

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
- ▶ Homepage
- ▶ *Deutsch*

ICD-10 C83: Non-follic. lymphoma

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	6,333
Diseases	6,365
Creation date	01/26/2021
Database export	01/07/2021
Population	4.92 m



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

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

https://www.tumorregister-muenchen.de/en/facts/base/bC83__E-ICD-10-C83-Non-follic.-lymphoma-incidence-and-mortality.pdf

Index of figures and tables

Fig./Tbl.		Page
1	Annual cases, DCO, mult. malignancies, follow-up / yr	4
2	Incidence by year of diagnosis	7
3	Age distribution parameters by year of diagnosis	8
4	Age distribution by 5-year age group and sex	11
5	Age-specific incidence, DCO rate, proportion malignancies	12
6	Age distribution and age-specific incidence (chart)	13
6a	Age-specific incidence internationally (chart)	14
7	Standardized incidence ratio of further malignancies	15
8a	Map of cancer incidence (BRD-S) by county (chart)	17
8b	Standardized incidence ratio (SIR) by county (chart)	18
9a	Pts incident cohorts and mortality / yr	19
9b	Incidence and mortality by year of diagnosis	20
9c	Cancer-related deaths, death certification available / yr	21
10	Medians of age at death / yr	22
11	Mortality by year of death	24
12	Distribution of age at death	26
13	Age-specific mortality	27
14	Further malignancies in deaths	28
15	Age-specific mortality (first primaries)	30
16	Age-specific mortality (single primaries)	31
17	Age distribution and age-specific mortality (chart)	32
18a	Map of cancer mortality (BRD-S) by county (chart)	33
18b	Standardized mortality ratio (SMR) by county (chart)	34

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

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

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

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

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

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

Munich Cancer Registry, January 2021

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

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

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

ICD-10 codes (ICD-10 2016) used for specifying cancer site

Code	Description
C83.-	Non-follicular lymphoma
C83.0	Small cell B-cell lymphoma
C83.1	Mantle cell lymphoma
C83.3	Diffuse large B-cell lymphoma
C83.5	Lymphoblastic (diffuse) lymphoma
C83.7	Burkitt lymphoma
C83.8	Other non-follicular lymphoma
C83.9	Non-follicular (diffuse) lymphoma, unspecified

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	112	1	0.9	7.1	12.1	80.4	97.3
1999	110			7.7	11.9	73.6	98.2
2000	129			8.3	11.9	75.2	99.2
2001	162			8.8	11.7	71.0	95.1
2002	221			10.5	11.5	69.2	98.6 #
2003	265			12.2	11.3	68.7	97.0
2004	284			12.5	11.2	66.2	97.2
2005	263			12.4	10.7	64.6	94.3
2006	306			13.1	10.3	66.3	95.8
2007	349	1	0.3	13.4	9.9	65.0	94.3 #
2008	340			13.9	9.3	64.1	98.2
2009	398			14.7	8.8	56.5	98.2
2010	402			15.3	8.1	59.5	97.5
2011	374	1	0.3	15.8	7.9	59.9	99.5
2012	391			16.8	7.9	54.2	99.5
2013	460			17.5	7.1	49.8	96.7
2014	382	1	0.3	18.0	7.0	50.5	95.0
2015	375			18.6	6.9	46.1	97.1
2016	336	1	0.3	18.9	5.6	49.4	99.1
2017	324	8	2.5	19.3	4.8	39.8	99.4
2018	226	1	0.4	19.4	5.1	24.8	99.1
2019	156			19.6	2.7	18.6	76.3 ##
1998-2019	6365	14	0.2	19.6	12.1	56.5	96.9

6,365 cases diagnosed 1998-2019 are related to a total of 6,333 patients. Currently, in 1,879 (29.7 %) of these 6,333 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,384 / 362 / 133 (21.9 % / 5.7 % / 2.1 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 324 cases has been diagnosed, of which 19.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	54	48.2	1	1.9	7.4	12.7	87.0	100.0
1999	49	44.5			6.8	12.5	71.4	98.0
2000	74	57.4			8.5	12.5	77.0	98.6
2001	80	49.4			8.9	12.4	68.8	96.3
2002	118	53.4			10.9	12.1	71.2	99.2 #
2003	140	52.8			12.8	11.9	63.6	97.9
2004	156	54.9			12.8	11.7	66.7	98.1
2005	146	55.5			13.1	11.2	61.6	93.2
2006	172	56.2			13.3	10.8	65.7	95.9
2007	194	55.6			13.4	10.5	65.5	93.8 #
2008	183	53.8			14.0	9.9	63.4	98.9
2009	218	54.8			14.8	9.4	55.5	99.1
2010	225	56.0			15.5	8.9	60.0	96.9
2011	228	61.0	1	0.4	16.2	8.4	61.4	99.1
2012	220	56.3			17.0	8.5	52.3	99.5
2013	252	54.8			17.8	7.3	53.2	96.4
2014	230	60.2	1	0.4	18.1	7.3	52.6	94.3
2015	216	57.6			18.7	6.7	47.2	97.2
2016	200	59.5	1	0.5	19.3	5.1	46.0	98.5
2017	181	55.9	4	2.2	19.6	4.3	38.7	99.4
2018	136	60.2	1	0.7	19.5	4.1	25.7	100.0
2019	84	53.8			19.7	1.2	14.3	76.2 ##
1998-2019	3556	55.9	9	0.3	19.7	12.7	56.1	97.0

3,556 cases diagnosed 1998-2019 are related to a total of 3,540 patients. Currently, in 1,087 (30.7 %) of these 3,540 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 812 / 194 / 81 (22.9 % / 5.5 % / 2.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 181 cases has been diagnosed, of which 19.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	58	51.8			6.9	11.3	74.1	94.8
1999	61	55.5			8.4	11.1	75.4	98.4
2000	55	42.6			8.0	11.0	72.7	100.0
2001	82	50.6			8.6	10.8	73.2	93.9
2002	103	46.6			10.0	10.6	67.0	98.1 #
2003	125	47.2			11.6	10.5	74.4	96.0
2004	128	45.1			12.1	10.4	65.6	96.1
2005	117	44.5			11.7	10.0	68.4	95.7
2006	134	43.8			12.9	9.5	67.2	95.5
2007	155	44.4	1	0.6	13.4	9.1	64.5	94.8 #
2008	157	46.2			13.8	8.4	65.0	97.5
2009	180	45.2			14.5	7.9	57.8	97.2
2010	177	44.0			15.1	7.0	58.8	98.3
2011	146	39.0			15.3	7.1	57.5	100.0
2012	171	43.7			16.4	7.2	56.7	99.4
2013	208	45.2			17.1	6.8	45.7	97.1
2014	152	39.8			18.0	6.6	47.4	96.1
2015	159	42.4			18.3	7.1	44.7	96.9
2016	136	40.5			18.4	6.3	54.4	100.0
2017	143	44.1	4	2.8	18.9	5.4	41.3	99.3
2018	90	39.8			19.2	6.5	23.3	97.8
2019	72	46.2			19.4	4.5	23.6	76.4 ##
1998–2019	2809	44.1	5	0.2	19.4	11.3	57.1	96.8

2,809 cases diagnosed 1998-2019 are related to a total of 2,793 patients. Currently, in 792 (28.4 %) of these 2,793 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 572 / 168 / 52 (20.5 % / 6.0 % / 1.9 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 143 cases has been diagnosed, of which 18.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.4 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

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

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	54	58	4.9	4.9	3.2	2.6	4.4	3.6	5.3	4.4
1999	49	61	4.4	5.1	3.0	2.6	4.0	3.6	4.7	4.5
2000	74	55	6.5	4.6	4.5	2.3	6.0	3.4	7.6	4.1
2001	80	82	6.9	6.7	4.3	3.6	6.1	4.9	7.6	6.0
2002	118	103	6.3	5.3	3.8	2.5	5.4	3.6	6.7	4.5
2003	140	125	7.5	6.3	4.8	3.3	6.4	4.6	7.9	5.6
2004	156	128	8.3	6.5	5.2	3.1	7.1	4.3	8.4	5.4
2005	146	117	7.7	5.9	4.7	2.9	6.4	4.0	7.8	5.0
2006	172	134	9.0	6.7	5.2	3.2	7.2	4.4	9.1	5.6
2007	194	155	8.8	6.7	5.1	3.1	7.1	4.4	8.9	5.6
2008	183	157	8.2	6.8	4.5	3.3	6.2	4.5	8.0	5.6
2009	218	180	9.8	7.7	5.6	3.5	7.7	4.9	9.5	6.3
2010	225	177	10.0	7.6	5.4	3.6	7.5	5.0	9.6	6.1
2011	228	146	10.2	6.2	5.3	2.9	7.5	4.0	9.4	5.0
2012	220	171	9.7	7.2	4.7	3.2	6.8	4.5	9.1	5.6
2013	252	208	10.9	8.7	5.7	3.9	8.0	5.5	10.2	7.0
2014	230	152	9.9	6.3	5.2	2.6	7.3	3.9	8.9	4.9
2015	216	159	9.1	6.5	4.7	2.7	6.6	3.9	8.5	5.0
2016	200	136	8.3	5.5	4.0	2.5	5.8	3.5	7.5	4.4
2017	181	143	7.5	5.8	3.5	2.5	5.2	3.5	6.7	4.5
2018	136	90	5.6	3.6	2.8	1.4	3.9	2.0	5.0	2.7
2019	84	72	3.5	2.9	1.7	1.1	2.4	1.6	3.1	2.1
1998-2019	3556	2809	8.1	6.1	4.5	2.8	6.2	4.0	7.8	5.0

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

Table 3

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	112	63.0	16.2	6.6	90.5	38.1	55.6	64.6	74.1	82.6
1999	110	63.1	18.0	4.2	90.7	34.6	54.3	65.7	77.0	82.1
2000	129	63.7	16.2	3.8	88.9	43.3	55.0	67.2	75.3	81.3
2001	162	63.2	16.5	4.9	90.3	38.5	54.9	64.8	76.8	81.8
2002	221	65.0	14.8	18.8	89.9	43.8	56.3	66.7	76.4	81.6
2003	265	63.1	16.9	19.0	93.7	38.8	53.5	66.4	76.5	81.3
2004	284	65.5	15.2	3.8	94.2	47.4	56.7	67.5	75.8	83.0
2005	263	65.1	15.9	4.8	98.4	45.7	56.8	67.8	76.1	83.1
2006	306	66.2	16.4	3.6	93.8	42.7	59.4	69.8	77.5	82.8
2007	349	66.2	16.8	4.0	101	43.5	56.8	69.9	77.9	85.0
2008	340	66.6	16.8	2.3	96.2	44.0	60.3	70.1	77.7	83.8
2009	398	66.6	16.1	4.3	95.2	44.5	59.1	69.0	78.3	84.4
2010	402	66.9	16.0	0.3	96.1	43.9	60.1	70.6	77.9	83.9
2011	374	66.9	15.4	7.8	94.8	44.3	58.8	70.8	77.2	83.6
2012	391	69.3	14.1	1.5	97.7	50.4	62.2	72.0	78.8	84.0
2013	460	68.0	15.8	1.0	92.2	46.8	61.0	71.7	79.0	84.6
2014	382	68.0	14.9	2.5	97.5	48.3	59.0	71.4	78.0	84.8
2015	375	68.9	16.0	1.5	98.5	46.2	61.2	72.8	80.0	84.9
2016	336	68.6	15.4	5.2	92.9	48.4	60.9	72.5	79.5	84.7
2017	324	70.2	14.0	21.4	97.8	50.4	62.8	73.0	80.2	85.9
2018	226	69.1	15.4	23.0	94.2	44.6	62.1	73.6	79.9	84.0
2019	156	70.6	14.4	20.3	98.3	52.1	62.4	73.6	80.6	85.0
1998-2019	6365	67.0	15.8	0.3	101	45.0	58.8	70.4	78.2	83.9

Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	54	59.8	17.0	6.6	84.7	33.9	46.7	62.6	72.0	79.2
1999	49	58.3	17.8	5.9	90.7	28.9	52.1	59.9	69.5	80.4
2000	74	61.0	18.6	3.8	88.8	37.7	47.1	65.5	75.3	81.3
2001	80	62.9	16.0	4.9	90.3	39.6	56.0	64.4	75.0	80.0
2002	118	63.5	14.6	18.8	89.9	43.0	55.5	65.0	73.8	82.0
2003	140	60.6	17.4	19.0	93.7	34.8	47.8	65.3	73.7	80.2
2004	156	62.5	14.3	8.4	92.0	43.0	54.5	64.9	73.4	79.0
2005	146	62.5	15.8	4.8	88.2	41.7	54.6	65.0	73.9	80.5
2006	172	64.6	16.7	3.6	92.0	42.1	57.5	68.0	77.1	80.6
2007	194	63.7	16.4	11.8	94.8	39.9	52.9	67.0	75.3	82.0
2008	183	65.4	16.8	2.3	91.7	42.9	57.9	69.0	76.5	82.4
2009	218	64.0	16.5	6.6	91.9	41.1	53.4	67.7	75.6	82.4
2010	225	66.1	16.0	3.7	90.4	42.4	58.5	70.3	77.3	83.6
2011	228	65.9	15.1	7.8	92.1	43.5	57.4	70.3	76.4	82.4
2012	220	68.5	14.4	1.5	91.2	50.2	62.3	71.7	78.0	83.1
2013	252	67.4	15.8	1.0	92.2	46.7	60.2	70.9	78.6	83.9
2014	230	66.4	15.7	2.5	97.5	47.2	57.1	70.0	77.1	83.2
2015	216	67.0	16.6	7.8	92.2	41.9	59.6	71.0	79.5	83.9
2016	200	68.3	15.4	5.2	88.0	49.8	59.4	72.7	79.2	84.4
2017	181	70.1	13.6	24.6	93.0	50.4	63.0	72.3	79.8	85.5
2018	136	67.9	15.4	23.0	94.2	44.6	61.2	71.4	78.6	83.3
2019	84	68.8	15.8	20.3	98.3	49.4	60.0	72.5	80.0	84.3
1998-2019	3556	65.5	16.0	1.0	98.3	43.3	56.7	68.9	77.1	82.6

Table 3b

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	58	66.0	15.0	18.1	90.5	49.9	58.6	66.0	77.4	83.8
1999	61	66.9	17.3	4.2	88.7	44.5	57.3	72.7	78.1	84.5
2000	55	67.3	11.6	33.3	88.9	51.8	58.2	69.2	75.3	80.0
2001	82	63.5	17.0	27.1	88.8	35.8	51.5	65.6	77.0	84.6
2002	103	66.8	14.9	23.1	89.4	44.3	57.9	70.0	79.0	81.3
2003	125	65.9	15.9	22.9	93.5	42.1	56.7	68.4	78.4	83.1
2004	128	69.1	15.5	3.8	94.2	49.4	63.0	70.4	79.5	85.4
2005	117	68.4	15.5	24.4	98.4	49.2	61.2	70.4	78.5	85.5
2006	134	68.3	15.9	19.9	93.8	43.8	61.4	71.3	80.0	85.3
2007	155	69.4	16.8	4.0	101	47.0	63.9	72.6	79.9	86.0
2008	157	67.9	16.7	5.4	96.2	45.7	63.3	71.0	78.9	85.0
2009	180	69.8	15.0	4.3	95.2	50.3	62.7	71.7	80.3	86.5
2010	177	68.0	16.0	0.3	96.1	44.0	60.4	71.2	79.3	85.3
2011	146	68.6	15.8	14.1	94.8	45.7	62.5	72.3	78.9	84.8
2012	171	70.2	13.8	6.4	97.7	54.1	62.1	72.5	80.2	86.6
2013	208	68.7	15.7	3.3	92.0	46.9	61.3	73.1	79.8	85.5
2014	152	70.4	13.4	30.5	96.9	52.3	62.0	73.5	79.4	85.4
2015	159	71.5	14.6	1.5	98.5	49.0	64.2	74.9	81.3	86.5
2016	136	69.0	15.5	16.6	92.9	46.7	62.3	72.4	79.8	84.9
2017	143	70.3	14.6	21.4	97.8	51.1	62.5	73.2	80.6	86.1
2018	90	70.9	15.3	32.6	93.5	44.8	63.4	77.5	81.5	85.3
2019	72	72.6	12.4	31.8	92.6	57.3	66.2	75.3	81.5	85.4
1998-2019	2809	68.8	15.4	0.3	101	48.1	61.3	72.0	79.6	85.3

Table 4

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

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0–4	13	0.3	0.3	8	0.3	0.3	5	0.3	0.3
5–9	11	0.2	0.5	8	0.3	0.6	3	0.2	0.4
10–14	6	0.1	0.7	3	0.1	0.7	3	0.2	0.6
15–19	18	0.4	1.1	9	0.4	1.1	9	0.5	1.0
20–24	33	0.7	1.8	23	0.9	2.0	10	0.5	1.5
25–29	48	1.1	2.9	34	1.3	3.3	14	0.7	2.3
30–34	52	1.2	4.0	32	1.2	4.6	20	1.0	3.3
35–39	89	2.0	6.0	53	2.1	6.6	36	1.8	5.1
40–44	132	2.9	8.9	81	3.2	9.8	51	2.6	7.8
45–49	188	4.2	13.1	132	5.1	14.9	56	2.9	10.6
50–54	238	5.3	18.3	153	6.0	20.9	85	4.4	15.0
55–59	276	6.1	24.5	157	6.1	27.0	119	6.1	21.1
60–64	390	8.6	33.1	217	8.5	35.4	173	8.9	30.0
65–69	564	12.5	45.6	345	13.4	48.9	219	11.3	41.3
70–74	747	16.6	62.2	417	16.2	65.1	330	17.0	58.2
75–79	744	16.5	78.6	425	16.6	81.7	319	16.4	74.6
80–84	572	12.7	91.3	299	11.6	93.3	273	14.0	88.6
85+	392	8.7	100.0	171	6.7	100.0	221	11.4	100.0
All ages	4513	100.0		2567	100.0		1946	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=8 %	Females DCO rate n=5 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4	8	5	0.5	0.4			3.8	3.1
5- 9	8	3	0.6	0.2			7.0	3.2
10-14	3	3	0.2	0.2			2.3	2.6
15-19	9	9	0.6	0.6			3.0	3.6
20-24	23	10	1.2	0.6			3.9	2.1
25-29	34	14	1.6	0.7			3.9	1.3
30-34	32	20	1.5	0.9			2.7	1.0
35-39	53	36	2.5	1.7			3.1	1.1
40-44	80	51	3.4	2.3			3.1	0.9
45-49	132	56	5.3	2.3			2.8	0.6
50-54	152	85	6.5	3.7			1.9	0.7
55-59	157	119	8.1	6.0			1.3	1.0
60-64	217	173	13.3	9.9		0.6	1.3	1.2
65-69	345	218	22.7	12.9	0.3		1.5	1.2
70-74	417	330	29.8	20.5	0.2	0.3	1.6	1.8
75-79	424	319	38.3	23.2	0.7	0.3	1.9	1.8
80-84	299	272	45.5	27.9	0.7		2.1	1.9
85+	171	221	40.1	22.9	0.6	0.9	1.7	1.4
All ages	2564	1944			0.3	0.3	1.8	1.3
Incidence								
Raw			8.5	6.2				
WS			4.4	2.8				
ES			6.2	3.9				
BRD-S			7.9	4.9				

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).

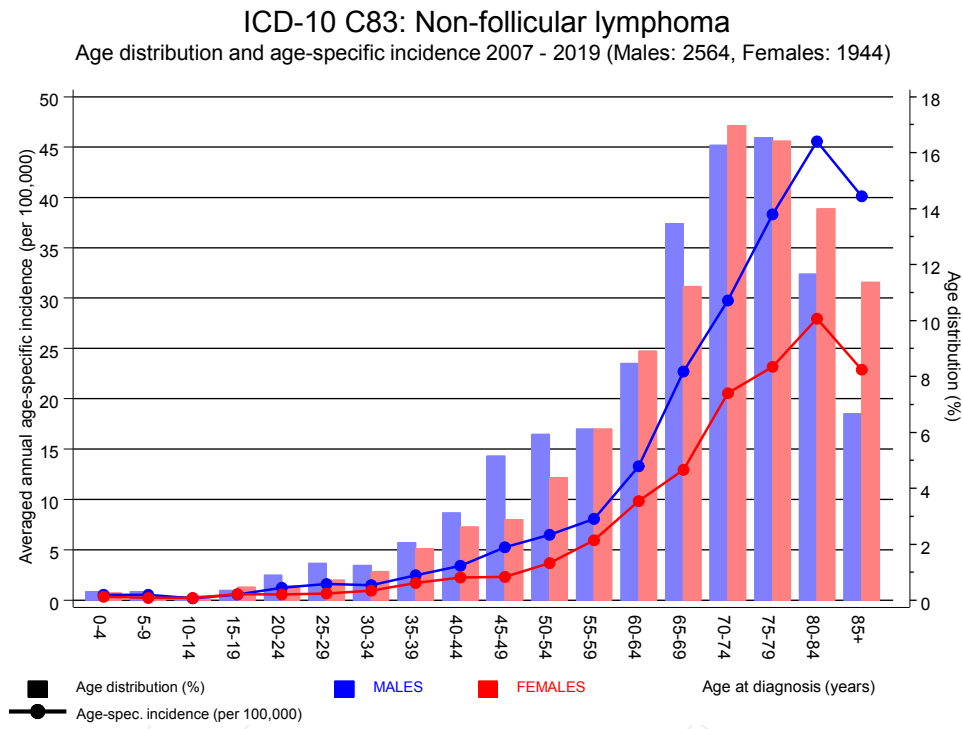


Figure 6. Age distribution (males: mean=66.8 yrs, median=70.4 yrs; females: mean=69.6 yrs, median=72.7 yrs) and age-specific incidence.

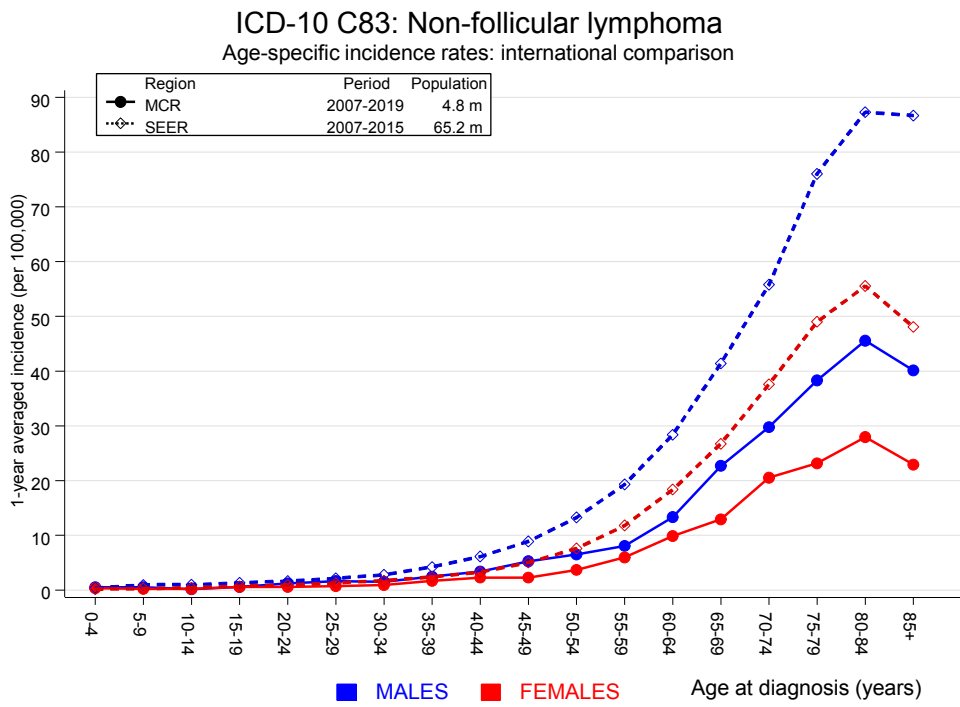


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

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

Table 7a

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

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	6	1.4	4.4	1.6	9.6 #	4.0	
C07-C08 Salivary gland	3	0.4	7.5	1.5	21.8 #	2.3	
C09-C10 Oropharynx	3	1.7	1.8	0.4	5.3	1.2	
C15 Oesophagus	5	3.3	1.5	0.5	3.5	1.5	
C16 Stomach	15	6.9	2.2	1.2	3.6 #	7.1	
C17 Small intestine	2	1.0	1.9	0.2	6.9	0.8	
C18 Colon	30	16.7	1.8	1.2	2.6 #	11.6	
C19-C20 Rectum	13	8.9	1.5	0.8	2.5	3.6	7.7
C21 Anus/canal	4	0.4	9.7	2.6	24.8 #	3.1	
C22 Liver	5	5.0	1.0	0.3	2.3	0.0	20.0
C23-C24 Bile	3	1.9	1.6	0.3	4.7	1.0	
C25 Pancreas	11	6.9	1.6	0.8	2.9	3.6	
C32 Larynx	7	1.6	4.3	1.7	8.8 #	4.7	14.3
C33-C34 Lung	49	20.1	2.4	1.8	3.2 #	25.1	6.1
C38,C45 Mesothelioma	2	1.2	1.6	0.2	5.9	0.7	
C43 Malign. melanoma	28	7.8	3.6	2.4	5.2 #	17.6	
C46,C49 Soft tissue	8	1.0	8.1	3.5	16.0 #	6.1	
C61 Prostate	85	47.2	1.8	1.4	2.2 #	32.9	4.7
C64 Kidney	17	5.9	2.9	1.7	4.7 #	9.7	
C66 Ureter	5	0.5	10.8	3.5	25.2 #	3.9	
C67 Bladder	18	8.3	2.2	1.3	3.4 #	8.4	
C69 Eye lymphoma	2	0.0	56.7	6.9	204.8 #	1.7	
C70-C72 CNS cancer	2	2.2	0.9	0.1	3.3	-0.1	50.0
C73 Thyroid	4	1.1	3.6	1.0	9.2	2.5	
C76-C79 CUP	9	3.0	3.0	1.4	5.8 #	5.3	
C81 Hodgkin lymphoma	6	0.4	14.2	5.2	30.8 #	4.8	
C82-C85 NHL	34	7.4	4.6	3.2	6.4 #	23.1	2.9
C90 Mult. myeloma	6	2.3	2.6	1.0	5.7	3.2	
C91-C96 Leukaemia	18	2.7	6.6	3.9	10.4 #	13.3	5.6
Others, specified	10	2.3	4.3	2.1	8.0 #	6.7	10.0
Not observed	0	3.3	0.0	0.0	1.1	-2.8	
All further malignancies	410	172.6	2.4	2.2	2.6 #	206.4	3.4

Patients	3453
Median age at next malignancy (years)	73.8
Person-years	11502
Mean observation time (years)	3.3
Median observation time (years)	1.6

The occurrence of further specified malignancy is statistically significant.

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

Table 7b

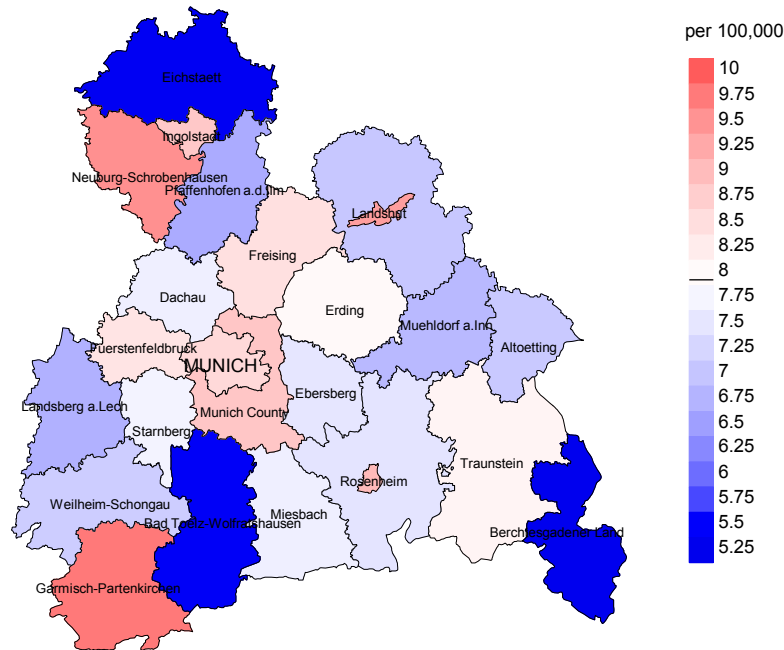
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	1	0.1	11.3	0.3	63.2	0.9	
C07-C08 Salivary gland	2	0.2	10.7	1.3	38.8 #	1.9	50.0
C09-C10 Oropharynx	2	0.4	4.8	0.6	17.4	1.6	
C15 Oesophagus	1	0.7	1.4	0.0	7.7	0.3	
C16 Stomach	9	4.0	2.2	1.0	4.3 #	5.1	
C17 Small intestine	3	0.6	5.1	1.0	14.8 #	2.5	
C18 Colon	23	11.4	2.0	1.3	3.0 #	12.0	13.0
C19-C20 Rectum	4	4.5	0.9	0.2	2.3	-0.6	
C21 Anus/canal	2	0.6	3.3	0.4	12.0	1.4	
C22 Liver	7	1.4	4.8	1.9	10.0 #	5.7	42.9
C23-C24 Bile	3	1.7	1.8	0.4	5.2	1.3	
C25 Pancreas	9	5.6	1.6	0.7	3.1	3.5	11.1
C33-C34 Lung	26	8.4	3.1	2.0	4.5 #	18.2	7.7
C37 Thymus	2	0.1	32.0	3.9	115.5 #	2.0	
C43 Malign. melanoma	14	4.1	3.4	1.8	5.7 #	10.2	
C44 Skin others	1	0.0	68.3	1.7	380.4 #	1.0	
C46,C49 Soft tissue	2	0.6	3.1	0.4	11.2	1.4	
C50 Breast	69	32.9	2.1	1.6	2.7 #	37.2	5.8
C51 Vulva	4	1.3	3.2	0.9	8.1	2.8	
C53 Cervix uteri	3	1.4	2.2	0.5	6.5	1.7	
C54 Corpus uteri	10	6.1	1.6	0.8	3.0	4.0	
C56 Ovary	7	4.5	1.6	0.6	3.2	2.6	14.3
C64 Kidney	7	2.7	2.6	1.0	5.3 #	4.4	
C65 Renal pelvis	2	0.4	5.3	0.6	19.3	1.7	
C67 Bladder	5	2.4	2.1	0.7	5.0	2.7	
C70-C72 CNS cancer	1	1.4	0.7	0.0	3.8	-0.5	
C73 Thyroid	3	1.6	1.8	0.4	5.3	1.4	
C76-C79 CUP	5	2.2	2.3	0.7	5.3	2.9	
C81 Hodgkin lymphoma	3	0.2	14.5	3.0	42.5 #	2.9	
C82-C85 NHL	30	4.5	6.6	4.5	9.5 #	26.3	
C90 Mult. myeloma	4	1.4	2.8	0.8	7.1	2.6	
C91-C96 Leukaemia	16	1.7	9.2	5.3	15.0 #	14.7	6.3
Not observed	0	3.6	0.0	0.0	1.0	-3.7	
All further malignancies	280	112.9	2.5	2.2	2.8 #	172.3	5.7
Patients		2722					
Median age at next malignancy (years)		75.6					
Person-years		9701					
Mean observation time (years)		3.6					
Median observation time (years)		1.7					

The occurrence of further specified malignancy is statistically significant.

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



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

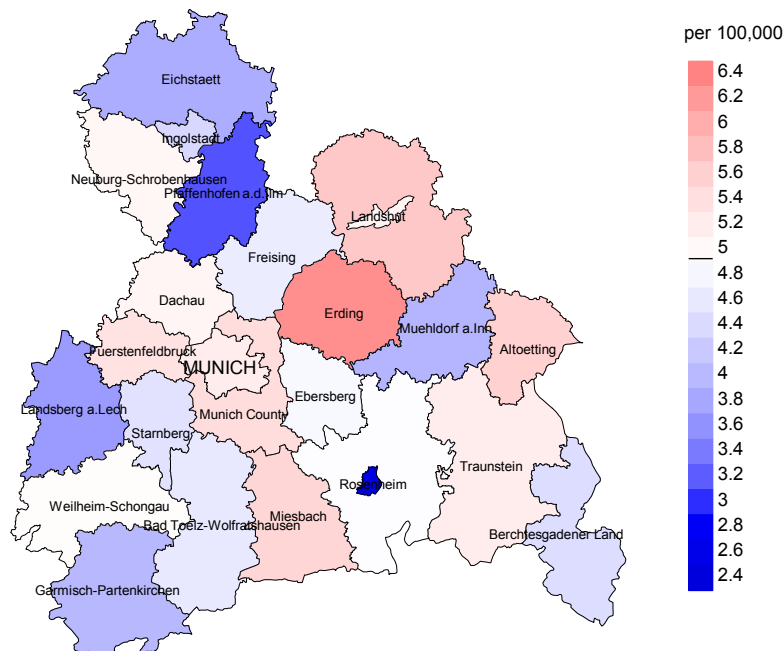
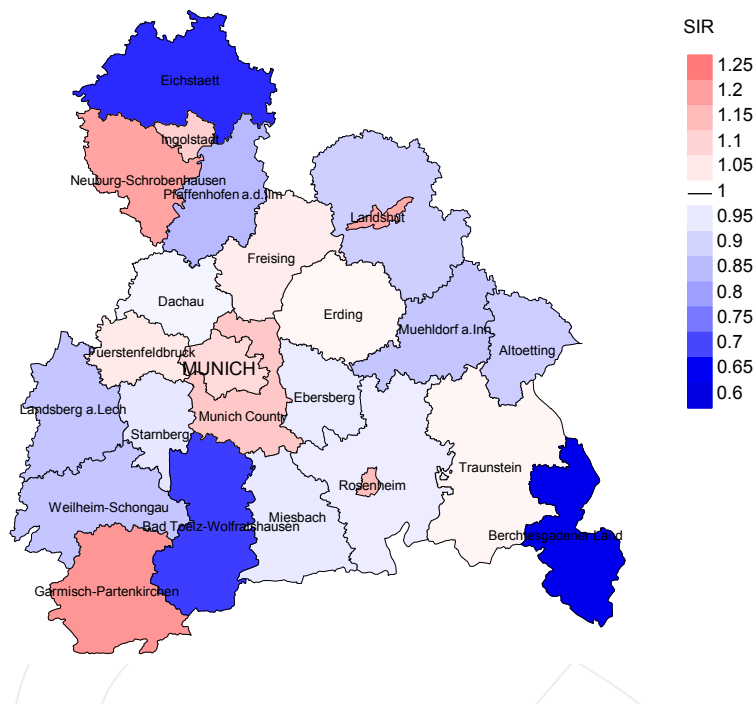


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.9/100,000 WS N=2,564, females 4.9/100,000 WS N=1,944).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 49 women were identified with newly diagnosed non-follic. lymphoma. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 4.8/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.2 and 7.0/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

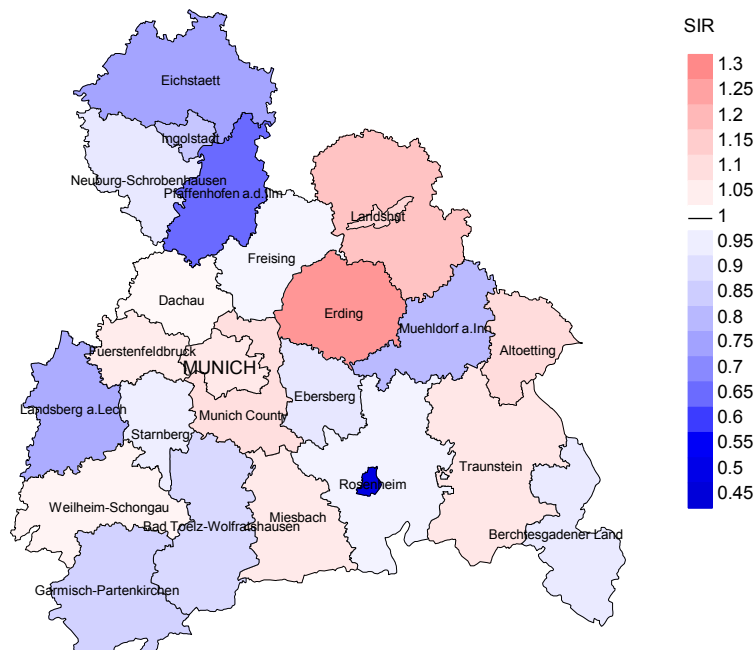


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,564, females N=1,944).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 49 women were identified with newly diagnosed non-follic. lymphoma. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.93. Though, the value of this parameter may vary with an underlying probability of 99% between 0.62 and 1.32, and is therefore not statistically striking.

MORTALITY

Table 9a

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

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	112	97.3	0.9	90	80.4	94.4
1999	110	98.2		81	73.6	90.1
2000	129	99.2		97	75.2	93.8
2001	162	95.1		115	71.0	94.8
2002	221	98.6		153	69.2	96.1
2003	265	97.0		182	68.7	96.2
2004	284	97.2		188	66.2	95.2
2005	263	94.3		170	64.6	94.1
2006	306	95.8		203	66.3	94.6
2007	349	94.3	0.3	227	65.0	94.3
2008	340	98.2		218	64.1	93.1
2009	398	98.2		225	56.5	95.1
2010	402	97.5		239	59.5	92.1
2011	374	99.5	0.3	224	59.9	93.3
2012	391	99.5		212	54.2	94.8
2013	460	96.7		229	49.8	90.8
2014	382	95.0	0.3	193	50.5	94.3
2015	375	97.1		173	46.1	90.2
2016	336	99.1	0.3	166	49.4	83.7
2017	324	99.4	2.5	129	39.8	77.5
2018	226	99.1	0.4	56	24.8	57.1
2019	156	76.3		29	18.6	89.7
1998-2019	6365	96.9	0.2	3599	56.5	92.1

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)

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

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	112	65	95.4	14	12.5
1999	110	60	88.3	14	12.7
2000	129	68	95.6	13	10.1
2001	162	72	94.4	21	13.0
2002	221	104	97.1	28	12.7
2003	265	133	98.5	44	16.6
2004	284	155	97.4	44	15.5
2005	263	148	97.3	36	13.7
2006	306	166	98.2	46	15.0
2007	349	204	96.6	64	18.3
2008	340	182	97.3	52	15.3
2009	398	230	97.8	70	17.6
2010	402	224	96.9	61	15.2
2011	374	218	97.7	48	12.8
2012	391	238	99.2	61	15.6
2013	460	276	98.2	72	15.7
2014	382	283	98.2	74	19.4
2015	375	267	98.9	67	17.9
2016	336	275	98.5	64	19.0
2017	324	325	97.8	72	22.2
2018	226	220	34.1	27	11.9
2019	156	170	58.2	18	11.5
1998–2019	6365	4083	92.6	1010	15.9

Table 9c

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

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

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	65	76.9	23.1	95.2
1999	60	75.0	25.0	90.6
2000	68	80.9	19.1	89.2
2001	72	83.3	16.7	94.1
2002	104	81.7	18.3	92.1
2003	133	85.0	15.0	91.6
2004	155	85.2	14.8	92.7
2005	148	85.1	14.9	92.4
2006	166	82.5	17.5	89.6
2007	204	83.3	16.7	92.9
2008	182	83.0	17.0	92.7
2009	230	80.0	20.0	92.4
2010	224	78.1	21.9	84.3
2011	218	76.6	23.4	85.4
2012	238	78.6	21.4	86.0
2013	276	74.6	25.4	82.3
2014	283	73.1	26.9	87.4
2015	267	75.3	24.7	81.1
2016	275	68.7	31.3	79.0
2017	325	76.6	23.4	84.0
2018	220	42.3	57.7	73.3
2019	170	50.0	50.0	76.8
1998–2019	4083	75.1	24.9	86.7

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	29	71.8	70.4	84.2	71.8
1999	25	69.9	69.1	73.4	72.6
2000	33	69.4	70.9	67.9	70.1
2001	31	67.4	66.3	71.0	67.4
2002	60	73.1	73.2	71.5	73.3
2003	70	72.4	71.6	81.2	71.7
2004	86	72.2	72.2	72.4	72.5
2005	83	73.7	74.1	73.6	73.8
2006	89	71.0	70.7	78.3	71.1
2007	113	73.0	73.1	70.4	72.5
2008	97	73.1	72.7	75.0	73.1
2009	131	75.5	75.3	83.3	75.3
2010	128	75.9	75.4	78.0	75.5
2011	129	73.2	72.3	77.5	72.8
2012	122	75.8	75.7	75.9	76.1
2013	166	77.7	77.1	81.6	77.7
2014	153	76.2	75.1	78.9	75.4
2015	151	78.1	76.2	81.7	76.6
2016	150	78.7	78.0	81.5	78.1
2017	179	78.9	77.7	82.7	77.7
2018	126	79.0	78.8	79.1	79.8
2019	96	79.4	78.8	79.6	78.3
1998-2019	2247	75.8	74.9	79.1	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	36	72.9	69.7	82.0	72.9
1999	35	78.1	76.1	78.3	78.1
2000	35	77.6	76.9	85.9	75.6
2001	41	75.9	75.6	81.8	76.0
2002	44	78.8	79.7	78.2	79.1
2003	63	78.9	79.0	75.5	78.7
2004	69	75.1	75.8	70.9	75.8
2005	65	79.2	77.7	90.8	78.3
2006	77	77.4	76.2	83.6	76.4
2007	91	78.6	78.2	79.7	78.3
2008	85	82.0	79.8	84.7	81.5
2009	99	78.8	77.4	79.7	79.4
2010	96	78.7	76.1	84.9	78.1
2011	89	78.9	77.8	82.8	77.5
2012	116	80.7	79.6	81.3	79.5
2013	110	79.7	76.1	83.4	77.5
2014	130	78.6	78.0	81.8	78.3
2015	116	78.7	77.9	83.2	78.7
2016	125	80.3	79.1	84.9	79.1
2017	146	80.8	79.2	85.6	79.2
2018	94	81.4	81.8	81.3	83.6
2019	74	81.9	79.1	84.7	81.0
1998-2019	1836	78.9	78.0	82.9	78.3

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	22	2.0	0.41	1.2	0.38	1.8	0.42	2.5	0.46
1999	17	1.5	0.35	0.9	0.31	1.4	0.35	1.7	0.36
2000	28	2.5	0.38	1.6	0.36	2.3	0.38	2.9	0.39
2001	26	2.2	0.33	1.5	0.34	2.1	0.34	2.7	0.35
2002	49	2.6	0.42	1.4	0.37	2.2	0.40	3.1	0.46
2003	60	3.2	0.43	1.8	0.37	2.7	0.42	3.7	0.46
2004	72	3.8	0.46	2.0	0.39	3.1	0.43	4.2	0.50
2005	70	3.7	0.48	1.8	0.38	2.9	0.45	4.0	0.52
2006	74	3.9	0.43	2.0	0.38	3.0	0.42	3.9	0.43
2007	94	4.2	0.48	2.1	0.41	3.3	0.46	4.5	0.51
2008	84	3.8	0.46	1.8	0.40	2.8	0.44	3.8	0.47
2009	107	4.8	0.49	2.2	0.39	3.4	0.45	4.9	0.51
2010	103	4.6	0.46	2.0	0.37	3.1	0.42	4.6	0.48
2011	91	4.1	0.40	1.9	0.37	2.9	0.39	3.9	0.42
2012	94	4.1	0.43	1.8	0.38	2.8	0.41	3.9	0.44
2013	122	5.3	0.49	2.1	0.38	3.5	0.44	5.0	0.49
2014	110	4.7	0.48	2.0	0.38	3.1	0.43	4.2	0.47
2015	110	4.6	0.51	2.0	0.42	3.1	0.47	4.2	0.49
2016	96	4.0	0.48	1.5	0.38	2.4	0.42	3.6	0.48
2017	142	5.9	0.78	2.3	0.66	3.7	0.72	5.1	0.76
2018	53	2.2	0.39	0.8	0.29	1.3	0.34	1.8	0.37
2019	47	1.9	0.56	0.8	0.46	1.2	0.51	1.7	0.54
1998-2019	1671	3.8	0.47	1.7	0.39	2.7	0.44	3.8	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	28	2.4	0.48	1.1	0.44	1.6	0.46	2.1	0.47
1999	28	2.4	0.46	0.9	0.36	1.5	0.41	2.0	0.45
2000	27	2.2	0.49	0.8	0.36	1.3	0.39	1.9	0.45
2001	34	2.8	0.41	1.1	0.31	1.8	0.36	2.4	0.41
2002	36	1.8	0.35	0.6	0.25	1.0	0.27	1.4	0.31
2003	53	2.7	0.42	1.0	0.29	1.5	0.32	2.0	0.37
2004	60	3.0	0.47	1.2	0.41	1.9	0.44	2.6	0.47
2005	56	2.8	0.48	1.0	0.33	1.5	0.37	2.1	0.42
2006	63	3.1	0.47	1.2	0.37	1.8	0.42	2.4	0.44
2007	76	3.3	0.49	1.2	0.37	1.8	0.42	2.5	0.45
2008	67	2.9	0.43	1.0	0.29	1.5	0.34	2.0	0.36
2009	77	3.3	0.43	1.1	0.31	1.7	0.35	2.4	0.39
2010	72	3.1	0.41	1.1	0.30	1.7	0.34	2.4	0.39
2011	76	3.3	0.52	1.1	0.37	1.7	0.41	2.4	0.48
2012	93	3.9	0.54	1.2	0.38	1.9	0.43	2.7	0.48
2013	84	3.5	0.40	1.1	0.29	1.8	0.33	2.6	0.37
2014	97	4.0	0.64	1.2	0.47	2.0	0.52	2.9	0.59
2015	91	3.7	0.57	1.3	0.47	1.9	0.50	2.7	0.53
2016	93	3.8	0.68	1.1	0.44	1.8	0.52	2.5	0.57
2017	107	4.3	0.75	1.3	0.52	2.0	0.58	3.0	0.67
2018	42	1.7	0.47	0.5	0.34	0.8	0.38	1.1	0.40
2019	38	1.5	0.53	0.4	0.38	0.7	0.42	1.0	0.46
1998-2019	1398	3.1	0.50	1.0	0.36	1.6	0.41	2.2	0.45

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9	1	0.0	0.0	1	0.1	0.1			0.0
10-14	2	0.1	0.1			0.1	2	0.2	0.2
15-19	3	0.1	0.3	2	0.2	0.2	1	0.1	0.3
20-24	2	0.1	0.4	2	0.2	0.4			0.3
25-29	4	0.2	0.5	2	0.2	0.6	2	0.2	0.5
30-34	7	0.3	0.8	5	0.4	1.0	2	0.2	0.7
35-39	8	0.4	1.2	6	0.5	1.4	2	0.2	0.9
40-44	25	1.1	2.3	20	1.6	3.0	5	0.5	1.4
45-49	47	2.1	4.4	38	3.0	6.1	9	0.9	2.3
50-54	61	2.7	7.1	36	2.9	8.9	25	2.5	4.7
55-59	85	3.8	10.8	57	4.5	13.5	28	2.8	7.5
60-64	140	6.2	17.0	85	6.8	20.3	55	5.4	12.9
65-69	222	9.8	26.8	136	10.9	31.1	86	8.5	21.4
70-74	343	15.1	41.9	188	15.0	46.1	155	15.3	36.7
75-79	461	20.3	62.3	260	20.8	66.9	201	19.8	56.6
80-84	424	18.7	81.0	220	17.6	84.4	204	20.1	76.7
85+	431	19.0	100.0	195	15.6	100.0	236	23.3	100.0
All ages	2266	100.0		1253	100.0		1013	100.0	

Table 13

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

Age at death Years	Males 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	1		0.1	0.13			4.0	
10-14		2			0.1	0.67		8.7
15-19	2	1	0.1	0.22	0.1	0.11	4.3	4.0
20-24	2		0.1	0.09			3.0	
25-29	2	2	0.1	0.06	0.1	0.14	2.4	2.2
30-34	5	2	0.2	0.16	0.1	0.10	3.9	1.3
35-39	6	2	0.3	0.11	0.1	0.06	2.5	0.5
40-44	20	5	0.9	0.25	0.2	0.10	3.5	0.6
45-49	38	9	1.5	0.29	0.4	0.16	2.8	0.6
50-54	36	25	1.5	0.24	1.1	0.29	1.4	1.0
55-59	57	28	2.9	0.36	1.4	0.24	1.4	0.8
60-64	85	55	5.2	0.39	3.1	0.32	1.4	1.2
65-69	136	86	8.9	0.39	5.1	0.39	1.6	1.3
70-74	188	155	13.4	0.45	9.7	0.47	1.7	1.9
75-79	260	201	23.5	0.61	14.6	0.63	2.3	2.2
80-84	220	204	33.5	0.74	21.0	0.75	2.3	2.4
85+	195	236	45.7	1.14	24.4	1.07	2.4	2.1
All ages	1253	1013					2.0	1.8
Mortality								
Raw			4.2	0.49	3.3	0.52		
WS			1.8	0.40	1.0	0.37		
ES			2.8	0.45	1.6	0.42		
BRD-S			3.9	0.49	2.3	0.47		
PYLL-70								
per 100,000			16.8		8.2			
ES			14.6		7.1			
AYLL-70			11.4		9.9			

Table 14a

Further malignancies in deaths in period 1998–2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	4	0.5	1	25.0			3	75.0
C03–C06 Oral cavity	6	0.8			2	33.3	4	66.7
C07–C08 Salivary gland	4	0.5	1	25.0			3	75.0
C09–C10 Oropharynx	5	0.7	3	60.0			2	40.0
C15 Oesophagus	4	0.5	1	25.0			3	75.0
C16 Stomach	19	2.5	6	31.6	3	15.8	10	52.6
C17 Small intestine	7	0.9	4	57.1			3	42.9
C18 Colon	50	6.6	23	46.0	10	20.0	17	34.0
C19–C20 Rectum	21	2.8	10	47.6	4	19.0	7	33.3
C22 Liver	10	1.3	2	20.0			8	80.0
C23–C24 Bile	4	0.5	2	50.0			2	50.0
C25 Pancreas	14	1.9	2	14.3			12	85.7
C32 Larynx	6	0.8	3	50.0			3	50.0
C33–C34 Lung	56	7.4	12	21.4	6	10.7	38	67.9
C38,C45 Mesothelioma	4	0.5	1	25.0	1	25.0	2	50.0
C43 Malign. melanoma	29	3.8	12	41.4	1	3.4	16	55.2
C44 Skin others	127	16.8	43	33.9	9	7.1	75	59.1
C46,C49 Soft tissue	8	1.1	4	50.0	1	12.5	3	37.5
C60 Penis	2	0.3			1	50.0	1	50.0
C61 Prostate	122	16.1	87	71.3	11	9.0	24	19.7
C62 Testis	7	0.9	4	57.1	1	14.3	2	28.6
C64 Kidney	26	3.4	19	73.1	5	19.2	2	7.7
C65 Renal pelvis	2	0.3			1	50.0	1	50.0
C66 Ureter	3	0.4			1	33.3	2	66.7
C67 Bladder	25	3.3	9	36.0	3	12.0	13	52.0
C68 Urethra	2	0.3	1	50.0			1	50.0
C69 Eye lymphoma	2	0.3	1	50.0			1	50.0
C69 Eye melanoma	2	0.3	2	100.0				
C70–C72 CNS cancer	3	0.4	1	33.3			2	66.7
C73 Thyroid	3	0.4	3	100.0				
C76–C79 CUP	16	2.1	2	12.5	1	6.3	13	81.3
C81 Hodgkin lymphoma	18	2.4	14	77.8	1	5.6	3	16.7
C82–C85 NHL	89	11.8			3	3.4	86	96.6
C90 Mult. myeloma	19	2.5	9	47.4	6	31.6	4	21.1
C91–C96 Leukaemia	29	3.8	11	37.9	2	6.9	16	55.2
Others, specified	8	1.1	1	12.5			7	87.5
All further malignancies	756	100.0	294	38.9	73	9.7	389	51.5

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 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	4	0.7	4	100.0				
C07-C08 Salivary gland	5	0.9	3	60.0			2	40.0
C09-C10 Oropharynx	4	0.7	2	50.0	1	25.0	1	25.0
C12-C13 Hypopharynx	1	0.2					1	100.0
C15 Oesophagus	1	0.2					1	100.0
C16 Stomach	16	2.9	5	31.3	2	12.5	9	56.3
C17 Small intestine	3	0.5	2	66.7	1	33.3		
C18 Colon	33	6.0	13	39.4	3	9.1	17	51.5
C19-C20 Rectum	17	3.1	9	52.9	3	17.6	5	29.4
C21 Anus/canal	4	0.7	3	75.0			1	25.0
C22 Liver	6	1.1					6	100.0
C23-C24 Bile	6	1.1	1	16.7			5	83.3
C25 Pancreas	10	1.8	1	10.0	2	20.0	7	70.0
C32 Larynx	2	0.4	2	100.0				
C33-C34 Lung	28	5.1	2	7.1	1	3.6	25	89.3
C43 Malign. melanoma	18	3.3	11	61.1	1	5.6	6	33.3
C44 Skin others	64	11.7	22	34.4	1	1.6	41	64.1
C46,C49 Soft tissue	3	0.5			1	33.3	2	66.7
C50 Breast	109	19.9	65	59.6	14	12.8	30	27.5
C51 Vulva	7	1.3	3	42.9			4	57.1
C53 Cervix uteri	8	1.5	6	75.0			2	25.0
C54 Corpus uteri	17	3.1	13	76.5	1	5.9	3	17.6
C55,C57 Fem. genitals un	5	0.9	5	100.0				
C56 Ovary	9	1.6	4	44.4			5	55.6
C64 Kidney	18	3.3	11	61.1	3	16.7	4	22.2
C65 Renal pelvis	1	0.2					1	100.0
C67 Bladder	6	1.1	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	1.3	5	71.4			2	28.6
C76-C79 CUP	10	1.8	5	50.0	1	10.0	4	40.0
C81 Hodgkin lymphoma	7	1.3	5	71.4			2	28.6
C82-C85 NHL	90	16.4	1	1.1	2	2.2	87	96.7
C90 Mult. myeloma	11	2.0	5	45.5	5	45.5	1	9.1
C91-C96 Leukaemia	15	2.7	2	13.3	2	13.3	11	73.3
C96 Systemic	1	0.2	1	100.0				
All further malignancies	548	100.0	213	38.9	45	8.2	290	52.9

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

Table 15

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

Age at death Years	Males		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9	1		0.1	0.13			4.2	
10-14		2			0.1	0.67		10.5
15-19	2	1	0.1	0.25	0.1	0.13	4.4	4.3
20-24	2		0.1	0.09			3.3	
25-29	2	2	0.1	0.06	0.1	0.15	2.6	2.3
30-34	5	2	0.2	0.16	0.1	0.11	4.0	1.4
35-39	5	2	0.2	0.11	0.1	0.06	2.2	0.6
40-44	13	4	0.6	0.19	0.2	0.09	2.5	0.6
45-49	35	8	1.4	0.29	0.3	0.15	2.9	0.6
50-54	29	17	1.2	0.22	0.7	0.25	1.3	0.8
55-59	44	23	2.3	0.34	1.2	0.24	1.2	0.8
60-64	67	43	4.1	0.37	2.4	0.33	1.3	1.1
65-69	107	56	7.0	0.39	3.3	0.36	1.6	1.1
70-74	137	123	9.8	0.44	7.7	0.53	1.6	1.9
75-79	193	149	17.4	0.68	10.8	0.64	2.3	2.2
80-84	158	155	24.1	0.80	15.9	0.77	2.3	2.4
85+	130	183	30.5	1.17	19.0	1.06	2.2	2.1
All ages	930	770					1.9	1.7
Mortality								
Raw			3.1	0.47	2.5	0.52		
WS			1.3	0.38	0.8	0.36		
ES			2.1	0.43	1.2	0.41		
BRD-S			2.9	0.47	1.7	0.46		
PYLL-70								
per 100,000			13.8		6.6			
ES			12.1		5.9			
AYLL-70			11.8		10.8			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9	1		0.1	0.13			4.2	
10-14		1			0.1	0.33		5.3
15-19	2	1	0.1	0.25	0.1	0.13	4.4	4.5
20-24	2		0.1	0.09			3.3	
25-29	2	1	0.1	0.07	0.0	0.08	2.6	1.2
30-34	5	2	0.2	0.16	0.1	0.11	4.1	1.5
35-39	5	2	0.2	0.11	0.1	0.06	2.2	0.6
40-44	13	2	0.6	0.19	0.1	0.04	2.5	0.3
45-49	34	7	1.4	0.29	0.3	0.15	2.8	0.5
50-54	26	16	1.1	0.21	0.7	0.24	1.2	0.8
55-59	39	19	2.0	0.33	1.0	0.22	1.1	0.7
60-64	56	38	3.4	0.34	2.2	0.32	1.1	1.0
65-69	89	42	5.9	0.40	2.5	0.30	1.3	0.8
70-74	114	106	8.1	0.42	6.6	0.49	1.4	1.7
75-79	157	128	14.2	0.64	9.3	0.60	2.0	1.9
80-84	131	126	20.0	0.77	12.9	0.68	2.1	2.0
85+	103	157	24.2	0.97	16.3	0.95	1.9	1.9
All ages	779	648					1.6	1.5
Mortality								
Raw			2.6	0.44	2.1	0.47		
WS			1.2	0.35	0.7	0.32		
ES			1.8	0.40	1.0	0.37		
BRD-S			2.4	0.44	1.5	0.42		
PYLL-70								
per 100,000			12.8		5.4			
ES			11.3		4.7			
AYLL-70			12.4		10.8			

* See corresponding tables with multiple malignancies.

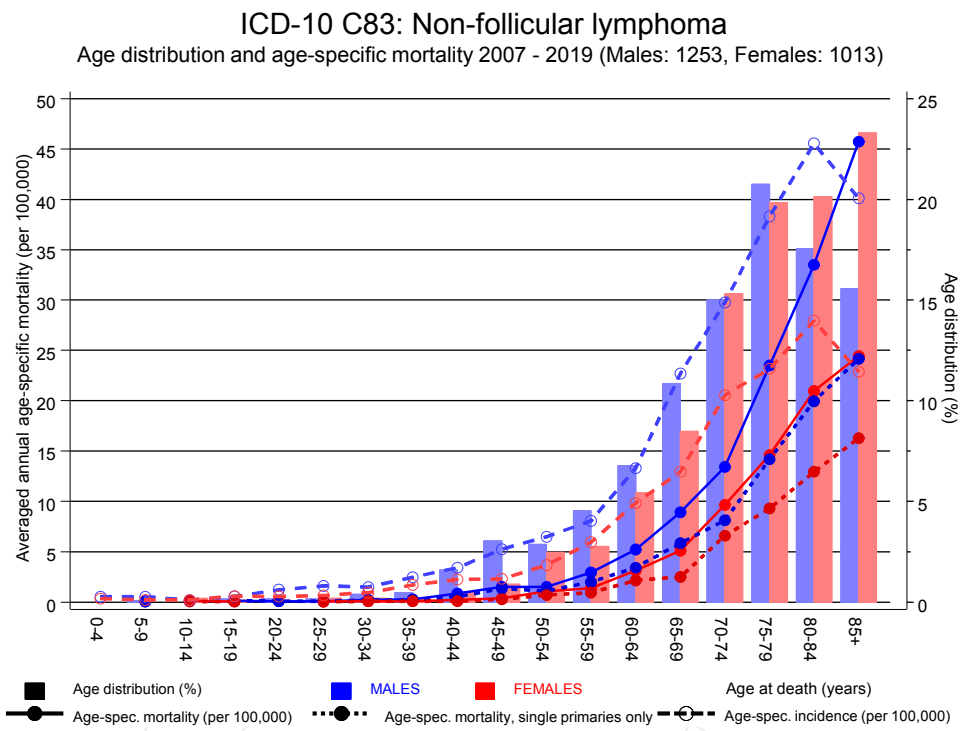
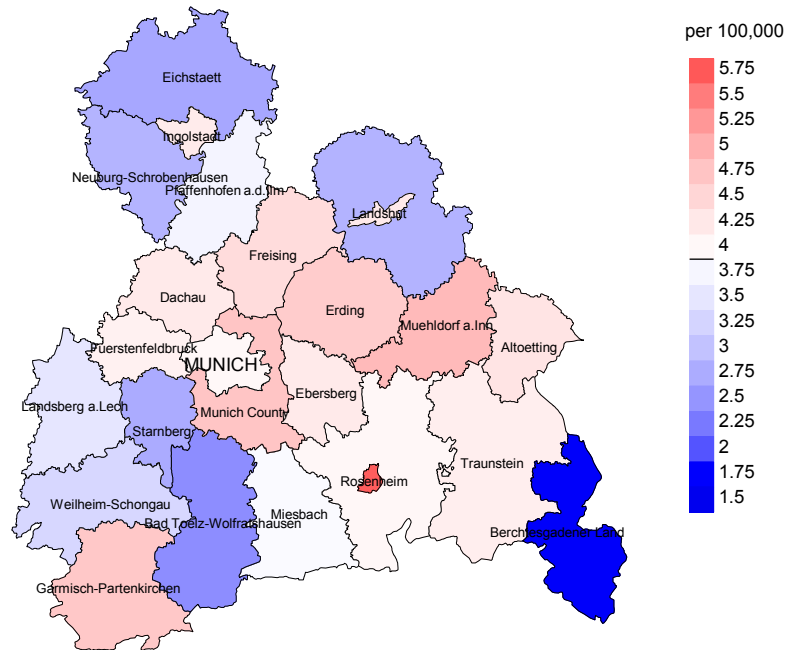


Figure 17. Distribution of age at death (bars; males: mean=69.9 yrs, median=72.1 yrs; females: mean=73.3 yrs, median=75.0 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

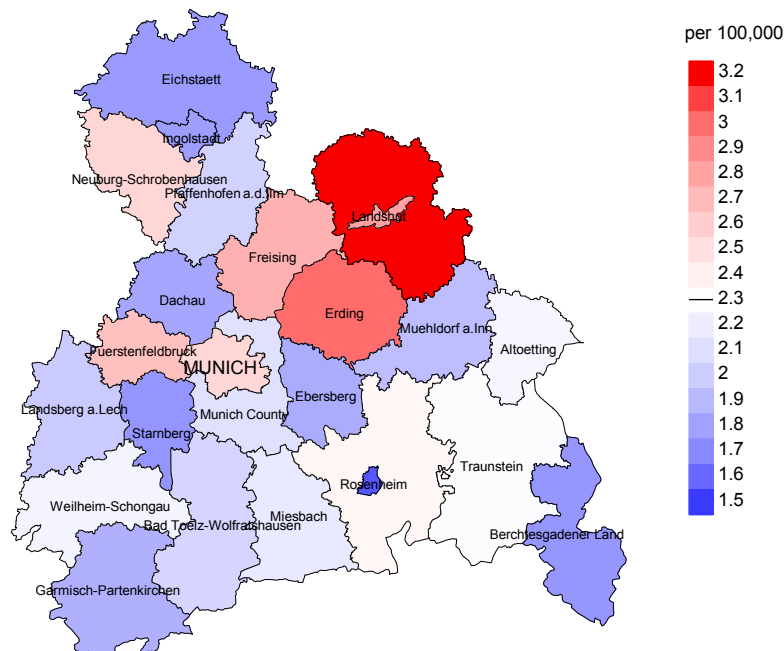
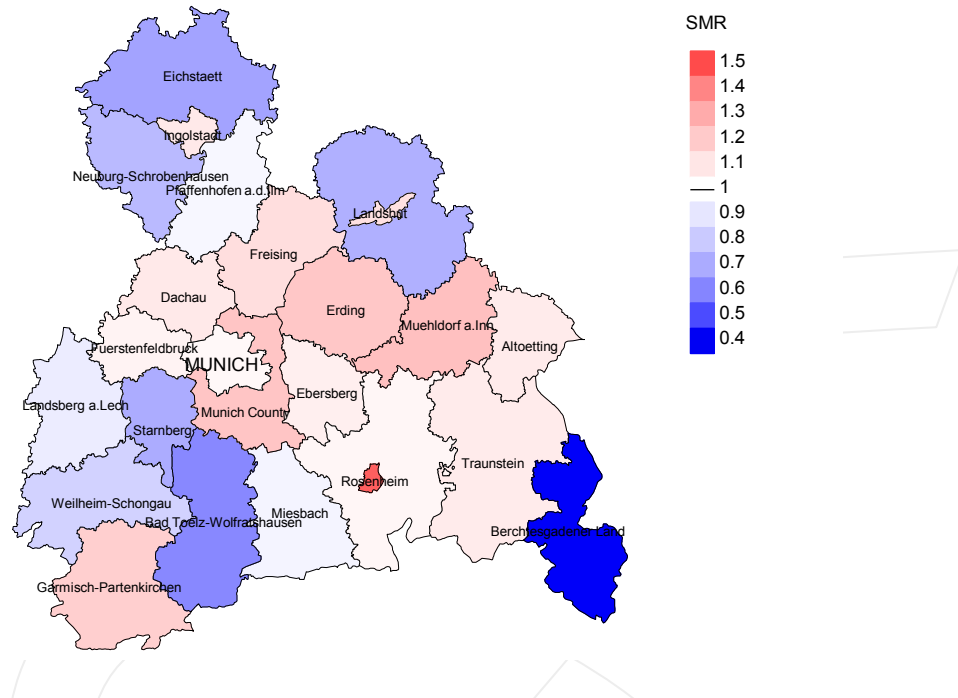


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 3.9/100,000 WS N=1,253, females 2.3/100,000 WS N=1,013).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 21 women died from non-follic. lymphoma. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.8/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.0 and 3.2/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

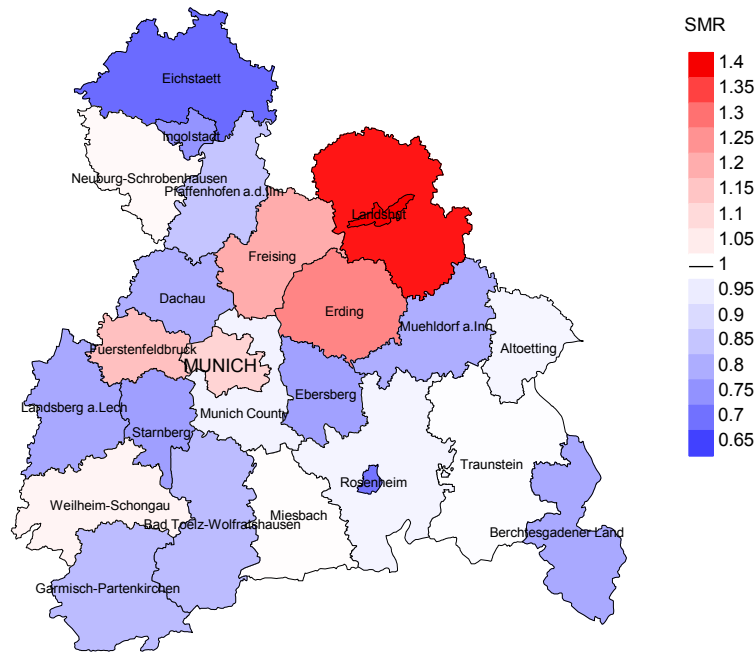


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,253, females N=1,013).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 21 women died from non-follic. lymphoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.78. Though, the value of this parameter may vary with an underlying probability of 99% between 0.41 and 1.33, 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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