

Munich Cancer Registry



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- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C82: Follic. lymphoma

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	2,308
Diseases	2,311
Creation date	01/26/2021
Database export	01/07/2021
Population	4.92 m





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

https://www.tumorregister-muenchen.de/en/facts/base/bC82__E-ICD-10-C82-Follic.-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, 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
C82.-	Follicular lymphoma
C82.0	Follicular lymphoma grade I
C82.1	Follicular lymphoma grade II
C82.2	Follicular lymphoma grade III, unspecified
C82.3	Follicular lymphoma grade IIIa
C82.4	Follicular lymphoma grade IIIb
C82.5	Diffuse follicle centre lymphoma
C82.6	Cutaneous follicle centre lymphoma
C82.7	Other types of follicular lymphoma
C82.9	Follicular 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	20			5.0	17.8	40.0	100.0
1999	37			8.8	17.8	59.5	97.3
2000	43	1	2.3	7.0	17.6	55.8	97.7
2001	54	1	1.9	11.0	17.7	40.7	98.1
2002	91			10.6	17.6	49.5	100.0 #
2003	106	2	1.9	10.8	17.4	39.6	93.4
2004	127	2	1.6	10.9	17.0	44.9	93.7
2005	110			11.7	16.5	34.5	90.0
2006	120			11.0	16.0	33.3	90.8
2007	145	1	0.7	12.2	15.6	48.3	90.3 #
2008	151			12.5	15.1	37.7	96.7
2009	153			13.1	14.4	34.0	96.7
2010	131			13.3	13.9	34.4	97.7
2011	148	2	1.4	13.4	12.4	33.8	95.3
2012	127	1	0.8	13.8	11.1	26.8	96.9
2013	144	1	0.7	14.6	9.9	29.2	97.2
2014	137			14.9	8.6	18.2	97.1
2015	132	1	0.8	15.3	7.8	24.2	93.2
2016	103			15.7	6.7	17.5	99.0
2017	93	1	1.1	16.3	5.3	11.8	98.9
2018	78			16.8	4.4	14.1	98.7
2019	61			17.1	1.7	6.6	70.5 ##
1998-2019	2311	13	0.6	17.1	17.8	32.4	95.0

2,311 cases diagnosed 1998-2019 are related to a total of 2,308 patients. Currently, in 745 (32.3 %) of these 2,308 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 534 / 155 / 56 (23.1 % / 6.7 % / 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 93 cases has been diagnosed, of which 16.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.3 % 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 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	10	50.0			0.0	19.0	40.0	100.0
1999	19	51.4			3.4	19.0	63.2	100.0
2000	15	34.9			4.5	19.0	53.3	93.3
2001	24	44.4			7.4	18.9	41.7	95.8
2002	46	50.5			7.9	19.0	54.3	100.0 #
2003	42	39.6	1	2.4	9.0	18.7	38.1	88.1
2004	64	50.4			9.1	17.9	46.9	93.8
2005	49	44.5			10.0	17.2	42.9	95.9
2006	57	47.5			9.8	16.9	33.3	89.5
2007	61	42.1			11.6	16.4	52.5	91.8 #
2008	78	51.7			12.5	15.7	39.7	96.2
2009	73	47.7			13.9	14.2	35.6	98.6
2010	56	42.7			14.0	13.3	41.1	98.2
2011	71	48.0			13.7	11.9	33.8	94.4
2012	57	44.9			14.3	9.9	24.6	96.5
2013	58	40.3	1	1.7	15.4	9.8	34.5	96.6
2014	73	53.3			15.6	9.0	20.5	95.9
2015	66	50.0			16.4	8.0	24.2	95.5
2016	53	51.5			16.9	7.5	17.0	98.1
2017	47	50.5	1	2.1	17.3	5.8	12.8	100.0
2018	44	56.4			17.9	5.4	13.6	97.7
2019	34	55.7			18.2	3.1	5.9	76.5 ##
1998-2019	1097	47.5	3	0.3	18.2	19.0	33.6	95.2

1,097 cases diagnosed 1998-2019 are related to a total of 1,095 patients. Currently, in 382 (34.9 %) of these 1,095 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 268 / 84 / 30 (24.5 % / 7.7 % / 2.7 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 47 cases has been diagnosed, of which 17.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	10	50.0			10.0	16.7	40.0	100.0
1999	18	48.6			14.3	16.7	55.6	94.4
2000	28	65.1	1	3.6	8.9	16.4	57.1	100.0
2001	30	55.6	1	3.3	14.0	16.6	40.0	100.0
2002	45	49.5			13.0	16.3	44.4	100.0 #
2003	64	60.4	1	1.6	12.3	16.3	40.6	96.9
2004	63	49.6	2	3.2	12.4	16.1	42.9	93.7
2005	61	55.5			13.2	15.9	27.9	85.2
2006	63	52.5			12.0	15.3	33.3	92.1
2007	84	57.9	1	1.2	12.7	14.9	45.2	89.3 #
2008	73	48.3			12.6	14.6	35.6	97.3
2009	80	52.3			12.4	14.5	32.5	95.0
2010	75	57.3			12.7	14.4	29.3	97.3
2011	77	52.0	2	2.6	13.2	12.8	33.8	96.1
2012	70	55.1	1	1.4	13.3	12.3	28.6	97.1
2013	86	59.7			14.0	10.0	25.6	97.7
2014	64	46.7			14.3	8.1	15.6	98.4
2015	66	50.0	1	1.5	14.4	7.7	24.2	90.9
2016	50	48.5			14.7	5.8	18.0	100.0
2017	46	49.5			15.4	4.7	10.9	97.8
2018	34	43.6			15.9	3.3	14.7	100.0
2019	27	44.3			16.1	0.0	7.4	63.0 ##
1998-2019	1214	52.5	10	0.8	16.1	16.7	31.3	94.8

1,214 cases diagnosed 1998-2019 are related to a total of 1,213 patients. Currently, in 363 (29.9 %) of these 1,213 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 266 / 71 / 26 (21.9 % / 5.9 % / 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 46 cases has been diagnosed, of which 15.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.7 % 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 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	10	10	0.9	0.9	0.6	0.5	0.8	0.7	0.9	0.8
1999	19	18	1.7	1.5	1.3	1.0	1.5	1.3	1.5	1.4
2000	15	28	1.3	2.3	0.8	1.4	1.1	1.9	1.5	2.1
2001	24	30	2.1	2.5	1.4	1.4	1.9	1.9	2.3	2.1
2002	46	45	2.5	2.3	1.6	1.2	2.1	1.7	2.4	2.0
2003	42	64	2.2	3.2	1.4	2.0	1.9	2.7	2.2	2.9
2004	64	63	3.4	3.2	2.1	1.8	2.9	2.4	3.3	2.8
2005	49	61	2.6	3.1	1.7	1.8	2.3	2.4	2.5	2.7
2006	57	63	3.0	3.1	1.8	1.8	2.5	2.4	2.8	2.8
2007	61	84	2.8	3.6	1.5	1.9	2.2	2.7	2.7	3.1
2008	78	73	3.5	3.1	2.0	1.4	2.8	2.1	3.2	2.6
2009	73	80	3.3	3.4	1.8	1.8	2.5	2.4	3.0	2.8
2010	56	75	2.5	3.2	1.5	1.7	2.0	2.3	2.3	2.7
2011	71	77	3.2	3.3	1.8	1.7	2.5	2.3	3.0	2.7
2012	57	70	2.5	3.0	1.4	1.5	2.0	2.1	2.3	2.5
2013	58	86	2.5	3.6	1.5	2.0	2.0	2.7	2.3	3.0
2014	73	64	3.1	2.7	1.8	1.4	2.4	1.9	2.9	2.3
2015	66	66	2.8	2.7	1.5	1.3	2.2	1.8	2.5	2.3
2016	53	50	2.2	2.0	1.2	1.0	1.7	1.5	2.0	1.7
2017	47	46	1.9	1.9	1.0	0.9	1.5	1.3	1.8	1.5
2018	44	34	1.8	1.4	1.0	0.7	1.4	1.0	1.6	1.1
2019	34	27	1.4	1.1	0.8	0.5	1.1	0.7	1.3	0.9
1998-2019	1097	1214	2.5	2.7	1.5	1.4	2.0	1.9	2.3	2.3

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	20	58.7	11.3	33.3	78.4	46.8	50.4	59.4	66.9	74.2
1999	37	54.2	16.8	7.9	92.4	34.1	46.6	58.9	62.8	67.9
2000	43	60.3	17.1	22.8	90.9	35.7	52.8	60.1	74.3	79.6
2001	54	59.2	15.1	22.7	91.4	37.2	52.1	59.3	70.1	77.3
2002	91	61.5	13.7	24.9	92.2	40.6	53.6	62.4	71.2	80.3
2003	106	60.0	11.3	30.6	85.0	43.4	53.0	60.8	67.2	73.7
2004	127	62.8	12.2	16.1	89.5	47.7	54.1	63.8	70.8	79.2
2005	110	61.5	12.8	21.5	93.7	43.2	53.9	62.8	69.9	76.5
2006	120	61.4	11.9	31.1	84.7	41.4	55.2	63.4	69.9	75.6
2007	145	66.1	12.1	30.7	92.6	49.8	58.6	67.0	74.5	82.2
2008	151	65.5	13.1	18.0	96.2	47.4	55.8	66.9	74.1	82.3
2009	153	65.1	13.7	6.4	94.8	46.5	57.4	66.9	73.0	79.8
2010	131	64.8	12.5	28.6	91.2	49.4	57.2	65.6	73.7	79.3
2011	148	64.1	13.3	31.3	90.9	44.1	54.7	64.1	74.3	80.9
2012	127	64.3	13.1	26.9	92.5	48.1	54.9	65.1	73.4	80.1
2013	144	63.0	13.7	12.9	91.9	44.7	53.2	65.9	72.9	79.2
2014	137	64.4	12.8	19.3	90.4	46.4	57.2	66.1	74.5	79.5
2015	132	65.3	15.0	21.4	93.1	47.3	55.0	66.1	77.1	81.2
2016	103	64.6	12.6	33.4	93.2	50.9	54.1	66.1	72.8	79.7
2017	93	65.9	14.1	32.4	91.0	47.7	56.5	67.6	76.4	81.9
2018	78	64.4	12.1	37.0	91.0	49.7	55.0	64.7	74.0	79.8
2019	61	66.5	12.6	31.6	97.2	51.6	59.5	69.0	73.9	80.2
1998-2019	2311	63.6	13.3	6.4	97.2	46.3	55.0	64.7	73.0	79.7

Table 3a

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	10	55.0	11.9	33.3	78.4	40.7	48.1	54.4	60.7	70.8
1999	19	53.3	18.8	7.9	78.9	12.4	39.6	59.4	65.3	67.9
2000	15	61.0	17.0	23.5	81.3	33.9	57.5	64.5	74.3	76.4
2001	24	56.6	15.5	22.7	81.6	34.5	47.7	56.5	69.5	76.0
2002	46	59.9	12.8	24.9	80.8	39.5	52.9	62.3	66.7	77.1
2003	42	59.1	11.9	33.8	81.3	42.0	51.8	59.9	67.6	75.0
2004	64	61.4	12.4	16.1	89.5	46.4	54.0	63.0	69.6	78.2
2005	49	59.5	13.4	21.5	86.8	41.9	51.6	61.6	68.5	76.6
2006	57	59.4	12.1	31.1	80.6	40.6	51.0	61.6	69.1	73.8
2007	61	65.5	13.6	30.7	92.6	49.5	56.4	67.5	75.1	79.8
2008	78	62.1	13.1	18.0	86.3	46.1	52.2	65.5	70.6	77.9
2009	73	63.6	13.4	36.7	94.8	44.4	50.0	65.4	72.2	79.3
2010	56	63.0	13.0	34.1	91.2	45.1	54.2	62.6	71.0	79.3
2011	71	63.3	13.6	31.3	84.5	44.0	54.2	63.7	75.4	80.0
2012	57	62.7	13.8	26.9	92.5	46.1	53.8	62.6	73.5	78.2
2013	58	61.9	13.5	24.6	91.9	45.1	51.0	62.0	71.2	78.2
2014	73	63.7	12.8	29.9	90.4	45.9	57.2	65.3	74.0	80.0
2015	66	64.3	15.3	21.4	93.1	47.3	54.2	63.7	76.1	85.5
2016	53	64.2	12.7	33.4	93.1	52.3	56.3	66.2	72.8	76.9
2017	47	65.0	14.2	32.5	87.7	39.5	56.8	66.4	77.0	81.8
2018	44	63.4	12.4	37.0	91.0	49.8	54.4	63.3	73.2	79.0
2019	34	64.5	12.7	31.6	84.8	48.5	59.1	67.0	72.5	78.9
1998-2019	1097	62.3	13.5	7.9	94.8	44.2	53.6	63.7	71.8	78.5

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	10	62.5	9.7	45.6	77.3	48.6	55.2	64.1	69.3	74.2
1999	18	55.1	14.9	29.3	92.4	37.1	46.6	57.6	61.2	78.8
2000	28	59.9	17.4	22.8	90.9	35.7	52.3	59.0	74.4	80.4
2001	30	61.3	14.6	30.7	91.4	37.2	53.6	61.6	70.1	79.6
2002	45	63.2	14.5	31.8	92.2	40.6	56.6	62.6	75.3	80.9
2003	64	60.5	11.0	30.6	85.0	48.3	54.0	61.2	67.0	72.1
2004	63	64.3	11.9	37.4	84.2	49.1	54.1	64.6	74.3	81.1
2005	61	63.0	12.1	34.7	93.7	44.0	55.9	64.4	70.1	76.4
2006	63	63.3	11.4	31.4	84.7	48.5	57.2	65.4	70.8	76.3
2007	84	66.5	11.0	35.6	86.8	53.1	60.0	66.2	73.5	82.2
2008	73	69.1	12.2	40.1	96.2	54.5	60.8	69.5	77.5	84.7
2009	80	66.5	13.9	6.4	93.9	47.8	60.3	67.6	73.6	82.9
2010	75	66.2	12.0	28.6	87.9	50.4	60.7	67.5	74.9	79.8
2011	77	64.8	13.0	31.3	90.9	47.6	56.1	65.0	72.9	81.9
2012	70	65.7	12.6	28.5	90.9	49.6	56.7	66.4	72.9	82.1
2013	86	63.8	13.8	12.9	86.4	43.3	54.7	67.6	73.1	79.3
2014	64	65.2	12.9	19.3	87.8	48.3	57.2	66.9	75.3	79.2
2015	66	66.3	14.7	28.0	86.7	47.4	56.8	72.2	78.5	80.9
2016	50	65.0	12.7	38.7	93.2	50.4	54.1	65.5	72.8	82.3
2017	46	66.8	14.1	32.4	91.0	48.8	55.1	69.1	75.4	84.5
2018	34	65.7	11.7	40.8	82.7	47.2	58.5	68.0	74.4	81.7
2019	27	69.0	12.3	41.3	97.2	51.6	62.5	70.3	76.8	82.6
1998-2019	1214	64.8	13.0	6.4	97.2	48.0	56.5	66.1	73.8	80.6

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									
5-9	1	0.1	0.1			0.0	1	0.1	0.1
10-14	1	0.1	0.1			0.0	1	0.1	0.2
15-19	2	0.1	0.2	1	0.1	0.1	1	0.1	0.4
20-24	2	0.1	0.4	2	0.3	0.4			0.4
25-29	7	0.4	0.8	3	0.4	0.8	4	0.5	0.8
30-34	17	1.1	1.9	12	1.6	2.3	5	0.6	1.4
35-39	32	2.0	3.9	18	2.3	4.7	14	1.7	3.1
40-44	60	3.7	7.6	35	4.5	9.2	25	3.0	6.1
45-49	98	6.1	13.7	55	7.1	16.3	43	5.2	11.3
50-54	152	9.5	23.2	81	10.5	26.8	71	8.5	19.8
55-59	163	10.2	33.4	84	10.9	37.7	79	9.5	29.3
60-64	197	12.3	45.7	91	11.8	49.5	106	12.7	42.1
65-69	271	16.9	62.6	129	16.7	66.3	142	17.1	59.1
70-74	230	14.3	76.9	94	12.2	78.5	136	16.3	75.5
75-79	193	12.0	89.0	94	12.2	90.7	99	11.9	87.4
80-84	107	6.7	95.6	42	5.4	96.1	65	7.8	95.2
85+	70	4.4	100.0	30	3.9	100.0	40	4.8	100.0
All ages	1603	100.0		771	100.0		832	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=2 %	Females DCO rate n=5 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4								
5- 9		1		0.1				1.1
10-14		1		0.1				0.9
15-19	1	1	0.1	0.1			0.3	0.4
20-24	2		0.1				0.3	
25-29	3	4	0.1	0.2			0.3	0.4
30-34	12	5	0.6	0.2			1.0	0.3
35-39	18	14	0.8	0.7			1.1	0.4
40-44	35	25	1.5	1.1			1.3	0.4
45-49	55	43	2.2	1.8			1.1	0.5
50-54	80	71	3.4	3.1			1.0	0.6
55-59	84	79	4.3	4.0			0.7	0.6
60-64	91	106	5.6	6.0			0.6	0.7
65-69	129	142	8.5	8.4			0.6	0.8
70-74	94	136	6.7	8.5		0.7	0.4	0.7
75-79	94	99	8.5	7.2	2.1		0.4	0.5
80-84	42	65	6.4	6.7		1.5	0.3	0.5
85+	30	40	7.0	4.1		7.5	0.3	0.3
All ages	770	832			0.3	0.6	0.5	0.6
Incidence								
Raw			2.6	2.7				
WS			1.4	1.4				
ES			2.0	1.9				
BRD-S			2.3	2.2				

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).

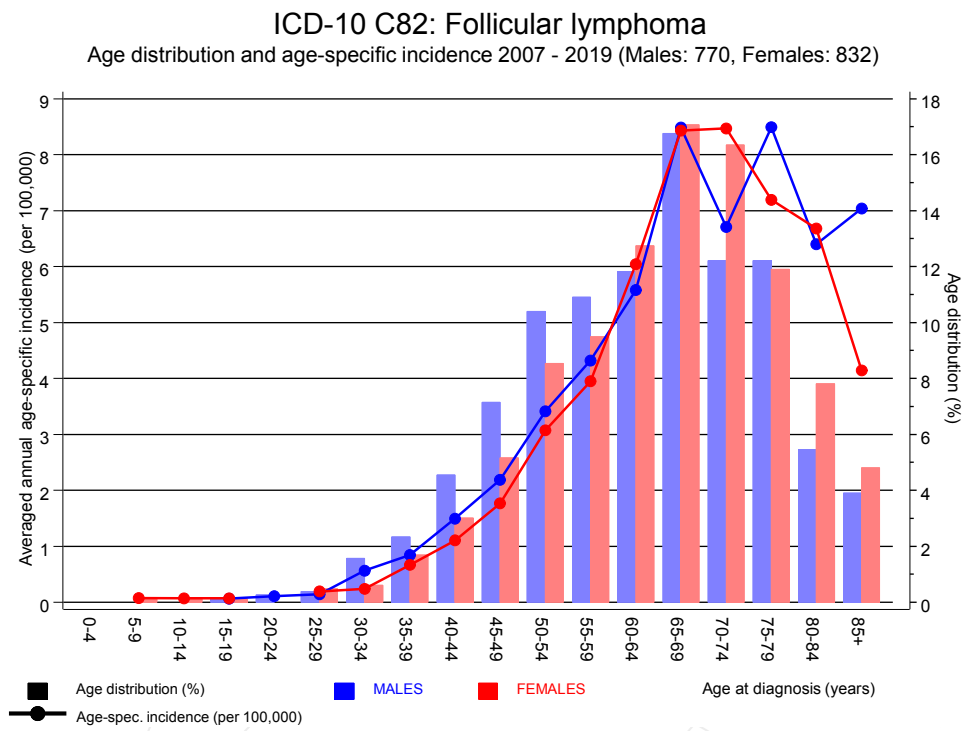


Figure 6. Age distribution (males: mean=63.6 yrs, median=65.1 yrs; females: mean=66.0 yrs, median=67.5 yrs) and age-specific incidence.

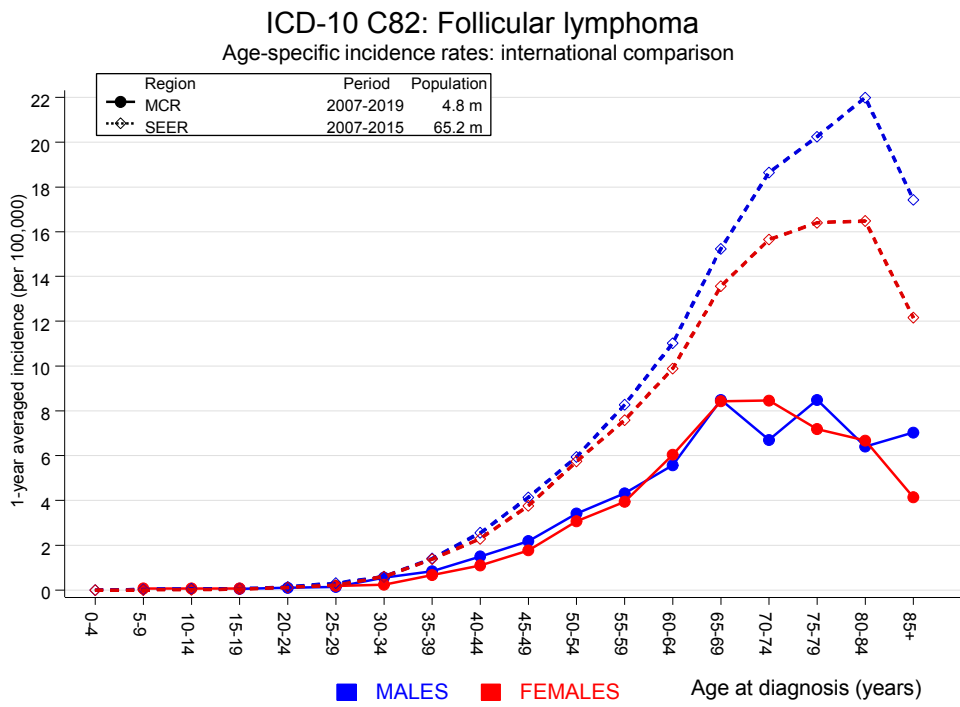


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 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	5	0.6	7.8	2.5	18.2 #	8.7	
C15 Oesophagus	3	1.4	2.1	0.4	6.2	3.2	
C16 Stomach	1	2.5	0.4	0.0	2.2	-3.1	
C17 Small intestine	2	0.4	4.7	0.6	17.0	3.1	
C18 Colon	12	6.2	1.9	1.0	3.4	11.5	8.3
C19-C20 Rectum	9	3.6	2.5	1.1	4.7 #	10.7	
C22 Liver	3	2.0	1.5	0.3	4.4	2.0	
C23-C24 Bile	2	0.7	2.9	0.4	10.5	2.6	
C25 Pancreas	2	2.6	0.8	0.1	2.8	-1.3	
C32 Larynx	2	0.7	2.8	0.3	10.1	2.6	
C33-C34 Lung	25	8.1	3.1	2.0	4.6 #	33.8	4.0
C38,C45 Mesothelioma	2	0.5	4.3	0.5	15.4	3.1	
C43 Malign. melanoma	6	3.2	1.9	0.7	4.1	5.6	
C44 Skin others	1	0.0	55.0	1.4	306.4 #	2.0	
C46,C49 Soft tissue	1	0.4	2.6	0.1	14.6	1.2	
C61 Prostate	36	18.8	1.9	1.3	2.6 #	34.3	
C64 Kidney	11	2.4	4.6	2.3	8.1 #	17.2	
C66 Ureter	1	0.2	5.9	0.2	33.0	1.7	
C67 Bladder	3	3.0	1.0	0.2	2.9	0.0	
C70-C72 CNS cancer	1	0.9	1.1	0.0	6.2	0.2	
C76-C79 CUP	2	1.1	1.8	0.2	6.5	1.8	
C81 Hodgkin lymphoma	3	0.2	16.8	3.5	49.2 #	5.6	
C82-C85 NHL	45	2.9	15.7	11.4	21.0 #	84.2	
C90 Mult. myeloma	2	0.9	2.3	0.3	8.2	2.2	
C91-C96 Leukaemia	7	1.0	7.0	2.8	14.3 #	12.0	14.3
Not observed	0	3.9	0.0	0.0	0.9 #	-7.8	
All further malignancies	187	68.3	2.7	2.4	3.2 #	237.3	1.6
Patients		1068					
Median age at next malignancy (years)		70.4					
Person-years		5001					
Mean observation time (years)		4.7					
Median observation time (years)		3.4					

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 1998-2019

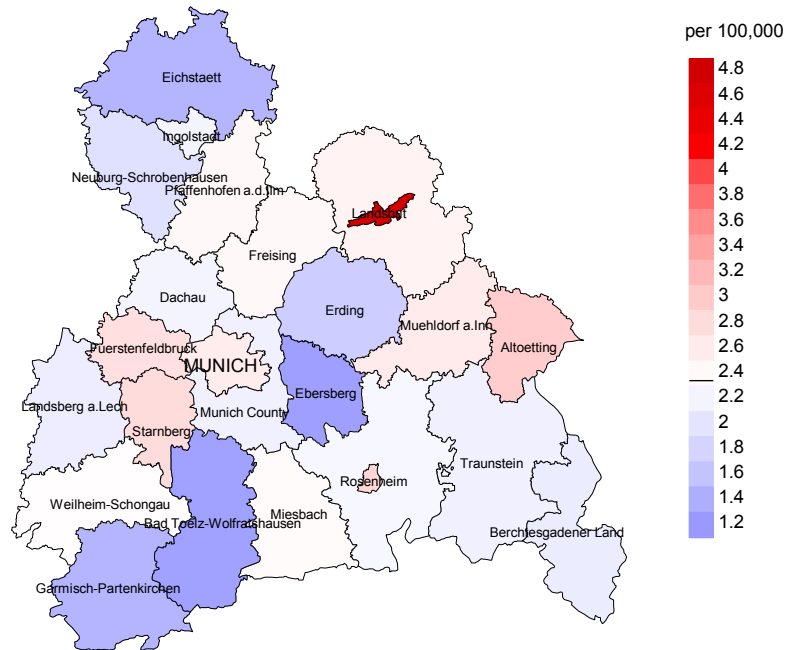
FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C07-C08 Salivary gland	2	0.1	21.0	2.5	75.9 #	3.3	
C09-C10 Oropharynx	1	0.3	3.5	0.1	19.5	1.2	
C15 Oesophagus	1	0.4	2.3	0.1	13.0	1.0	
C16 Stomach	3	1.9	1.6	0.3	4.7	1.9	
C17 Small intestine	2	0.4	5.6	0.7	20.3	2.8	
C18 Colon	16	5.5	2.9	1.7	4.7 #	18.0	
C19-C20 Rectum	1	2.3	0.4	0.0	2.4	-2.3	
C21 Anus/canal	1	0.3	2.9	0.1	16.0	1.1	
C22 Liver	1	0.8	1.3	0.0	7.3	0.4	
C23-C24 Bile	3	0.8	3.7	0.8	10.8	3.7	33.3
C25 Pancreas	2	2.8	0.7	0.1	2.6	-1.3	
C33-C34 Lung	9	5.0	1.8	0.8	3.4	6.8	
C38,C45 Mesothelioma	2	0.1	17.4	2.1	62.8 #	3.2	
C40-C41 Bone	1	0.1	17.2	0.4	95.7	1.6	
C43 Malign. melanoma	4	2.5	1.6	0.4	4.2	2.6	
C46,C49 Soft tissue	1	0.4	2.9	0.1	15.9	1.1	
C48 Peritoneal	1	0.3	3.6	0.1	20.0	1.2	
C50 Breast	43	20.0	2.2	1.6	2.9 #	39.3	
C51 Vulva	1	0.6	1.6	0.0	8.8	0.6	
C53 Cervix uteri	1	0.8	1.2	0.0	6.8	0.3	
C54 Corpus uteri	6	3.6	1.7	0.6	3.6	4.1	
C56 Ovary	5	2.5	2.0	0.6	4.7	4.3	
C64 Kidney	3	1.4	2.1	0.4	6.1	2.6	
C67 Bladder	2	1.1	1.8	0.2	6.5	1.5	
C73 Thyroid	5	1.1	4.5	1.5	10.6 #	6.7	
C81 Hodgkin lymphoma	2	0.1	17.8	2.2	64.3 #	3.2	
C82-C85 NHL	35	2.4	14.6	10.2	20.3 #	55.7	
C91-C96 Leukaemia	4	0.9	4.5	1.2	11.6 #	5.3	25.0
Not observed	0	4.3	0.0	0.0	0.9 #	-7.3	
All further malignancies	158	62.7	2.5	2.1	2.9 #	162.7	1.3

Patients	1183
Median age at next malignancy (years)	73.3
Person-years	5859
Mean observation time (years)	5.0
Median observation time (years)	3.8

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

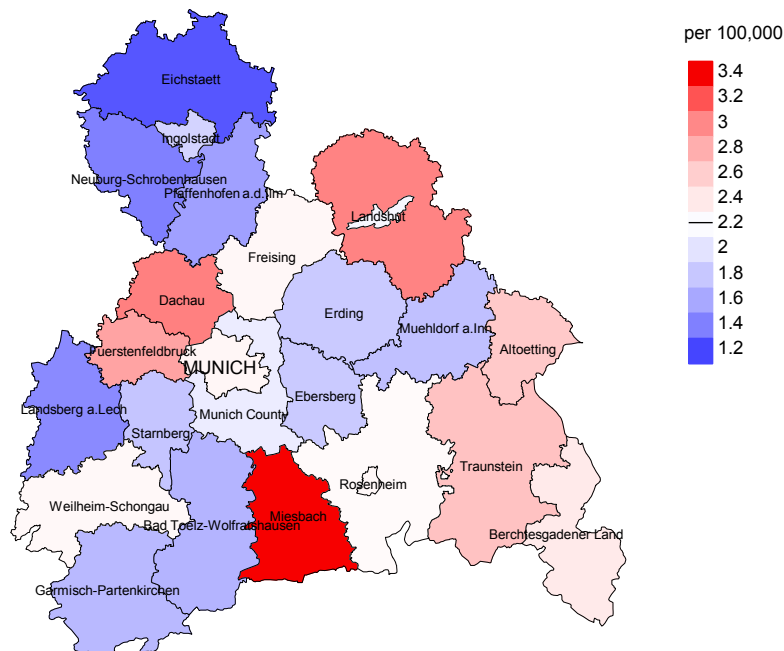
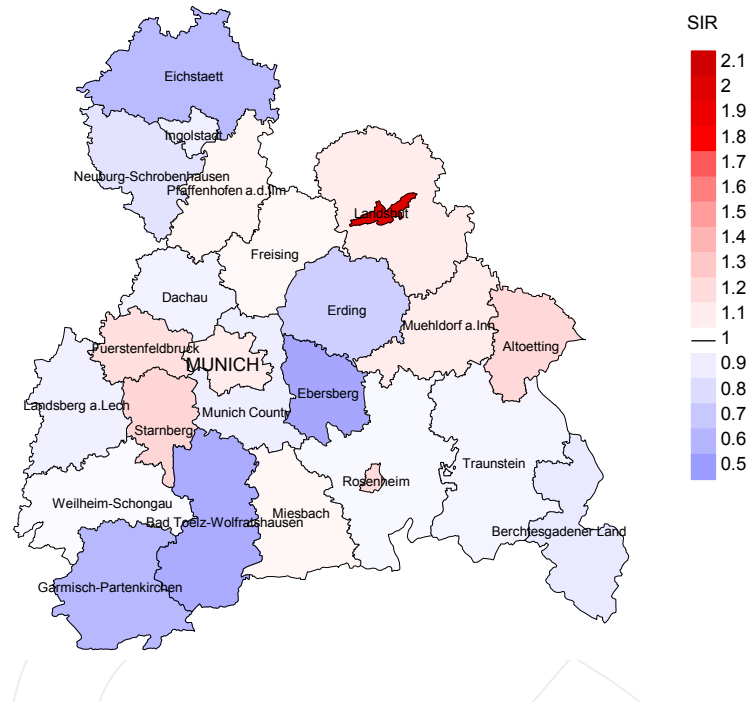


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.3/100,000 WS N=770, females 2.2/100,000 WS N=832).

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 19 women were identified with newly diagnosed follic. lymphoma. Therefore, the mean incidence 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 0.9 and 3.2/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

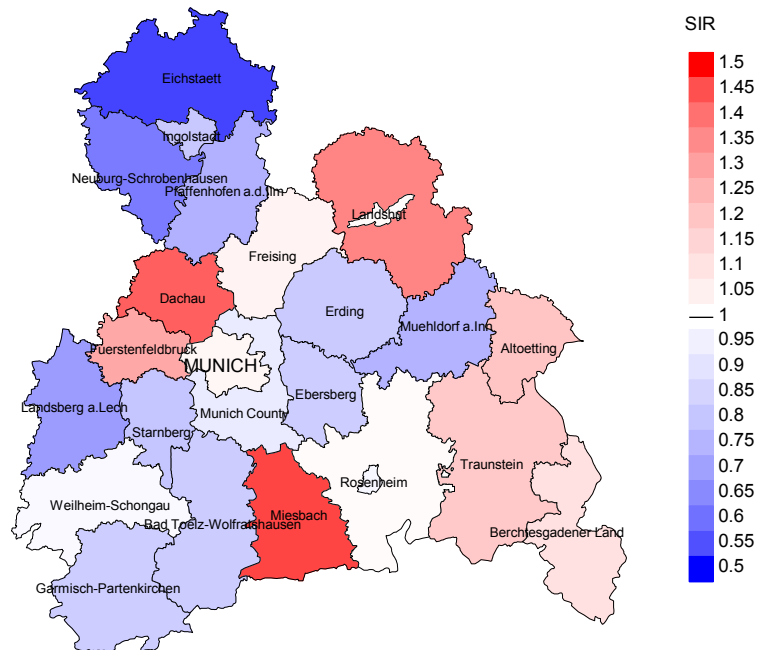


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=770, females N=832).

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 19 women were identified with newly diagnosed follic. 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 0.42 and 1.45, 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	20	100.0		8	40.0	100.0
1999	37	97.3		22	59.5	95.5
2000	43	97.7	2.3	24	55.8	100.0
2001	54	98.1	1.9	22	40.7	95.5
2002	91	100.0		45	49.5	93.3
2003	106	93.4	1.9	42	39.6	95.2
2004	127	93.7	1.6	57	44.9	96.5
2005	110	90.0		38	34.5	86.8
2006	120	90.8		40	33.3	97.5
2007	145	90.3	0.7	70	48.3	92.9
2008	151	96.7		57	37.7	91.2
2009	153	96.7		52	34.0	88.5
2010	131	97.7		45	34.4	91.1
2011	148	95.3	1.4	50	33.8	88.0
2012	127	96.9	0.8	34	26.8	88.2
2013	144	97.2	0.7	42	29.2	85.7
2014	137	97.1		25	18.2	84.0
2015	132	93.2	0.8	32	24.2	87.5
2016	103	99.0		18	17.5	72.2
2017	93	98.9	1.1	11	11.8	72.7
2018	78	98.7		11	14.1	72.7
2019	61	70.5		4	6.6	75.0
1998-2019	2311	95.0	0.6	749	32.4	90.5

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	20				
1999	37				
2000	43	6	100.0	1	2.3
2001	54	13	100.0	3	5.6
2002	91	14	100.0	2	2.2
2003	106	16	100.0	4	3.8
2004	127	24	95.8	8	6.3
2005	110	18	94.4	3	2.7
2006	120	22	100.0	1	0.8
2007	145	39	100.0	9	6.2
2008	151	48	97.9	5	3.3
2009	153	33	97.0	4	2.6
2010	131	45	97.8	2	1.5
2011	148	46	100.0	6	4.1
2012	127	46	97.8	3	2.4
2013	144	55	98.2	3	2.1
2014	137	56	100.0	4	2.9
2015	132	62	98.4	8	6.1
2016	103	63	96.8	6	5.8
2017	93	73	98.6	4	4.3
2018	78	53	34.0	1	1.3
2019	61	49	44.9	1	1.6
1998–2019	2311	781	90.7	78	3.4

Table 9c

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

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

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
2000	6	100.0		100.0
2001	13	76.9	23.1	100.0
2002	14	100.0		100.0
2003	16	87.5	12.5	100.0
2004	24	91.7	8.3	100.0
2005	18	83.3	16.7	94.1
2006	22	90.9	9.1	100.0
2007	39	89.7	10.3	92.3
2008	48	64.6	35.4	85.1
2009	33	75.8	24.2	81.3
2010	45	71.1	28.9	86.4
2011	46	73.9	26.1	87.0
2012	46	71.7	28.3	86.7
2013	55	74.5	25.5	90.7
2014	56	71.4	28.6	89.3
2015	62	74.2	25.8	85.2
2016	63	74.6	25.4	83.6
2017	73	75.3	24.7	84.7
2018	53	54.7	45.3	50.0
2019	49	51.0	49.0	77.3
2000-2019	781	73.5	26.5	87.3

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
2000	3	61.2	61.2		61.2
2001	5	75.0	75.0		75.0
2002	7	76.7	76.7		76.7
2003	8	66.8	65.8	83.1	66.8
2004	13	74.8	76.7	68.3	76.7
2005	8	68.8	68.8	75.1	68.6
2006	11	70.4	70.4	69.0	70.4
2007	24	67.0	67.6	62.4	65.9
2008	18	72.2	74.4	72.1	73.3
2009	11	66.3	64.6	87.1	64.0
2010	20	69.4	67.2	77.6	68.4
2011	22	75.8	72.1	80.9	74.0
2012	28	69.1	71.2	67.8	70.4
2013	26	79.0	78.5	81.6	78.8
2014	30	74.1	74.8	71.7	74.1
2015	31	76.7	74.0	90.9	76.7
2016	32	76.0	72.2	82.6	72.3
2017	34	74.3	73.8	78.8	73.8
2018	28	80.0	79.0	82.0	80.7
2019	26	80.3	75.3	81.1	74.7
2000-2019	385	74.4	72.7	80.1	72.3

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
2000	3	87.5	87.5		87.5
2001	8	67.3	61.5	73.1	67.3
2002	7	77.5	77.5		77.5
2003	8	79.2	76.5	83.0	79.2
2004	11	76.3	74.4	84.0	76.3
2005	10	64.2	63.8	74.1	64.5
2006	11	71.7	71.7		71.7
2007	15	80.1	81.2	79.8	81.2
2008	30	72.8	67.7	82.3	69.5
2009	22	81.5	80.4	86.6	82.6
2010	25	74.0	72.8	78.4	71.7
2011	24	73.5	72.4	77.7	72.4
2012	18	78.6	77.9	83.4	77.9
2013	29	75.7	74.2	82.5	75.0
2014	26	76.0	74.5	77.4	75.1
2015	31	77.9	77.9	78.7	77.7
2016	31	79.5	79.7	77.7	77.6
2017	39	83.0	80.7	85.3	81.5
2018	25	79.2	79.5	79.0	80.6
2019	23	84.2	82.3	84.6	79.9
2000–2019	396	77.9	76.8	81.8	76.5

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
2000	3	0.3	0.20	0.3	0.34	0.2	0.22	0.2	0.15
2001	5	0.4	0.21	0.2	0.16	0.4	0.19	0.5	0.24
2002	7	0.4	0.15	0.2	0.13	0.3	0.16	0.5	0.20
2003	7	0.4	0.17	0.2	0.16	0.3	0.17	0.4	0.17
2004	12	0.6	0.19	0.3	0.14	0.5	0.18	0.7	0.22
2005	6	0.3	0.12	0.2	0.10	0.2	0.11	0.3	0.11
2006	9	0.5	0.16	0.2	0.11	0.3	0.13	0.5	0.18
2007	21	0.9	0.34	0.5	0.33	0.7	0.35	1.0	0.37
2008	11	0.5	0.14	0.2	0.12	0.4	0.13	0.5	0.15
2009	9	0.4	0.12	0.2	0.13	0.3	0.13	0.4	0.13
2010	16	0.7	0.29	0.4	0.26	0.5	0.26	0.6	0.28
2011	15	0.7	0.21	0.3	0.16	0.4	0.18	0.6	0.20
2012	19	0.8	0.33	0.4	0.28	0.6	0.30	0.8	0.35
2013	18	0.8	0.31	0.3	0.18	0.5	0.24	0.7	0.31
2014	24	1.0	0.33	0.5	0.27	0.7	0.29	1.0	0.33
2015	23	1.0	0.35	0.4	0.27	0.6	0.30	0.9	0.34
2016	23	1.0	0.43	0.4	0.37	0.7	0.39	0.8	0.43
2017	31	1.3	0.66	0.6	0.56	0.9	0.60	1.1	0.64
2018	14	0.6	0.33	0.2	0.20	0.3	0.25	0.5	0.31
2019	13	0.5	0.38	0.2	0.29	0.4	0.33	0.5	0.36
2000-2019	286	0.7	0.27	0.3	0.22	0.5	0.25	0.7	0.28

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
2000	3	0.2	0.11	0.1	0.06	0.1	0.07	0.2	0.07
2001	5	0.4	0.17	0.2	0.17	0.3	0.15	0.3	0.16
2002	7	0.4	0.16	0.1	0.10	0.2	0.12	0.3	0.15
2003	7	0.4	0.11	0.1	0.06	0.2	0.07	0.3	0.10
2004	10	0.5	0.16	0.2	0.12	0.3	0.13	0.4	0.16
2005	9	0.5	0.15	0.3	0.15	0.4	0.16	0.4	0.16
2006	11	0.5	0.17	0.2	0.12	0.3	0.13	0.4	0.15
2007	14	0.6	0.17	0.2	0.10	0.3	0.11	0.4	0.13
2008	20	0.9	0.27	0.4	0.30	0.6	0.29	0.8	0.30
2009	16	0.7	0.20	0.2	0.11	0.3	0.14	0.5	0.18
2010	16	0.7	0.21	0.3	0.16	0.4	0.17	0.5	0.18
2011	19	0.8	0.25	0.3	0.18	0.5	0.20	0.6	0.21
2012	14	0.6	0.20	0.2	0.13	0.3	0.14	0.4	0.17
2013	23	1.0	0.27	0.4	0.19	0.6	0.21	0.7	0.25
2014	16	0.7	0.25	0.2	0.18	0.4	0.20	0.5	0.21
2015	23	0.9	0.35	0.3	0.24	0.5	0.27	0.7	0.31
2016	24	1.0	0.48	0.2	0.22	0.4	0.28	0.7	0.40
2017	24	1.0	0.52	0.2	0.28	0.4	0.33	0.6	0.42
2018	15	0.6	0.44	0.1	0.21	0.3	0.26	0.4	0.35
2019	12	0.5	0.44	0.1	0.22	0.2	0.28	0.3	0.33
2000-2019	288	0.7	0.25	0.2	0.17	0.4	0.19	0.5	0.22

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									
10-14									
15-19									
20-24	1	0.2	0.2	1	0.4	0.4			0.0
25-29	0	0.0	0.2			0.4			0.0
30-34	0	0.0	0.2			0.4			0.0
35-39	2	0.4	0.6	1	0.4	0.8	1	0.4	0.4
40-44	4	0.8	1.5	2	0.8	1.7	2	0.8	1.3
45-49	9	1.9	3.4	5	2.1	3.8	4	1.7	3.0
50-54	22	4.7	8.0	14	5.9	9.7	8	3.4	6.4
55-59	17	3.6	11.6	9	3.8	13.5	8	3.4	9.7
60-64	42	8.9	20.5	27	11.4	24.9	15	6.4	16.1
65-69	56	11.8	32.3	35	14.8	39.7	21	8.9	25.0
70-74	72	15.2	47.6	37	15.6	55.3	35	14.8	39.8
75-79	96	20.3	67.9	45	19.0	74.3	51	21.6	61.4
80-84	73	15.4	83.3	31	13.1	87.3	42	17.8	79.2
85+	79	16.7	100.0	30	12.7	100.0	49	20.8	100.0
All ages	473	100.0		237	100.0		236	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								
10-14								
15-19								
20-24	1		0.1	0.50			1.5	
25-29								
30-34								
35-39	1	1	0.0	0.06	0.0	0.07	0.4	0.3
40-44	2	2	0.1	0.06	0.1	0.08	0.3	0.2
45-49	5	4	0.2	0.09	0.2	0.09	0.4	0.3
50-54	14	8	0.6	0.18	0.3	0.11	0.6	0.3
55-59	9	8	0.5	0.11	0.4	0.10	0.2	0.2
60-64	27	15	1.7	0.30	0.9	0.14	0.5	0.3
65-69	35	21	2.3	0.27	1.2	0.15	0.4	0.3
70-74	37	35	2.6	0.39	2.2	0.26	0.3	0.4
75-79	45	51	4.1	0.48	3.7	0.52	0.4	0.6
80-84	31	42	4.7	0.74	4.3	0.65	0.3	0.5
85+	30	49	7.0	1.00	5.1	1.22	0.4	0.4
All ages	237	236					0.4	0.4
Mortality								
Raw			0.8	0.31	0.8	0.28		
WS			0.4	0.25	0.3	0.18		
ES			0.5	0.27	0.4	0.21		
BRD-S			0.7	0.31	0.5	0.25		
PYLL-70								
per 100,000			3.4		2.2			
ES			2.9		1.8			
AYLL-70			9.5		9.9			

Table 14a

Further malignancies in deaths in period 2000-2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	3	1.8	1	33.3	1	33.3	1	33.3
C07-C08 Salivary gland	1	0.6	1	100.0				
C15 Oesophagus	1	0.6					1	100.0
C16 Stomach	4	2.4	2	50.0	1	25.0	1	25.0
C18 Colon	10	6.0	4	40.0	1	10.0	5	50.0
C19-C20 Rectum	6	3.6	1	16.7	1	16.7	4	66.7
C22 Liver	2	1.2	1	50.0			1	50.0
C23-C24 Bile	2	1.2					2	100.0
C25 Pancreas	2	1.2			2	100.0		
C32 Larynx	2	1.2	2	100.0				
C33-C34 Lung	17	10.2	1	5.9	1	5.9	15	88.2
C38,C45 Mesothelioma	1	0.6					1	100.0
C43 Malign. melanoma	5	3.0	3	60.0			2	40.0
C44 Skin others	29	17.5	6	20.7	3	10.3	20	69.0
C46,C49 Soft tissue	1	0.6	1	100.0				
C60 Penis	1	0.6	1	100.0				
C61 Prostate	31	18.7	16	51.6	3	9.7	12	38.7
C62 Testis	1	0.6	1	100.0				
C64 Kidney	6	3.6	4	66.7	1	16.7	1	16.7
C65 Renal pelvis	1	0.6	1	100.0				
C67 Bladder	2	1.2			1	50.0	1	50.0
C70-C72 CNS cancer	2	1.2	1	50.0			1	50.0
C73 Thyroid	1	0.6	1	100.0				
C76-C79 CUP	2	1.2					2	100.0
C81 Hodgkin lymphoma	1	0.6					1	100.0
C82-C85 NHL	24	14.5					24	100.0
C90 Mult. myeloma	1	0.6					1	100.0
C91-C96 Leukaemia	7	4.2					7	100.0
All further malignancies	166	100.0	48	28.9	15	9.0	103	62.0

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 2000-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	1	0.7	1	100.0				
C07-C08 Salivary gland	1	0.7					1	100.0
C09-C10 Oropharynx	1	0.7					1	100.0
C15 Oesophagus	2	1.4					2	100.0
C16 Stomach	3	2.2	2	66.7			1	33.3
C18 Colon	12	8.6	4	33.3	1	8.3	7	58.3
C19-C20 Rectum	3	2.2	2	66.7	1	33.3		
C23-C24 Bile	2	1.4					2	100.0
C25 Pancreas	1	0.7					1	100.0
C33-C34 Lung	7	5.0	1	14.3			6	85.7
C38,C45 Mesothelioma	2	1.4					2	100.0
C40-C41 Bone	1	0.7					1	100.0
C43 Malign. melanoma	3	2.2	1	33.3			2	66.7
C44 Skin others	14	10.1	3	21.4	1	7.1	10	71.4
C50 Breast	21	15.1	15	71.4	1	4.8	5	23.8
C51 Vulva	1	0.7	1	100.0				
C53 Cervix uteri	1	0.7			1	100.0		
C54 Corpus uteri	5	3.6	4	80.0			1	20.0
C56 Ovary	8	5.8	2	25.0	2	25.0	4	50.0
C64 Kidney	3	2.2	3	100.0				
C67 Bladder	3	2.2	2	66.7			1	33.3
C70-C72 CNS cancer	1	0.7	1	100.0				
C73 Thyroid	3	2.2	3	100.0				
C82-C85 NHL	37	26.6					37	100.0
C91-C96 Leukaemia	3	2.2					3	100.0
All further malignancies	139	100.0	45	32.4	7	5.0	87	62.6

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 n	Females n	Males Age- spec. mortal. MI-index	Females Age- spec. mortal. MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4						
5- 9						
10-14						
15-19						
20-24	1		0.1	0.50	1.7	
25-29						
30-34						
35-39	1		0.0	0.06	0.4	
40-44	1	2	0.0	0.03	0.2	0.3
45-49	5	4	0.2	0.10	0.4	0.3
50-54	14	8	0.6	0.19	0.6	0.4
55-59	8	6	0.4	0.10	0.2	0.2
60-64	23	15	1.4	0.31	0.9	0.4
65-69	29	16	1.9	0.31	0.9	0.3
70-74	31	28	2.2	0.53	1.7	0.4
75-79	32	48	2.9	0.57	3.5	0.7
80-84	26	34	4.0	1.04	3.5	0.5
85+	18	40	4.2	1.20	4.1	0.5
All ages	189	201			0.4	0.4
Mortality						
Raw			0.6	0.32	0.6	0.30
WS			0.3	0.25	0.2	0.19
ES			0.4	0.28	0.3	0.22
BRD-S			0.6	0.32	0.5	0.26
PYLL-70						
per 100,000			3.1		2.0	
ES			2.6		1.6	
AYLL-70			9.9		10.0	

* 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 n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39	1		0.0	0.06			0.4	
40-44	1	2	0.0	0.03	0.1	0.09	0.2	0.3
45-49	4	3	0.2	0.09	0.1	0.08	0.3	0.2
50-54	11	5	0.5	0.17	0.2	0.08	0.5	0.2
55-59	6	4	0.3	0.09	0.2	0.07	0.2	0.1
60-64	13	8	0.8	0.21	0.5	0.12	0.3	0.2
65-69	20	12	1.3	0.27	0.7	0.13	0.3	0.2
70-74	16	18	1.1	0.43	1.1	0.23	0.2	0.3
75-79	22	24	2.0	0.49	1.7	0.36	0.3	0.4
80-84	13	29	2.0	0.59	3.0	0.67	0.2	0.5
85+	12	33	2.8	0.86	3.4	1.38	0.2	0.4
All ages	119	138					0.2	0.3
Mortality								
Raw			0.4	0.24	0.4	0.24		
WS			0.2	0.19	0.1	0.14		
ES			0.3	0.21	0.2	0.17		
BRD-S			0.4	0.24	0.3	0.20		
PYLL-70								
per 100,000			2.1		1.3			
ES			1.8		1.1			
AYLL-70			10.1		10.3			

* See corresponding tables with multiple malignancies.

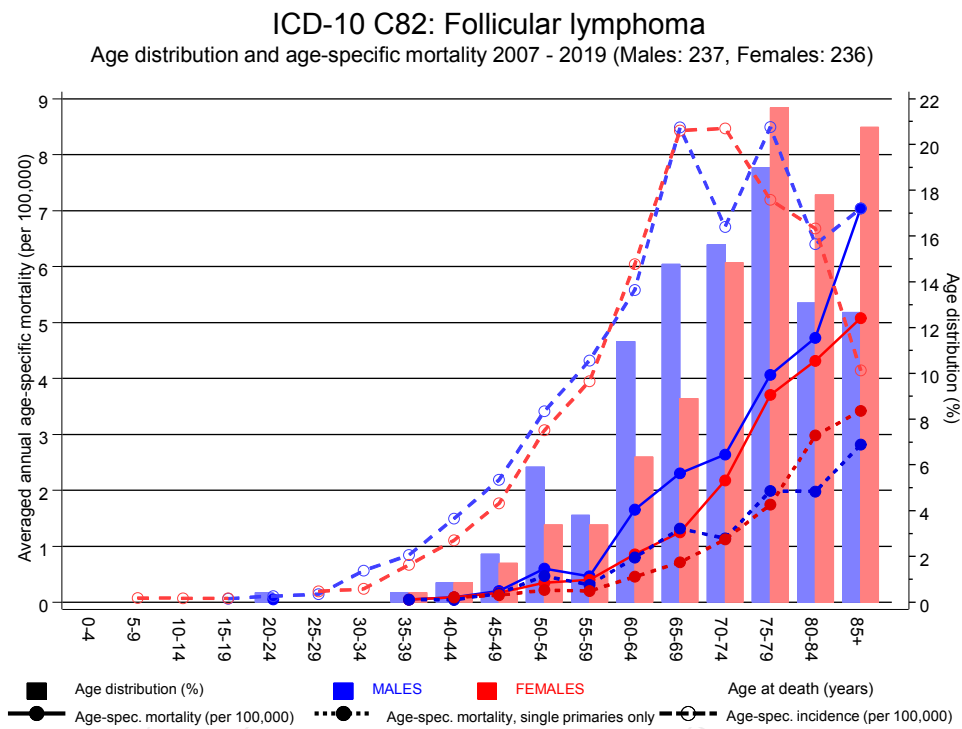
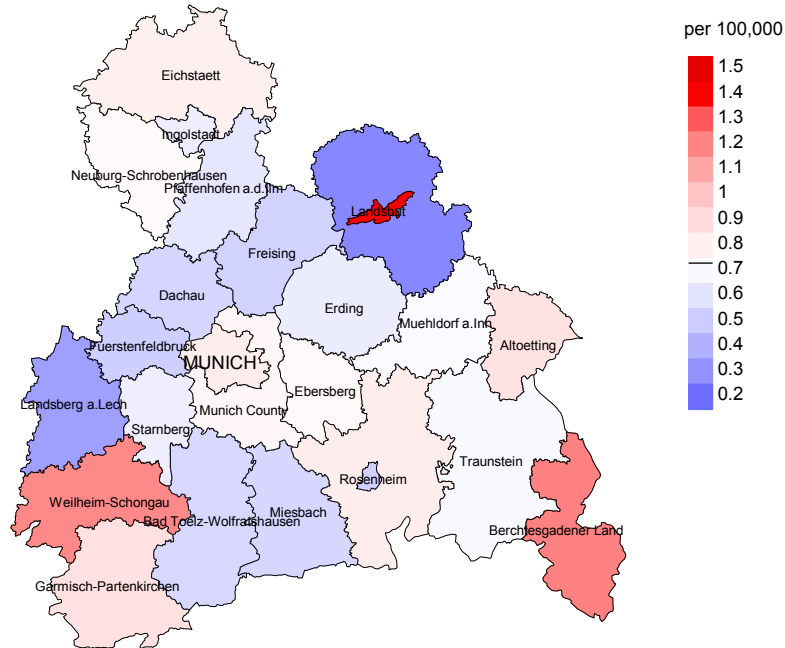


Figure 17. Distribution of age at death (bars; males: mean=66.1 yrs, median=66.9 yrs; females: mean=70.2 yrs, median=71.2 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at 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

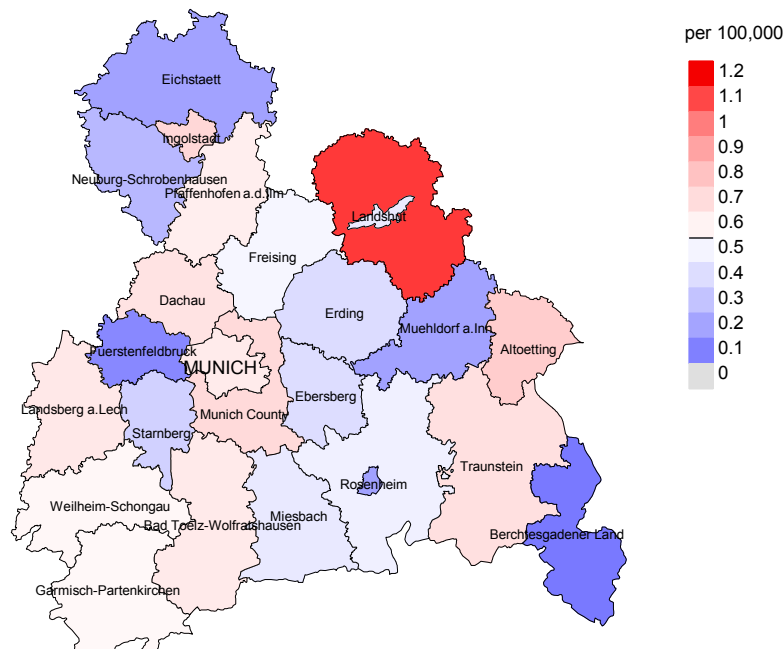
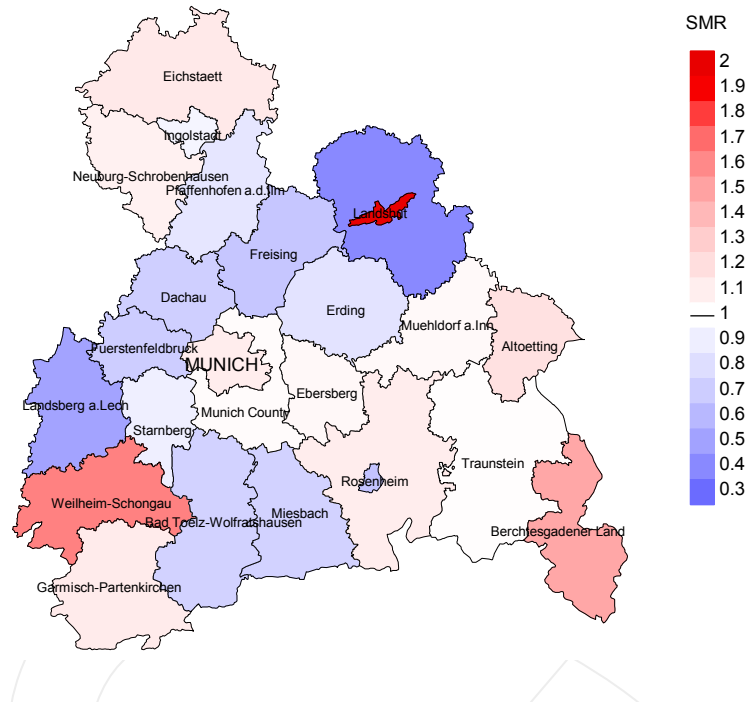


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.7/100,000 WS N=237, females 0.5/100,000 WS N=236).

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 5 women died from follic. lymphoma. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 1.3/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

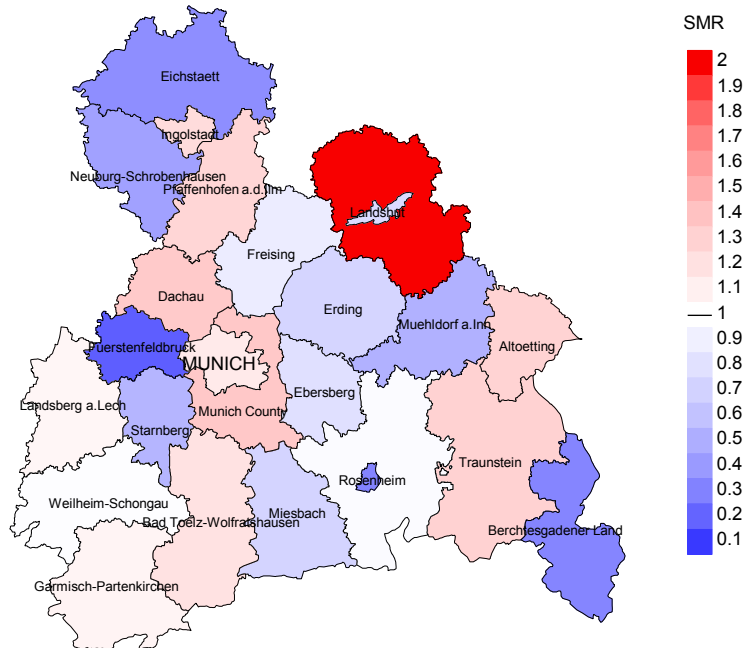


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=237, females N=236).

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 5 women died from follic. lymphoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.79. Though, the value of this parameter may vary with an underlying probability of 99% between 0.17 and 2.24, and is therefore not statistically striking.

Statistical Notes

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

1. All multiple primaries included

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

Recommended Citation

Munich Cancer Registry. ICD-10 C82: Follic. lymphoma - Incidence and Mortality [Internet]. 2021 [updated 2021 Jan 26; cited 2021 Mar 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bC82__E-ICD-10-C82-Follic.-lymphoma-incidence-and-mortality.pdf

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