Munich Cancer Registry

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ICD-10 C82: Follic. lymphoma

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	2,425
Diseases	2,428
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

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

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

https://www.tumorregister-muenchen.de/en/facts/base/bC82__E-ICD-10-C82-Follic.-lymphoma-incidence-and-mortality.pdf

Index of figures and tables

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

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

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

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

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

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

Munich Cancer Registry, December 2021

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

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

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

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

Code	Description
C82.-	Follicular lymphoma
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	19.1	45.0	100.0
1999	37			8.8	19.1	59.5	97.3
2000	43	1	2.3	7.0	19.0	55.8	97.7
2001	54	1	1.9	11.0	19.1	44.4	98.1
2002	91			10.6	18.9	52.7	98.9 #
2003	105	2	1.9	10.9	18.8	41.0	94.3
2004	127	2	1.6	10.9	18.4	47.2	94.5
2005	110			11.8	18.0	40.9	90.9
2006	120			11.0	17.4	38.3	90.8
2007	145	1	0.7	12.2	16.9	51.0	91.0 #
2008	151			12.6	16.4	43.0	97.4
2009	155			13.2	15.8	37.4	97.4
2010	134			13.3	15.2	38.1	97.8
2011	147	2	1.4	13.5	13.7	34.7	95.2
2012	127	1	0.8	13.8	12.6	32.3	97.6
2013	144	1	0.7	14.7	11.3	34.0	97.2
2014	137			14.9	9.9	22.6	97.1
2015	132	1	0.8	15.4	9.6	26.5	93.9
2016	109			15.8	8.6	23.9	99.1
2017	105	1	1.0	16.2	7.8	16.2	100.0
2018	85			16.9	6.1	15.3	98.8
2019	88			17.3	4.1	8.0	97.7
2020	62			17.5	3.3	8.1	100.0 ##
1998-2020	2428	13	0.5	17.5	19.1	34.8	96.2

2,428 cases diagnosed 1998-2020 are related to a total of 2,425 patients. Currently, in 810 (33.4 %) of these 2,425 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 564 / 177 / 69 (23.3 % / 7.3 % / 2.8 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 85 cases has been diagnosed, of which 16.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	20.2	40.0	100.0	
1999	19	51.4			3.4	20.2	63.2	100.0	
2000	15	34.9			4.5	20.1	53.3	93.3	
2001	24	44.4			7.4	20.1	45.8	95.8	
2002	46	50.5			7.9	20.1	58.7	100.0	#
2003	42	40.0	1	2.4	9.0	19.8	40.5	88.1	
2004	64	50.4			9.1	19.2	50.0	95.3	
2005	49	44.5			10.0	18.4	51.0	95.9	
2006	57	47.5			9.8	17.9	38.6	89.5	
2007	61	42.1			11.6	17.3	55.7	91.8	#
2008	78	51.7			12.5	16.4	44.9	96.2	
2009	73	47.1			13.9	15.2	42.5	98.6	
2010	56	41.8			14.0	14.2	44.6	98.2	
2011	70	47.6			13.7	12.8	34.3	94.3	
2012	57	44.9			14.3	11.2	31.6	98.2	
2013	58	40.3	1	1.7	15.4	11.0	41.4	96.6	
2014	73	53.3			15.6	10.0	23.3	95.9	
2015	66	50.0			16.4	9.5	25.8	95.5	
2016	58	53.2			16.9	9.1	19.0	98.3	
2017	55	52.4	1	1.8	17.3	8.0	16.4	100.0	
2018	46	54.1			17.8	5.9	15.2	97.8	
2019	46	52.3			18.4	4.1	8.7	95.7	
2020	32	51.6			18.4	0.0	9.4	100.0	##
1998-2020	1155	47.6	3	0.3	18.4	20.2	36.1	96.1	

1,155 cases diagnosed 1998-2020 are related to a total of 1,154 patients. Currently, in 410 (35.5 %) of these 1,154 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 274 / 98 / 38 (23.7 % / 8.5 % / 3.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 46 cases has been diagnosed, of which 17.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	18.1	50.0	100.0	
1999	18	48.6			14.3	18.1	55.6	94.4	
2000	28	65.1	1	3.6	8.9	17.9	57.1	100.0	
2001	30	55.6	1	3.3	14.0	18.1	43.3	100.0	
2002	45	49.5			13.0	17.8	46.7	97.8	#
2003	63	60.0	1	1.6	12.4	17.8	41.3	98.4	
2004	63	49.6	2	3.2	12.5	17.8	44.4	93.7	
2005	61	55.5			13.2	17.6	32.8	86.9	
2006	63	52.5			12.1	16.9	38.1	92.1	
2007	84	57.9	1	1.2	12.7	16.5	47.6	90.5	#
2008	73	48.3			12.6	16.4	41.1	98.6	
2009	82	52.9			12.6	16.4	32.9	96.3	
2010	78	58.2			12.8	16.3	33.3	97.4	
2011	77	52.4	2	2.6	13.3	14.6	35.1	96.1	
2012	70	55.1	1	1.4	13.4	14.0	32.9	97.1	
2013	86	59.7			14.1	11.6	29.1	97.7	
2014	64	46.7			14.4	9.8	21.9	98.4	
2015	66	50.0	1	1.5	14.4	9.8	27.3	92.4	
2016	51	46.8			14.7	8.1	29.4	100.0	
2017	50	47.6			15.3	7.5	16.0	100.0	
2018	39	45.9			16.1	6.4	15.4	100.0	
2019	42	47.7			16.3	4.2	7.1	100.0	
2020	30	48.4			16.6	6.9	6.7	100.0	##
1998-2020	1273	52.4	10	0.8	16.6	18.1	33.5	96.3	

1,273 cases diagnosed 1998-2020 are related to a total of 1,271 patients. Currently, in 400 (31.5 %) of these 1,271 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 290 / 79 / 31 (22.8 % / 6.2 % / 2.4 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 39 cases has been diagnosed, of which 16.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.4 % 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 4.94 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	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	63	2.2	3.2	1.4	2.0	1.9	2.6	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	82	3.3	3.5	1.8	1.8	2.5	2.5	3.0	2.9
2010	56	78	2.5	3.3	1.5	1.7	2.0	2.4	2.3	2.8
2011	70	77	3.1	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	58	51	2.4	2.1	1.3	1.1	1.9	1.5	2.2	1.7
2017	55	50	2.3	2.0	1.2	1.0	1.7	1.4	2.1	1.6
2018	46	39	1.9	1.6	1.0	0.8	1.4	1.1	1.7	1.3
2019	46	42	1.9	1.7	1.0	0.8	1.4	1.1	1.7	1.4
2020	32	30	1.3	1.2	0.7	0.5	1.0	0.7	1.2	0.9
1998-2020	1155	1273	2.5	2.6	1.5	1.4	2.0	1.9	2.3	2.2

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	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	105	59.9	11.3	30.6	85.0	43.4	53.0	60.8	66.9	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	155	65.0	13.6	6.4	94.8	46.5	56.9	66.7	73.0	79.8
2010	134	64.8	12.4	28.6	91.2	49.4	57.2	65.7	73.2	79.3
2011	147	64.0	13.3	31.3	90.9	44.1	54.5	64.0	74.2	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	109	65.0	12.4	33.4	93.2	50.9	56.3	66.2	73.5	79.7
2017	105	65.7	14.3	21.7	91.0	47.7	56.8	68.2	76.4	81.9
2018	85	64.9	12.0	37.0	91.0	49.8	56.2	66.7	74.3	79.8
2019	88	68.0	12.5	31.6	97.2	51.6	60.4	69.0	76.9	82.6
2020	62	66.3	15.6	30.3	86.3	43.1	57.1	72.1	77.8	81.3
1998-2020	2428	63.8	13.4	6.4	97.2	46.3	55.2	65.0	73.5	79.8

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 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	70	63.1	13.6	31.3	84.5	44.0	54.2	63.5	74.7	80.1
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	58	64.7	12.3	33.4	93.1	52.3	56.6	66.8	73.5	77.5
2017	55	65.2	14.9	21.7	87.7	39.5	58.1	67.6	77.1	81.8
2018	46	64.0	12.5	37.0	91.0	49.8	54.4	63.6	74.3	79.4
2019	46	67.3	13.3	31.6	92.3	51.7	60.0	68.8	78.5	82.8
2020	32	63.2	16.0	30.3	86.3	38.5	54.1	69.1	75.6	80.8
1998-2020	1155	62.5	13.7	7.9	94.8	44.2	53.8	63.8	72.3	78.9

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	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	63	60.4	11.0	30.6	85.0	48.3	53.9	60.8	66.8	71.9
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	82	66.2	13.8	6.4	93.9	48.2	59.8	67.2	73.4	82.1
2010	78	66.1	11.8	28.6	87.9	50.4	60.7	67.4	74.4	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	51	65.3	12.7	38.7	93.2	50.9	54.1	66.1	73.6	81.4
2017	50	66.3	13.8	32.4	91.0	48.8	55.1	68.8	75.4	84.0
2018	39	66.1	11.3	40.8	82.7	47.2	58.5	68.4	74.4	81.7
2019	42	68.7	11.8	41.3	97.2	51.6	62.5	69.0	76.5	82.5
2020	30	69.7	14.6	31.1	85.8	45.6	63.8	76.8	78.3	81.7
1998-2020	1273	65.0	13.0	6.4	97.2	48.1	56.6	66.2	74.2	80.6

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
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	0.3
20-24	3	0.2	0.4	3	0.4	0.5			0.3
25-29	7	0.4	0.8	3	0.4	0.8	4	0.4	0.8
30-34	20	1.2	2.0	14	1.7	2.5	6	0.7	1.5
35-39	35	2.0	4.0	20	2.4	4.9	15	1.7	3.1
40-44	64	3.7	7.7	38	4.6	9.5	26	2.9	6.1
45-49	102	5.9	13.7	55	6.6	16.2	47	5.3	11.3
50-54	156	9.1	22.7	81	9.8	25.9	75	8.4	19.7
55-59	175	10.2	32.9	93	11.2	37.2	82	9.2	28.9
60-64	207	12.0	44.9	95	11.5	48.6	112	12.6	41.5
65-69	288	16.7	61.7	137	16.5	65.1	151	16.9	58.4
70-74	244	14.2	75.8	102	12.3	77.4	142	15.9	74.3
75-79	220	12.8	88.6	102	12.3	89.7	118	13.2	87.6
80-84	121	7.0	95.6	52	6.3	96.0	69	7.7	95.3
85+	75	4.4	100.0	33	4.0	100.0	42	4.7	100.0
All ages	1721	100.0		829	100.0		892	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=2 %	Females DCO rate n=5 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4								
5- 9		1		0.1				1.0
10-14		1		0.1				0.8
15-19	1	1	0.1	0.1			0.3	0.4
20-24	3		0.1				0.5	
25-29	3	4	0.1	0.2			0.3	0.3
30-34	14	6	0.6	0.3			1.1	0.3
35-39	20	15	0.9	0.7			1.1	0.4
40-44	38	26	1.5	1.1			1.4	0.4
45-49	55	47	2.0	1.8			1.1	0.5
50-54	81	75	3.2	3.0			1.0	0.6
55-59	93	82	4.4	3.8			0.7	0.6
60-64	95	112	5.4	5.9			0.5	0.7
65-69	137	151	8.4	8.3			0.6	0.8
70-74	102	142	6.8	8.3		0.7	0.4	0.7
75-79	102	118	8.4	7.9	2.0		0.4	0.6
80-84	52	69	7.2	6.5		1.4	0.3	0.4
85+	33	42	7.1	4.0		7.1	0.3	0.3
All ages	829	892			0.2	0.6	0.5	0.6
Incidence								
Raw			2.5	2.7				
WS			1.4	1.3				
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).

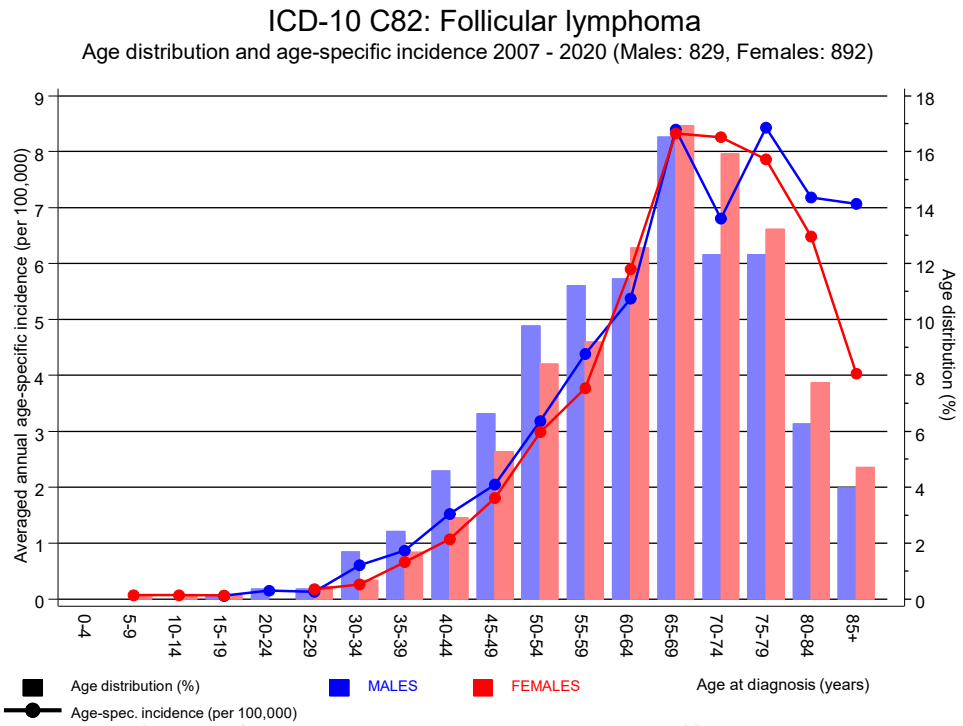


Figure 6. Age distribution (males: mean=63.8 yrs, median=65.4 yrs; females: mean=66.2 yrs, median=68.1 yrs) and age-specific incidence.

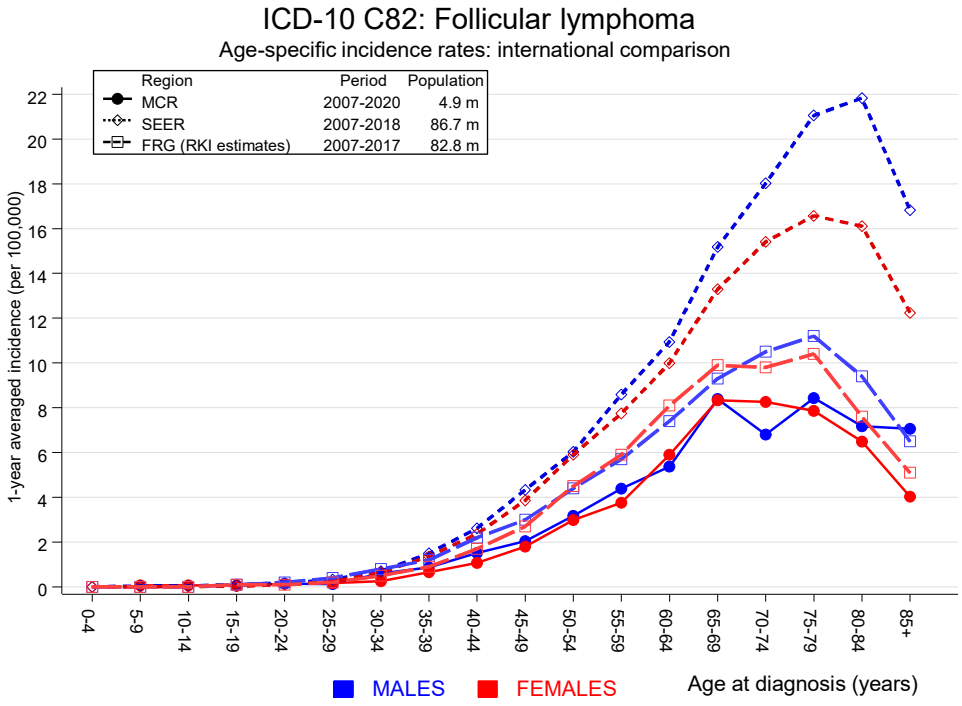


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

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

Table 7a

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

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	5	0.7	7.2	2.3	16.7	#	7.7	
C15	Oesophagus	3	1.6	1.9	0.4	5.5		2.5	
C16	Stomach	3	2.8	1.1	0.2	3.2		0.4	
C17	Small intestine	2	0.5	4.2	0.5	15.0		2.7	
C18	Colon	11	6.9	1.6	0.8	2.8		7.4	9.1
C19–C20	Rectum	10	4.0	2.5	1.2	4.6	#	10.8	
C22	Liver	3	2.2	1.4	0.3	4.0		1.4	
C23–C24	Bile	2	0.8	2.6	0.3	9.2		2.2	
C25	Pancreas	3	2.9	1.0	0.2	3.0		0.1	
C32	Larynx	3	0.8	3.9	0.8	11.3		4.0	
C33–C34	Lung	29	8.8	3.3	2.2	4.7	#	36.3	3.4
C37	Thymus	1	0.0	20.5	0.5	114.1		1.7	
C38,C45	Mesothelioma	3	0.5	5.8	1.2	16.9	#	4.5	
C43	Malign. melanoma	7	3.6	1.9	0.8	4.0		6.1	
C44	Skin others	1	0.0	51.4	1.3	286.2	#	1.8	
C46,C49	Soft tissue	1	0.4	2.3	0.1	12.8		1.0	
C61	Prostate	39	20.7	1.9	1.3	2.6	#	32.9	
C64	Kidney	11	2.6	4.2	2.1	7.4	#	15.0	
C66	Ureter	1	0.2	5.1	0.1	28.6		1.5	
C67	Bladder	4	3.4	1.2	0.3	3.1		1.2	
C70–C72	CNS cancer	1	1.0	1.0	0.0	5.6		0.0	
C76–C79	CUP	2	1.2	1.6	0.2	5.9		1.4	
C81	Hodgkin lymphoma	3	0.2	15.3	3.2	44.8	#	5.1	
C82–C85	NHL	54	3.2	17.1	12.8	22.3	#	91.6	
C90	Mult. myeloma	2	1.0	2.1	0.3	7.5		1.9	
C91–C96	Leukaemia	7	1.1	6.3	2.5	13.0	#	10.6	14.3
Not observed		0	4.2	0.0	0.0	0.9	#	-7.6	
All further malignancies		211	75.5	2.8	2.4	3.2	#	244.2	1.4

Patients	1138
Median age at next malignancy (years)	71.0
Person-years	5550
Mean observation time (years)	4.9
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 1998-2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C07-C08	Salivary gland	2	0.1	18.9	2.3	68.4	#	2.9	
C09-C10	Oropharynx	1	0.3	3.2	0.1	17.7		1.1	
C15	Oesophagus	1	0.5	2.1	0.1	11.5		0.8	
C16	Stomach	4	2.0	2.0	0.5	5.0		3.0	
C17	Small intestine	2	0.4	5.1	0.6	18.3		2.5	
C18	Colon	17	6.0	2.8	1.6	4.5	#	16.9	
C19-C20	Rectum	1	2.5	0.4	0.0	2.2		-2.4	
C21	Anus/canal	1	0.4	2.6	0.1	14.3		0.9	
C22	Liver	1	0.8	1.2	0.0	6.6		0.2	
C23-C24	Bile	3	0.9	3.4	0.7	9.9		3.3	33.3
C25	Pancreas	2	3.1	0.7	0.1	2.4		-1.7	
C33-C34	Lung	10	5.5	1.8	0.9	3.3		6.9	
C38,C45	Mesothelioma	2	0.1	15.9	1.9	57.6	#	2.9	
C40-C41	Bone	1	0.1	15.0	0.4	83.6		1.4	
C43	Malign. melanoma	4	2.8	1.4	0.4	3.7		1.9	
C46,C49	Soft tissue	1	0.4	2.6	0.1	14.3		0.9	
C48	Peritoneal	1	0.3	3.2	0.1	17.7		1.1	
C50	Breast	44	21.9	2.0	1.5	2.7	#	34.1	
C51	Vulva	1	0.7	1.4	0.0	7.9		0.5	
C53	Cervix uteri	1	0.9	1.1	0.0	6.3		0.2	
C54	Corpus uteri	7	3.9	1.8	0.7	3.7		4.7	
C56	Ovary	5	2.7	1.8	0.6	4.3		3.5	
C64	Kidney	3	1.6	1.9	0.4	5.6		2.2	
C67	Bladder	3	1.2	2.4	0.5	7.1		2.7	
C70-C72	CNS cancer	1	0.9	1.1	0.0	6.3		0.2	
C73	Thyroid	5	1.2	4.2	1.4	9.9	#	5.9	
C76-C79	CUP	1	1.1	0.9	0.0	4.9		-0.2	
C81	Hodgkin lymphoma	2	0.1	16.4	2.0	59.2	#	2.9	
C82-C85	NHL	47	2.6	18.0	13.2	23.9	#	68.5	
C91-C96	Leukaemia	6	1.0	6.2	2.3	13.5	#	7.8	33.3
Not observed		0	2.7	0.0	0.0	1.4		-4.1	
All further malignancies		180	68.8	2.6	2.2	3.0	#	171.6	1.7

Patients	1253
Median age at next malignancy (years)	73.3
Person-years	6479
Mean observation time (years)	5.2
Median observation time (years)	4.0

The occurrence of further specified malignancy is statistically significant.

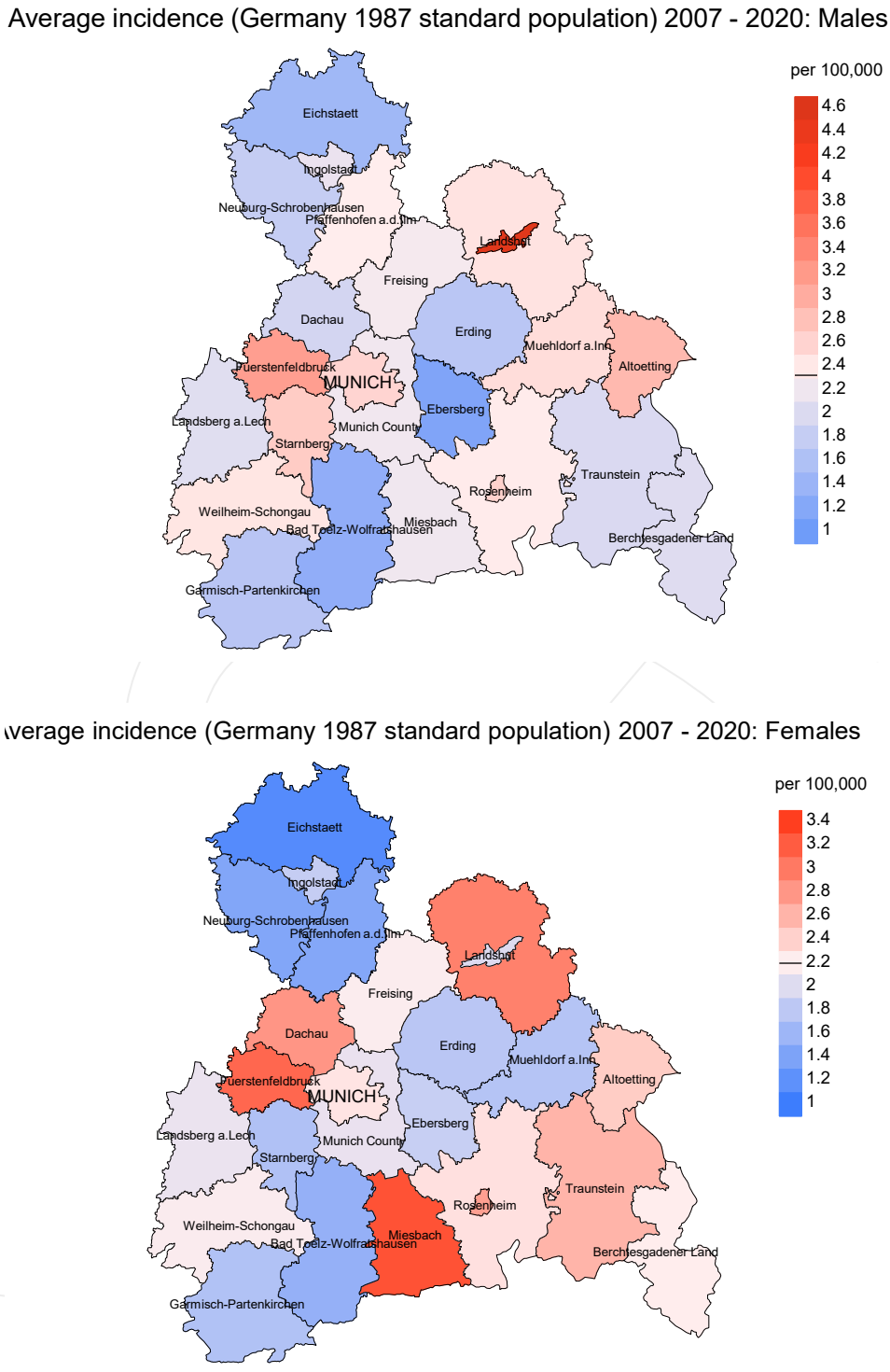
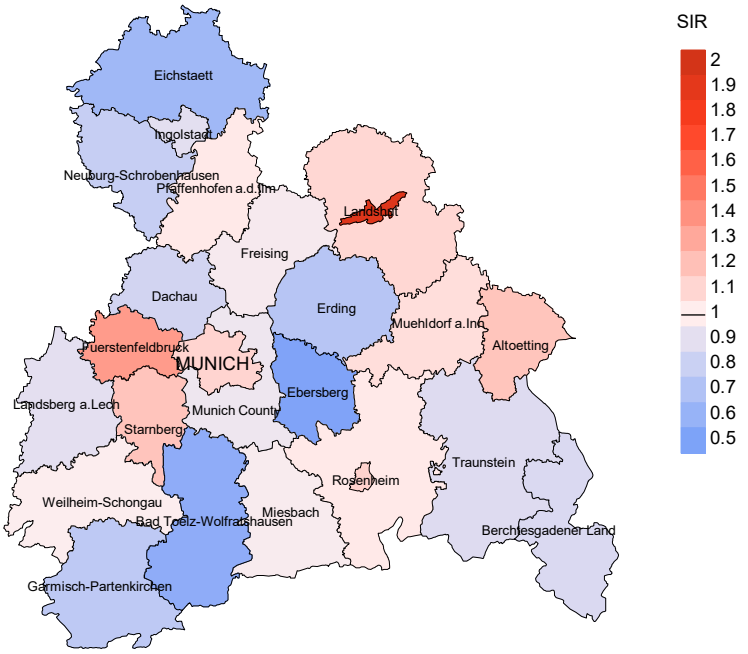


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.3/100,000 WS N=829, females 2.2/100,000 WS N=892).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 21 women were identified with newly diagnosed follic. lymphoma. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.9/100,000 (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 incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

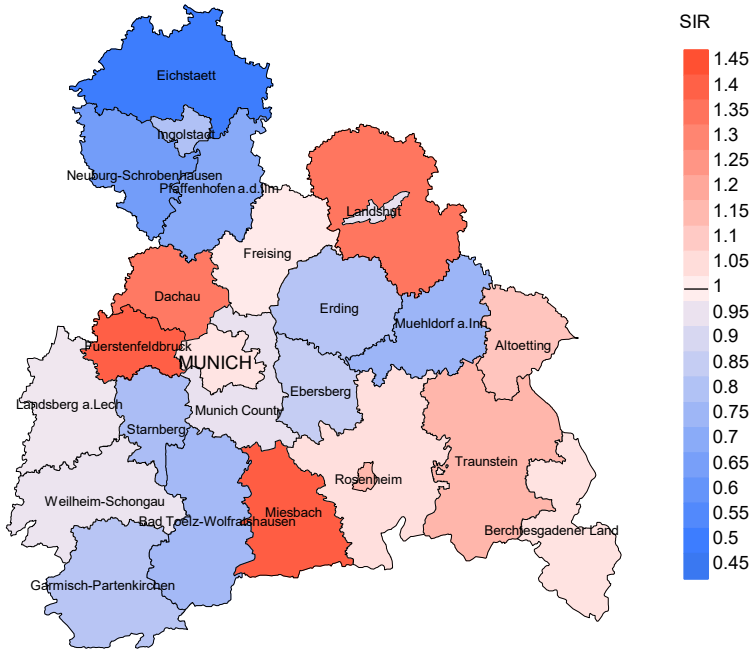


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=829, females N=892).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2020 a total of 21 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 0.85. Though, the value of this parameter may vary with an underlying probability of 99% between 0.45 and 1.46, and is therefore not statistically striking.

MORTALITY

Table 9a

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

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	20	100.0		9	45.0	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	24	44.4	95.8
2002	91	98.9		48	52.7	95.8
2003	105	94.3	1.9	43	41.0	95.3
2004	127	94.5	1.6	60	47.2	98.3
2005	110	90.9		45	40.9	88.9
2006	120	90.8		46	38.3	95.7
2007	145	91.0	0.7	74	51.0	93.2
2008	151	97.4		65	43.0	90.8
2009	155	97.4		58	37.4	91.4
2010	134	97.8		51	38.1	96.1
2011	147	95.2	1.4	51	34.7	90.2
2012	127	97.6	0.8	41	32.3	90.2
2013	144	97.2	0.7	49	34.0	89.8
2014	137	97.1		31	22.6	77.4
2015	132	93.9	0.8	35	26.5	91.4
2016	109	99.1		26	23.9	76.9
2017	105	100.0	1.0	17	16.2	82.4
2018	85	98.8		13	15.3	61.5
2019	88	97.7		7	8.0	85.7
2020	62	100.0		5	8.1	100.0
1998-2020	2428	96.2	0.5	844	34.8	91.6

Table 9b

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

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	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	105	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	155	33	97.0	4	2.6
2010	134	45	97.8	2	1.5
2011	147	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	109	64	98.4	6	5.5
2017	105	73	98.6	4	3.8
2018	85	65	67.7	1	1.2
2019	88	61	37.7	1	1.1
2020	62	80	92.5	1	1.6
1998-2020	2428	886	91.5	79	3.3

Table 9c

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

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
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	64	75.0	25.0	84.1
2017	73	75.3	24.7	84.7
2018	65	61.5	38.5	54.5
2019	61	47.5	52.5	78.3
2020	80	51.3	48.8	81.1
2000-2020	886	71.2	28.8	85.8

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	33	76.5	72.3	82.6	73.7
2017	34	74.3	73.8	78.8	73.8
2018	34	80.0	79.5	80.5	82.2
2019	31	80.2	75.3	81.1	80.2
2020	40	79.9	80.8	77.8	80.9
2000-2020	437	75.0	73.9	79.7	74.0

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
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	31	80.6	80.6	80.0	81.2
2019	30	84.0	83.9	84.2	79.9
2020	40	80.9	78.2	82.5	79.9
2000–2020	449	78.4	77.0	81.8	76.8

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 years for girls.

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

Table 11a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
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	0.17	0.4	0.18	0.6	0.21
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	24	1.0	0.41	0.5	0.35	0.7	0.37	0.9	0.41
2017	31	1.3	0.56	0.6	0.48	0.9	0.52	1.1	0.54
2018	21	0.9	0.46	0.3	0.28	0.5	0.34	0.7	0.43
2019	14	0.6	0.30	0.2	0.24	0.4	0.27	0.5	0.29
2020	19	0.8	0.59	0.3	0.37	0.4	0.44	0.7	0.56
2000-2020	314	0.7	0.29	0.3	0.23	0.5	0.25	0.7	0.29

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	0.13	0.5	0.17
2010	16	0.7	0.21	0.3	0.15	0.4	0.16	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	0.47	0.2	0.22	0.4	0.28	0.7	0.39
2017	24	1.0	0.48	0.2	0.25	0.4	0.30	0.6	0.38
2018	19	0.8	0.49	0.2	0.22	0.3	0.27	0.5	0.37
2019	15	0.6	0.36	0.1	0.16	0.2	0.21	0.4	0.26
2020	22	0.9	0.73	0.3	0.63	0.4	0.65	0.6	0.61
2000-2020	317	0.7	0.26	0.2	0.17	0.4	0.19	0.5	0.23

Table 12

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14									
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	5	0.9	1.5	3	1.1	1.9	2	0.8	1.1
45-49	9	1.7	3.2	5	1.9	3.8	4	1.5	2.6
50-54	23	4.3	7.5	15	5.7	9.4	8	3.0	5.7
55-59	19	3.6	11.1	10	3.8	13.2	9	3.4	9.1
60-64	45	8.5	19.6	28	10.6	23.8	17	6.4	15.5
65-69	61	11.5	31.1	35	13.2	37.0	26	9.8	25.3
70-74	76	14.3	45.5	41	15.5	52.5	35	13.2	38.5
75-79	106	20.0	65.5	49	18.5	70.9	57	21.5	60.0
80-84	88	16.6	82.1	42	15.8	86.8	46	17.4	77.4
85+	95	17.9	100.0	35	13.2	100.0	60	22.6	100.0
All ages	530	100.0		265	100.0		265	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24	1		0.0	0.33			1.4	
25-29								
30-34								
35-39	1	1	0.0	0.05	0.0	0.07	0.4	0.2
40-44	3	2	0.1	0.08	0.1	0.08	0.5	0.2
45-49	5	4	0.2	0.09	0.2	0.09	0.4	0.2
50-54	15	8	0.6	0.19	0.3	0.11	0.6	0.3
55-59	10	9	0.5	0.11	0.4	0.11	0.2	0.2
60-64	28	17	1.6	0.29	0.9	0.15	0.4	0.3
65-69	35	26	2.1	0.26	1.4	0.17	0.4	0.4
70-74	41	35	2.7	0.40	2.0	0.25	0.3	0.4
75-79	49	57	4.0	0.48	3.8	0.48	0.4	0.6
80-84	42	46	5.8	0.81	4.3	0.67	0.4	0.5
85+	35	60	7.5	1.06	5.8	1.43	0.4	0.5
All ages	265	265					0.4	0.4
Mortality								
Raw			0.8	0.32	0.8	0.30		
WS			0.4	0.25	0.3	0.19		
ES			0.6	0.28	0.4	0.22		
BRD-S			0.8	0.32	0.6	0.26		
PYLL-70								
per 100,000			3.3		2.2			
ES			2.9		1.8			
AYLL-70			9.8		9.3			

Table 14a

Further malignancies in deaths in period 2000–2020
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06 Oral cavity	3	1.6	1	33.3	1	33.3	1	33.3
C07–C08 Salivary gland	1	0.5	1	100.0				
C15 Oesophagus	1	0.5					1	100.0
C16 Stomach	5	2.6	2	40.0	1	20.0	2	40.0
C18 Colon	11	5.8	4	36.4	1	9.1	6	54.5
C19–C20 Rectum	7	3.7	1	14.3	1	14.3	5	71.4
C22 Liver	2	1.0	1	50.0			1	50.0
C23–C24 Bile	2	1.0					2	100.0
C25 Pancreas	2	1.0			2	100.0		
C32 Larynx	3	1.6	2	66.7			1	33.3
C33–C34 Lung	18	9.4	1	5.6	1	5.6	16	88.9
C38,C45 Mesothelioma	1	0.5					1	100.0
C43 Malign. melanoma	5	2.6	3	60.0			2	40.0
C44 Skin others	35	18.3	7	20.0	3	8.6	25	71.4
C46,C49 Soft tissue	1	0.5	1	100.0				
C50 Breast	1	0.5	1	100.0				
C60 Penis	1	0.5	1	100.0				
C61 Prostate	35	18.3	19	54.3	3	8.6	13	37.1
C62 Testis	1	0.5	1	100.0				
C64 Kidney	7	3.7	4	57.1	1	14.3	2	28.6
C65 Renal pelvis	1	0.5	1	100.0				
C67 Bladder	5	2.6	3	60.0	1	20.0	1	20.0
C70–C72 CNS cancer	2	1.0	1	50.0			1	50.0
C73 Thyroid	1	0.5	1	100.0				
C76–C79 CUP	2	1.0					2	100.0
C81 Hodgkin lymphoma	1	0.5					1	100.0
C82–C85 NHL	29	15.2					29	100.0
C90 Mult. myeloma	1	0.5					1	100.0
C91–C96 Leukaemia	7	3.7					7	100.0
All further malignancies	191	100.0	56	29.3	15	7.9	120	62.8

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

Table 14b

Further malignancies in deaths in period 2000-2020
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	1	0.6	1	100.0				
C07-C08 Salivary gland	1	0.6					1	100.0
C09-C10 Oropharynx	1	0.6					1	100.0
C15 Oesophagus	2	1.3					2	100.0
C16 Stomach	4	2.5	2	50.0			2	50.0
C18 Colon	13	8.2	4	30.8	1	7.7	8	61.5
C19-C20 Rectum	4	2.5	3	75.0	1	25.0		
C23-C24 Bile	3	1.9					3	100.0
C25 Pancreas	2	1.3					2	100.0
C33-C34 Lung	8	5.1	2	25.0			6	75.0
C38,C45 Mesothelioma	2	1.3					2	100.0
C40-C41 Bone	1	0.6					1	100.0
C43 Malign. melanoma	3	1.9	1	33.3			2	66.7
C44 Skin others	14	8.9	3	21.4	1	7.1	10	71.4
C50 Breast	25	15.8	16	64.0	1	4.0	8	32.0
C51 Vulva	1	0.6	1	100.0				
C53 Cervix uteri	2	1.3			1	50.0	1	50.0
C54 Corpus uteri	5	3.2	4	80.0			1	20.0
C56 Ovary	8	5.1	2	25.0	2	25.0	4	50.0
C64 Kidney	3	1.9	3	100.0				
C67 Bladder	3	1.9	2	66.7			1	33.3
C69 Eye melanoma	1	0.6	1	100.0				
C70-C72 CNS cancer	1	0.6	1	100.0				
C73 Thyroid	4	2.5	4	100.0				
C82-C85 NHL	41	25.9	1	2.4			40	97.6
C91-C96 Leukaemia	5	3.2	1	20.0			4	80.0
All further malignancies	158	100.0	52	32.9	7	4.4	99	62.7

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

Table 15

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24	1		0.0	0.33			1.5	
25-29								
30-34								
35-39	1		0.0	0.05			0.4	
40-44	2	2	0.1	0.06	0.1	0.08	0.4	0.3
45-49	5	4	0.2	0.10	0.2	0.09	0.4	0.3
50-54	15	8	0.6	0.20	0.3	0.12	0.6	0.4
55-59	9	7	0.4	0.10	0.3	0.10	0.2	0.2
60-64	24	15	1.4	0.31	0.8	0.17	0.4	0.4
65-69	29	21	1.8	0.28	1.2	0.17	0.4	0.4
70-74	34	28	2.3	0.51	1.6	0.27	0.4	0.4
75-79	36	53	3.0	0.60	3.5	0.56	0.4	0.7
80-84	34	37	4.7	1.13	3.5	0.74	0.5	0.5
85+	21	48	4.5	1.31	4.6	1.66	0.3	0.5
All ages	211	223					0.4	0.5
Mortality								
Raw			0.6	0.33	0.7	0.31		
WS			0.3	0.26	0.2	0.19		
ES			0.5	0.28	0.3	0.22		
BRD-S			0.6	0.33	0.5	0.27		
PYLL-70								
per 100,000			3.1		1.9			
ES			2.6		1.6			
AYLL-70			10.2		9.4			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39	1		0.0	0.05			0.4	
40-44	2	2	0.1	0.06	0.1	0.09	0.4	0.3
45-49	4	3	0.1	0.09	0.1	0.07	0.3	0.2
50-54	11	5	0.4	0.16	0.2	0.08	0.5	0.2
55-59	6	4	0.3	0.08	0.2	0.06	0.2	0.1
60-64	14	8	0.8	0.22	0.4	0.11	0.3	0.2
65-69	20	15	1.2	0.25	0.8	0.15	0.3	0.3
70-74	18	18	1.2	0.42	1.0	0.23	0.2	0.3
75-79	23	29	1.9	0.48	1.9	0.37	0.3	0.4
80-84	16	31	2.2	0.62	2.9	0.72	0.2	0.4
85+	13	36	2.8	0.87	3.5	1.44	0.2	0.4
All ages	128	151					0.2	0.3
Mortality								
Raw			0.4	0.24	0.4	0.25		
WS			0.2	0.19	0.1	0.15		
ES			0.3	0.21	0.2	0.17		
BRD-S			0.4	0.24	0.3	0.21		
PYLL-70								
per 100,000			2.1		1.3			
ES			1.8		1.0			
AYLL-70			10.3		9.7			

* See corresponding tables with multiple malignancies.

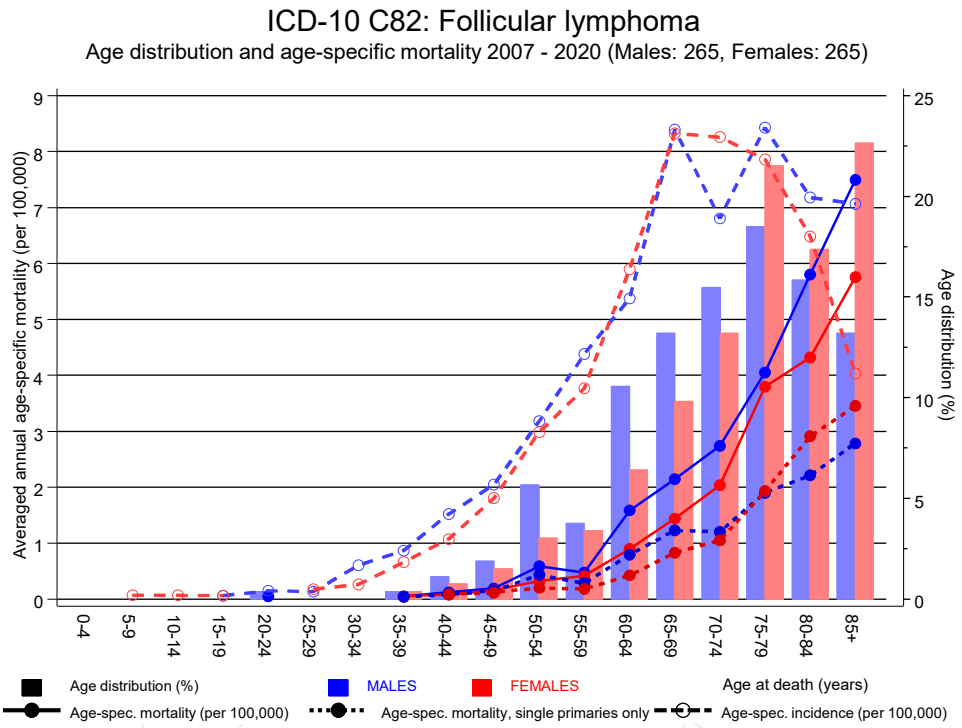


Figure 17. Distribution of age at death (bars; males: mean=66.2 yrs, median=66.9 yrs; females: mean=70.0 yrs, median=71.1 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

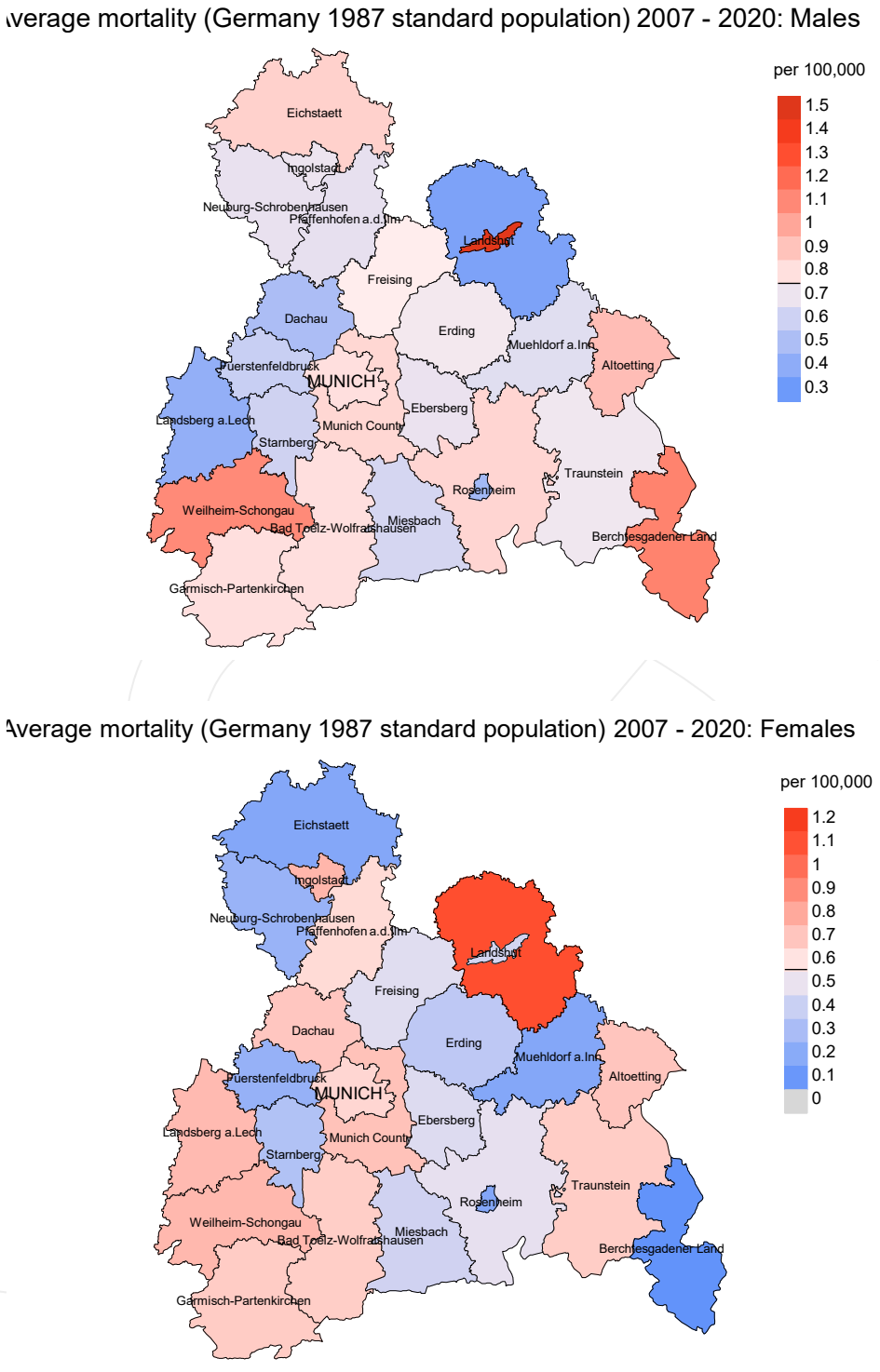
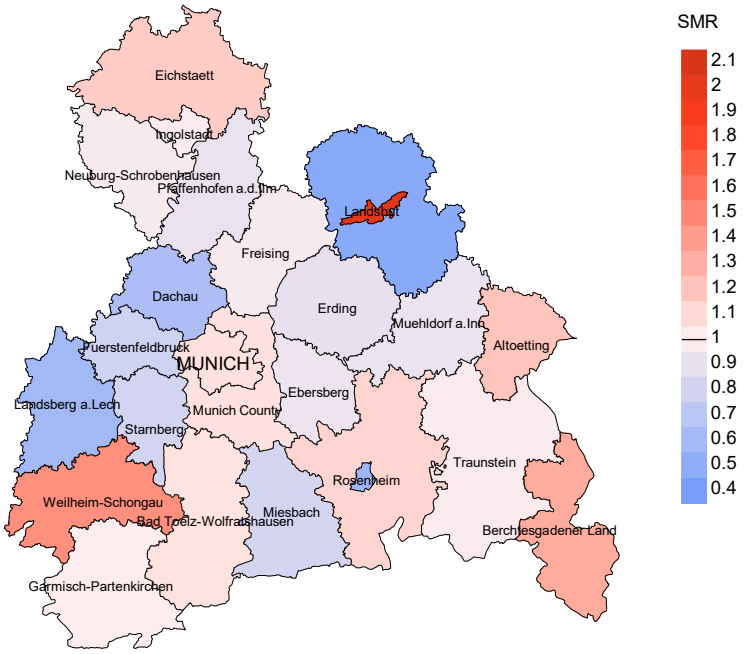


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.8/100,000 WS N=265, females 0.6/100,000 WS N=265).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 6 women died from follic. lymphoma. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.5/100,000 (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 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

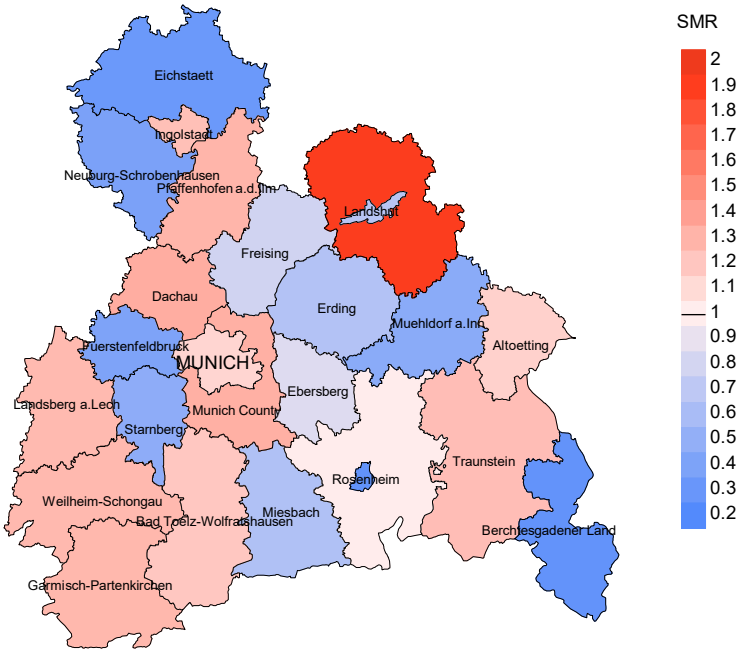


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=265, females N=265).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2020 a total of 6 women died from follic. lymphoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.85. Though, the value of this parameter may vary with an underlying probability of 99% between 0.22 and 2.21, 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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