

Munich Cancer Registry



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

ICD-10 C88.4: MALT lymphoma

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	942
Diseases	950
Creation date	01/26/2021
Database export	01/07/2021
Population	4.92 m



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

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

https://www.tumorregister-muenchen.de/en/facts/base/bC884_E-ICD-10-C88.4-MALT-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 2015) used for specifying cancer site

Code	Description
C88.4	Extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue [MALT-lymphoma]

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	15	6.7	19.6	46.7	93.3
1999	22	13.5	19.3	72.7	95.5
2000	16	13.2	19.4	75.0	93.8
2001	34	14.9	19.3	61.8	91.2
2002	47	13.4	19.2	66.0	93.6 #
2003	45	15.1	19.0	48.9	95.6
2004	32	14.7	18.5	43.8	100.0
2005	36	15.0	18.4	52.8	91.7
2006	53	13.3	17.9	50.9	90.6
2007	56	14.3	16.8	48.2	92.9 #
2008	50	13.5	16.3	48.0	94.0
2009	45	14.0	15.6	35.6	93.3
2010	63	13.2	14.6	31.7	96.8
2011	62	13.7	14.2	25.8	87.1
2012	60	14.8	12.5	31.7	93.3
2013	58	15.1	12.0	24.1	91.4
2014	47	16.2	11.6	17.0	91.5
2015	66	16.5	11.8	21.2	87.9
2016	42	17.2	12.3	23.8	100.0
2017	53	17.4	14.0	20.8	100.0
2018	28	17.1	8.5	21.4	96.4
2019	20	17.6	5.3	15.0	80.0 ##
1998-2019	950	17.6	19.6	37.6	93.2

950 cases diagnosed 1998-2019 are related to a total of 942 patients. Currently, in 322 (34.2 %) of these 942 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 231 / 70 / 21 (24.5 % / 7.4 % / 2.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 53 cases has been diagnosed, of which 17.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 14.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	9	60.0	11.1	22.5	66.7	100.0
1999	12	54.5	14.3	22.1	75.0	100.0
2000	8	50.0	13.8	22.0	87.5	100.0
2001	12	35.3	17.1	21.9	75.0	100.0
2002	24	51.1	12.3	21.6	70.8	95.8 #
2003	21	46.7	15.1	21.5	42.9	90.5
2004	10	31.3	14.6	20.9	40.0	100.0
2005	18	50.0	14.0	20.9	55.6	88.9
2006	30	56.6	12.5	20.2	50.0	93.3
2007	25	44.6	14.8	17.6	52.0	92.0 #
2008	26	52.0	13.8	17.0	53.8	92.3
2009	20	44.4	14.0	15.0	45.0	90.0
2010	33	52.4	13.3	14.6	36.4	100.0
2011	26	41.9	14.6	14.1	38.5	92.3
2012	33	55.0	16.0	13.4	27.3	87.9
2013	26	44.8	16.2	13.0	30.8	92.3
2014	23	48.9	17.4	13.3	26.1	95.7
2015	35	53.0	17.4	11.4	22.9	80.0
2016	21	50.0	18.7	12.9	33.3	100.0
2017	25	47.2	18.5	11.5	20.0	100.0
2018	13	46.4	18.2	11.1	38.5	92.3
2019	15	75.0	19.1	7.1	20.0	80.0 ##
1998-2019	465	48.9	19.1	22.5	41.9	92.9

465 cases diagnosed 1998-2019 are related to a total of 463 patients. Currently, in 181 (39.1 %) of these 463 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 129 / 37 / 15 (27.9 % / 8.0 % / 3.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 25 cases has been diagnosed, of which 18.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 11.5 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

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

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	6	40.0	0.0	16.9	16.7	83.3
1999	10	45.5	12.5	16.7	70.0	90.0
2000	8	50.0	12.5	17.1	62.5	87.5
2001	22	64.7	13.0	16.9	54.5	86.4
2002	23	48.9	14.5	16.9	60.9	91.3 #
2003	24	53.3	15.1	16.6	54.2	100.0
2004	22	68.8	14.8	16.3	45.5	100.0
2005	18	50.0	15.8	15.9	50.0	94.4
2006	23	43.4	14.1	15.6	52.2	87.0
2007	31	55.4	13.9	16.0	45.2	93.5 #
2008	24	48.0	13.3	15.6	41.7	95.8
2009	25	55.6	14.0	16.2	28.0	96.0
2010	30	47.6	13.2	14.6	26.7	93.3
2011	36	58.1	12.9	14.3	16.7	83.3
2012	27	45.0	13.7	11.6	37.0	100.0
2013	32	55.2	14.1	11.0	18.8	90.6
2014	24	51.1	15.1	9.8	8.3	87.5
2015	31	47.0	15.6	12.2	19.4	96.8
2016	21	50.0	15.8	11.8	14.3	100.0
2017	28	52.8	16.3	16.7	21.4	100.0
2018	15	53.6	16.0	5.0	6.7	100.0
2019	5	25.0	16.1	0.0		80.0 ##
1998-2019	485	51.1	16.1	16.9	33.4	93.4

485 cases diagnosed 1998-2019 are related to a total of 479 patients. Currently, in 141 (29.4 %) of these 479 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 102 / 33 / 6 (21.3 % / 6.9 % / 1.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 28 cases has been diagnosed, of which 16.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 16.7 % 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
 (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	9	6	0.8	0.5	0.5	0.3	0.7	0.4	1.0	0.5
1999	12	10	1.1	0.8	0.6	0.4	1.0	0.5	1.5	0.7
2000	8	8	0.7	0.7	0.5	0.4	0.6	0.5	0.8	0.6
2001	12	22	1.0	1.8	0.6	1.0	0.9	1.4	1.1	1.6
2002	24	23	1.3	1.2	0.8	0.6	1.1	0.8	1.2	1.0
2003	21	24	1.1	1.2	0.7	0.7	1.0	0.9	1.2	1.1
2004	10	22	0.5	1.1	0.3	0.6	0.4	0.8	0.5	1.0
2005	18	18	1.0	0.9	0.6	0.4	0.8	0.6	1.0	0.7
2006	30	23	1.6	1.1	0.9	0.5	1.3	0.8	1.6	0.9
2007	25	31	1.1	1.3	0.7	0.7	0.9	1.0	1.1	1.2
2008	26	24	1.2	1.0	0.6	0.5	0.9	0.7	1.1	0.9
2009	20	25	0.9	1.1	0.5	0.6	0.7	0.8	0.9	1.0
2010	33	30	1.5	1.3	0.9	0.7	1.2	0.9	1.4	1.1
2011	26	36	1.2	1.5	0.8	0.9	0.9	1.2	1.0	1.4
2012	33	27	1.5	1.1	0.8	0.6	1.1	0.8	1.3	1.0
2013	26	32	1.1	1.3	0.5	0.7	0.8	1.0	1.1	1.2
2014	23	24	1.0	1.0	0.5	0.6	0.7	0.8	0.9	0.9
2015	35	31	1.5	1.3	0.7	0.7	1.1	0.9	1.3	1.1
2016	21	21	0.9	0.9	0.4	0.4	0.6	0.6	0.8	0.7
2017	25	28	1.0	1.1	0.5	0.5	0.7	0.7	0.9	0.9
2018	13	15	0.5	0.6	0.3	0.2	0.4	0.3	0.5	0.5
2019	15	5	0.6	0.2	0.3	0.1	0.4	0.1	0.5	0.2
1998-2019	465	485	1.1	1.1	0.6	0.5	0.8	0.7	1.0	0.9

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

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	15	61.7	14.9	39.2	81.8	39.8	45.3	64.6	76.4	78.4
1999	22	70.9	11.3	47.5	88.2	58.2	61.0	74.2	80.8	82.3
2000	16	63.4	13.6	23.0	80.8	48.6	60.1	63.8	69.7	79.8
2001	34	67.0	10.7	44.5	93.0	51.7	60.3	67.8	73.8	77.7
2002	47	65.8	13.7	30.3	90.6	46.3	58.5	65.0	74.2	84.8
2003	45	63.7	12.0	27.3	83.5	45.7	58.0	65.5	71.8	78.5
2004	32	62.3	14.6	29.1	85.2	37.7	51.9	65.0	73.0	79.9
2005	36	64.4	16.9	25.2	88.7	37.8	56.4	64.9	77.2	84.5
2006	53	67.9	12.5	35.6	95.3	53.1	58.6	67.8	77.3	84.1
2007	56	65.9	15.4	16.4	95.2	48.6	57.7	67.7	76.6	83.4
2008	50	68.4	13.2	40.0	89.8	48.4	59.9	69.6	78.6	84.3
2009	45	66.7	11.7	37.3	88.8	50.4	60.5	66.2	75.1	81.8
2010	63	63.5	16.1	20.5	91.1	39.2	51.8	67.3	73.8	82.3
2011	62	60.7	15.8	9.2	89.7	40.4	50.5	61.8	71.8	77.8
2012	60	65.3	14.7	8.5	90.3	47.8	55.3	67.1	75.9	83.4
2013	58	67.7	13.7	29.8	93.0	50.7	58.3	68.4	76.8	83.4
2014	47	64.0	14.3	34.2	99.6	42.2	57.2	67.5	73.0	79.3
2015	66	65.2	15.1	27.7	92.5	46.7	51.5	65.8	76.5	84.1
2016	42	68.2	15.0	22.4	95.8	53.4	60.1	71.8	77.2	81.7
2017	53	68.9	13.9	30.8	91.4	51.8	62.5	72.2	78.9	84.3
2018	28	71.4	14.3	44.1	91.1	48.4	61.3	75.7	81.6	86.0
2019	20	68.4	11.1	40.0	82.5	54.5	59.3	72.3	75.8	81.0
1998-2019	950	65.8	14.2	8.5	99.6	47.4	58.0	67.4	76.1	82.3

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	9	64.0	16.1	39.2	81.8	39.2	54.0	68.7	76.4	81.8
1999	12	71.0	10.5	50.4	83.8	59.8	62.4	74.2	80.0	82.3
2000	8	63.5	17.9	23.0	80.8	23.0	61.1	66.1	74.8	80.8
2001	12	66.5	10.4	48.8	87.8	55.1	60.7	65.1	71.9	77.7
2002	24	64.2	11.1	38.3	89.3	54.7	58.7	63.7	71.6	74.9
2003	21	61.2	13.6	27.3	83.5	45.1	55.5	62.3	70.1	76.0
2004	10	57.2	14.2	35.0	73.6	35.3	48.6	63.3	66.0	73.0
2005	18	60.5	17.1	25.2	85.9	26.1	49.4	63.1	75.0	77.3
2006	30	66.9	9.9	48.9	84.1	53.0	59.7	67.5	73.3	81.1
2007	25	65.0	18.1	16.4	89.2	37.5	56.5	66.6	78.6	86.5
2008	26	67.1	11.9	40.0	85.4	51.3	60.6	69.0	75.5	83.2
2009	20	67.4	14.0	37.3	88.8	47.4	59.8	66.4	78.6	85.2
2010	33	61.2	16.9	23.7	91.1	39.2	50.2	62.5	73.5	85.9
2011	26	58.8	17.5	9.2	89.7	39.1	47.0	61.1	71.1	75.9
2012	33	64.6	11.1	46.1	87.8	50.7	56.4	65.9	72.5	77.5
2013	26	72.0	12.0	47.5	93.0	57.4	62.9	72.0	78.2	90.6
2014	23	68.0	13.6	37.9	99.6	46.7	62.6	71.5	73.6	83.3
2015	35	67.5	13.7	31.2	92.3	49.3	58.0	71.4	76.5	80.1
2016	21	71.6	14.0	22.4	95.8	64.5	67.2	72.2	77.1	82.2
2017	25	67.2	15.1	34.9	90.5	42.1	58.9	67.5	77.4	84.3
2018	13	71.4	16.3	44.1	91.1	44.3	66.3	75.6	82.5	90.6
2019	15	68.7	11.2	40.0	82.5	58.3	59.4	72.1	76.7	82.0
1998-2019	465	65.7	14.2	9.2	99.6	47.0	58.3	67.2	75.5	82.5

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	6	58.1	13.5	41.3	78.4	41.3	45.3	59.6	64.6	78.4
1999	10	70.7	12.8	47.5	88.2	52.9	60.1	73.7	80.8	84.7
2000	8	63.3	8.9	48.6	79.8	48.6	59.4	62.6	67.1	79.8
2001	22	67.3	11.1	44.5	93.0	51.7	60.3	69.6	74.1	77.3
2002	23	67.4	16.1	30.3	90.6	46.3	56.3	71.9	82.0	87.2
2003	24	65.9	10.1	42.7	82.5	52.2	61.3	66.5	72.4	79.1
2004	22	64.5	14.6	29.1	85.2	47.4	58.1	66.1	77.8	80.4
2005	18	68.2	16.3	32.2	88.7	37.8	58.2	71.3	80.5	85.7
2006	23	69.2	15.5	35.6	95.3	53.2	56.7	70.1	80.6	89.1
2007	31	66.7	13.1	34.8	95.2	51.1	58.9	67.9	75.9	80.1
2008	24	69.8	14.6	45.0	89.8	48.0	56.3	73.5	80.5	87.3
2009	25	66.1	9.7	48.7	83.8	51.4	60.5	66.1	73.5	79.0
2010	30	66.0	15.1	20.5	84.8	44.1	61.4	68.9	75.4	82.0
2011	36	62.1	14.5	29.8	89.2	42.9	54.4	62.0	73.7	78.0
2012	27	66.2	18.4	8.5	90.3	44.1	54.5	72.3	78.1	84.2
2013	32	64.2	14.2	29.8	83.7	47.7	56.0	67.0	76.2	80.9
2014	24	60.1	14.1	34.2	79.5	42.1	46.3	62.6	71.4	75.9
2015	31	62.6	16.3	27.7	92.5	44.6	50.4	63.2	77.6	84.1
2016	21	64.8	15.5	26.1	85.1	49.9	55.7	63.1	77.2	81.4
2017	28	70.5	12.9	30.8	91.4	51.8	65.5	72.6	79.0	86.1
2018	15	71.3	12.9	48.4	85.0	49.4	56.3	77.5	80.6	83.8
2019	5	67.4	12.0	50.7	78.4	50.7	58.9	74.4	74.7	78.4
1998-2019	485	66.0	14.2	8.5	95.3	48.0	57.2	67.5	77.0	82.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2019

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9	2	0.3	0.3	1	0.3	0.3	1	0.3	0.3
10-14	0	0.0	0.3			0.3			0.3
15-19	1	0.2	0.5	1	0.3	0.6			0.3
20-24	3	0.5	0.9	2	0.6	1.2	1	0.3	0.6
25-29	5	0.8	1.7	1	0.3	1.6	4	1.2	1.8
30-34	12	1.8	3.5	3	0.9	2.5	9	2.7	4.6
35-39	13	2.0	5.5	9	2.8	5.3	4	1.2	5.8
40-44	17	2.6	8.2	9	2.8	8.1	8	2.4	8.2
45-49	37	5.7	13.8	19	5.9	14.0	18	5.5	13.7
50-54	52	8.0	21.8	20	6.2	20.2	32	9.7	23.4
55-59	54	8.3	30.2	25	7.8	28.0	29	8.8	32.2
60-64	79	12.2	42.3	42	13.1	41.1	37	11.2	43.5
65-69	77	11.8	54.2	41	12.8	53.9	36	10.9	54.4
70-74	101	15.5	69.7	53	16.5	70.4	48	14.6	69.0
75-79	100	15.4	85.1	43	13.4	83.8	57	17.3	86.3
80-84	52	8.0	93.1	21	6.5	90.3	31	9.4	95.7
85+	45	6.9	100.0	31	9.7	100.0	14	4.3	100.0
All ages	650	100.0		321	100.0		329	100.0	

Table 5

Age-specific incidence 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 Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4						
5- 9	1	1	0.1	0.1	0.9	1.1
10-14						
15-19	1		0.1		0.3	
20-24	2	1	0.1	0.1	0.3	0.2
25-29	1	4	0.0	0.2	0.1	0.4
30-34	3	9	0.1	0.4	0.3	0.5
35-39	9	4	0.4	0.2	0.5	0.1
40-44	9	8	0.4	0.4	0.3	0.1
45-49	19	18	0.8	0.7	0.4	0.2
50-54	20	32	0.9	1.4	0.3	0.3
55-59	25	29	1.3	1.5	0.2	0.2
60-64	42	37	2.6	2.1	0.3	0.3
65-69	41	36	2.7	2.1	0.2	0.2
70-74	52	48	3.7	3.0	0.2	0.3
75-79	43	57	3.9	4.1	0.2	0.3
80-84	21	31	3.2	3.2	0.1	0.2
85+	31	14	7.3	1.5	0.3	0.1
All ages	320	329			0.2	0.2
Incidence						
Raw			1.1	1.1		
WS			0.6	0.5		
ES			0.8	0.7		
BRD-S			1.0	0.9		

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

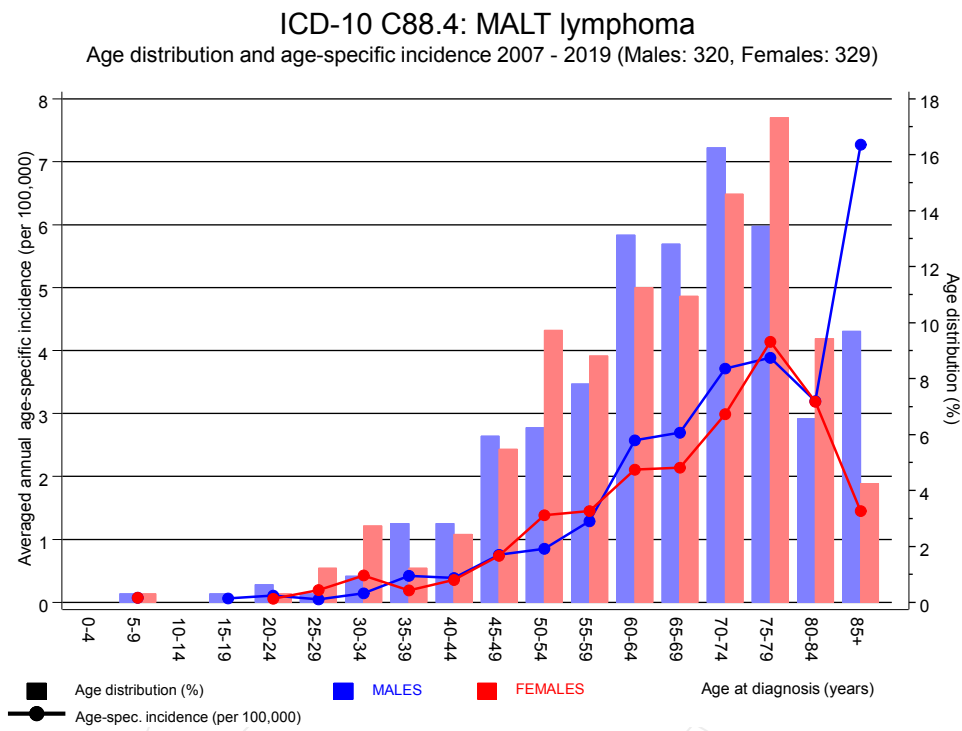


Figure 6. Age distribution (males: mean=66.5 yrs, median=68.3 yrs; females: mean=65.6 yrs, median=67.9 yrs) and age-specific incidence.

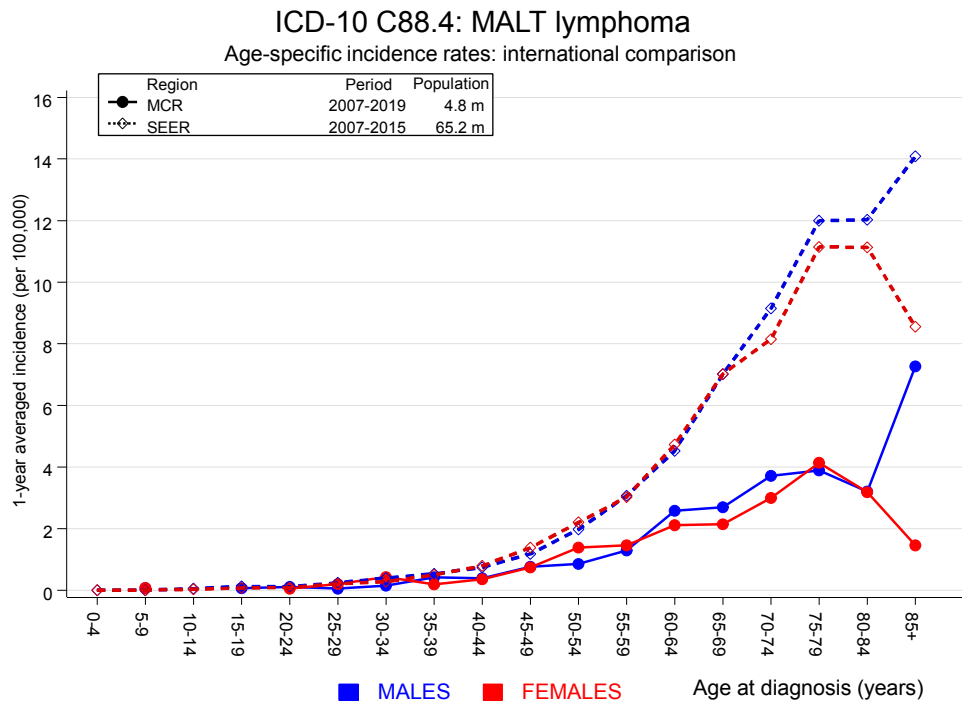


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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 %
C09–C10 Oropharynx	1	0.3	3.0	0.1	16.5	3.1	
C16 Stomach	7	1.4	5.0	2.0	10.2 #	25.9	
C18 Colon	8	3.4	2.3	1.0	4.6 #	21.2	
C19–C20 Rectum	1	1.8	0.5	0.0	3.1	-3.8	
C22 Liver	4	1.0	4.0	1.1	10.2 #	13.9	50.0
C25 Pancreas	4	1.4	2.9	0.8	7.4	12.1	
C30–C31 Sinuses	1	0.1	15.8	0.4	88.0	4.3	
C33–C34 Lung	11	4.1	2.7	1.3	4.8 #	32.0	
C38,C45 Mesothelioma	2	0.2	8.2	1.0	29.8	8.1	
C43 Malign. melanoma	4	1.5	2.6	0.7	6.7	11.4	
C50 Breast	1	0.1	10.4	0.3	58.2	4.2	
C60 Penis	1	0.1	11.1	0.3	61.7	4.2	
C61 Prostate	22	9.8	2.2	1.4	3.4 #	56.4	4.5
C64 Kidney	9	1.2	7.6	3.5	14.4 #	36.2	
C65 Renal pelvis	1	0.2	6.5	0.2	36.0	3.9	
C67 Bladder	2	1.7	1.2	0.1	4.3	1.4	
C73 Thyroid	2	0.2	9.1	1.1	33.0 #	8.2	
C76–C79 CUP	2	0.6	3.3	0.4	12.1	6.5	
C82–C85 NHL	11	1.5	7.4	3.7	13.2 #	44.0	
C91–C96 Leukaemia	1	0.5	1.8	0.0	10.2	2.1	
Not observed	0	4.0	0.0	0.0	0.9 #	-18.5	
All further malignancies	95	35.2	2.7	2.2	3.3 #	276.9	3.2

Patients	448
Median age at next malignancy (years)	71.1
Person-years	2160
Mean observation time (years)	4.8
Median observation time (years)	3.7

The occurrence of further specified malignancy is statistically significant.

Table 7b

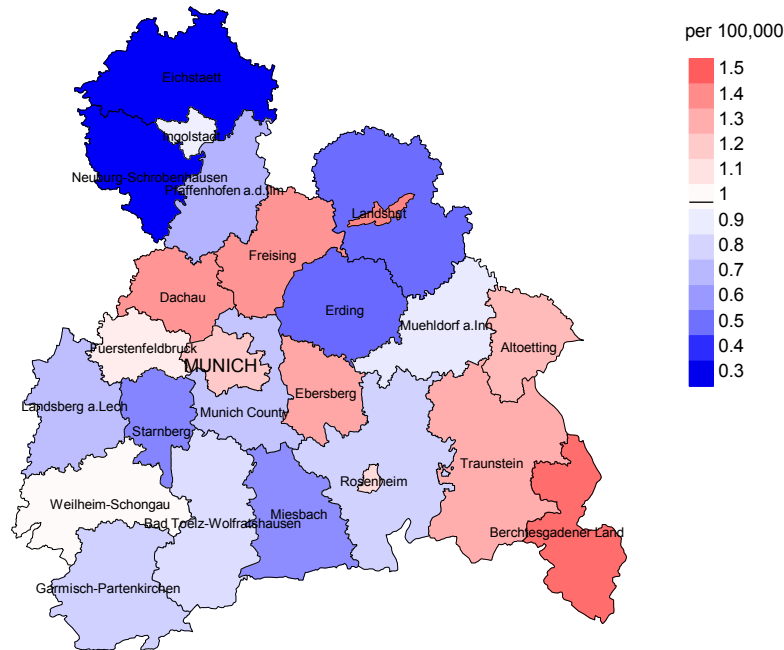
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C16 Stomach	5	0.9	5.7	1.9	13.4 #	18.6	
C18 Colon	1	2.5	0.4	0.0	2.3	-6.6	
C19–C20 Rectum	1	1.0	1.0	0.0	5.5	-0.1	
C22 Liver	2	0.3	6.3	0.8	22.7	7.6	
C23–C24 Bile	1	0.4	2.7	0.1	15.3	2.9	
C25 Pancreas	6	1.2	5.0	1.8	10.8 #	21.6	33.3
C33–C34 Lung	11	1.9	5.8	2.9	10.3 #	41.0	9.1
C43 Malign. melanoma	2	0.9	2.1	0.3	7.7	4.8	
C48 Peritoneal	1	0.1	9.8	0.2	54.3	4.0	
C50 Breast	22	7.6	2.9	1.8	4.4 #	64.9	
C53 Cervix uteri	1	0.3	3.2	0.1	17.6	3.1	
C56 Ovary	3	1.0	3.0	0.6	8.6	8.9	
C64 Kidney	2	0.6	3.3	0.4	12.0	6.3	
C69 Eye lymphoma	2	0.0	266.6	32.3	963.0 #	9.0	
C82–C85 NHL	13	1.0	13.0	6.9	22.3 #	54.1	
C90 Mult. myeloma	2	0.3	6.3	0.8	22.6	7.6	
C91–C96 Leukaemia	2	0.4	5.3	0.6	19.3	7.3	
Not observed	0	4.9	0.0	0.0	0.7 #	-22.2	
All further malignancies	77	25.4	3.0	2.4	3.8 #	232.8	3.9
Patients		469					
Median age at next malignancy (years)		73.5					
Person-years		2219					
Mean observation time (years)		4.7					
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

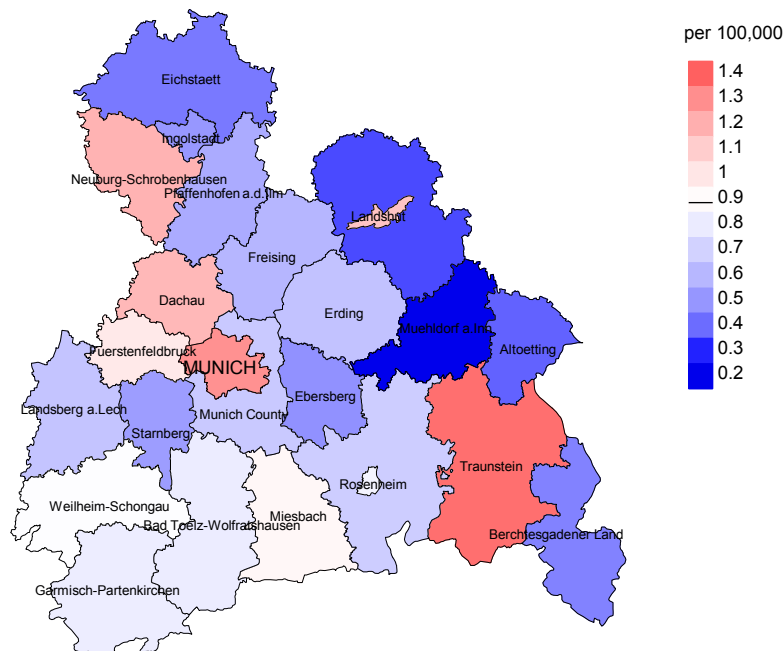
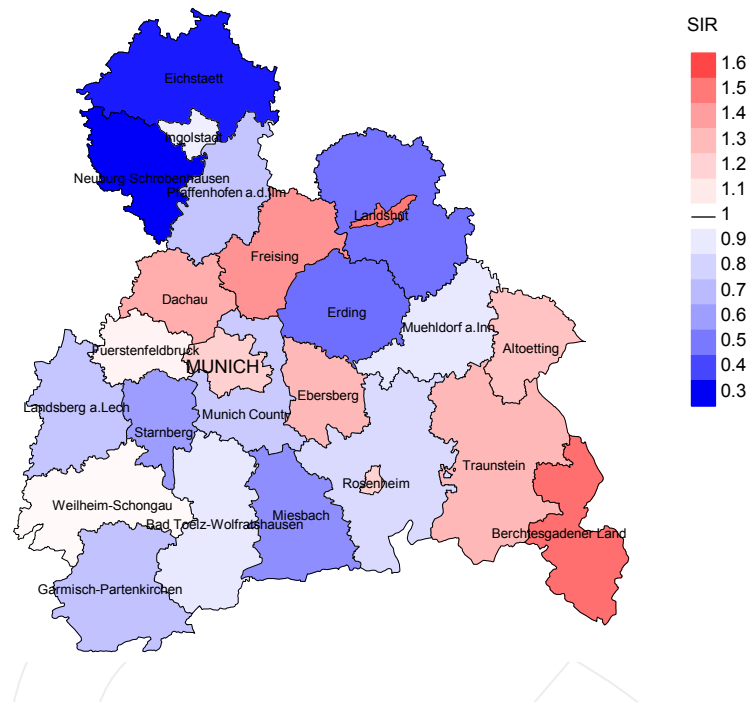


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.0/100,000 WS N=320, females 0.9/100,000 WS N=329).

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 were identified with newly diagnosed MALT lymphoma. Therefore, the mean incidence 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 1.4/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

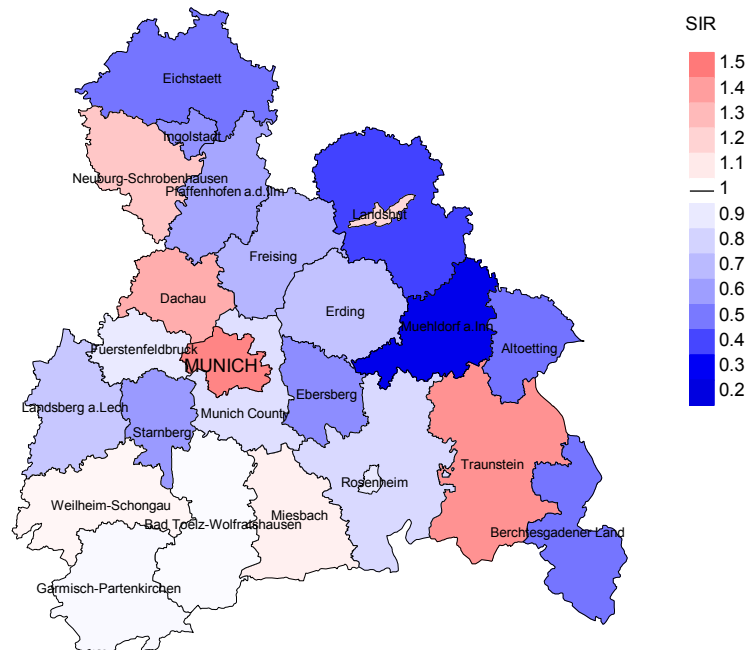


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=320, females N=329).

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 were identified with newly diagnosed MALT lymphoma. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.55. Though, the value of this parameter may vary with an underlying probability of 99% between 0.12 and 1.56, and is therefore not statistically striking.

MORTALITY

Table 9a

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

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

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	15	93.3	7	46.7	71.4
1999	22	95.5	16	72.7	100.0
2000	16	93.8	12	75.0	91.7
2001	34	91.2	21	61.8	95.2
2002	47	93.6	31	66.0	87.1
2003	45	95.6	22	48.9	100.0
2004	32	100.0	14	43.8	100.0
2005	36	91.7	19	52.8	100.0
2006	53	90.6	27	50.9	96.3
2007	56	92.9	27	48.2	96.3
2008	50	94.0	24	48.0	95.8
2009	45	93.3	16	35.6	93.8
2010	63	96.8	20	31.7	95.0
2011	62	87.1	16	25.8	81.3
2012	60	93.3	19	31.7	94.7
2013	58	91.4	14	24.1	92.9
2014	47	91.5	8	17.0	62.5
2015	66	87.9	14	21.2	78.6
2016	42	100.0	10	23.8	80.0
2017	53	100.0	11	20.8	81.8
2018	28	96.4	6	21.4	33.3
2019	20	80.0	3	15.0	66.7
1998-2019	950	93.2	357	37.6	90.8

Table 9b

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

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

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	15	2		
1999	22	4	2	9.1
2000	16	4	2	12.5
2001	34	4	1	2.9
2002	47	15	4	8.5
2003	45	12	2	4.4
2004	32	7		
2005	36	7	2	5.6
2006	53	17	3	5.7
2007	56	24	4	7.1
2008	50	22	3	6.0
2009	45	15		
2010	63	20	2	3.2
2011	62	29	2	3.2
2012	60	20	3	5.0
2013	58	24	5	8.6
2014	47	18		
2015	66	29	4	6.1
2016	42	30	1	2.4
2017	53	44	5	9.4
2018	28	23	5	17.9
2019	20	23	2	10.0
1998-2019	950	393	52	5.5

Table 9c

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

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

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	2	100.0		100.0
1999	4	75.0	25.0	100.0
2000	4	100.0		100.0
2001	4	100.0		100.0
2002	15	86.7	13.3	93.3
2003	12	58.3	41.7	90.0
2004	7	71.4	28.6	85.7
2005	7	71.4	28.6	85.7
2006	17	52.9	47.1	68.8
2007	24	83.3	16.7	83.3
2008	22	72.7	27.3	72.7
2009	15	80.0	20.0	80.0
2010	20	45.0	55.0	75.0
2011	29	58.6	41.4	62.1
2012	20	75.0	25.0	90.0
2013	24	66.7	33.3	65.2
2014	18	61.1	38.9	61.1
2015	29	51.7	48.3	60.7
2016	30	50.0	50.0	65.5
2017	44	63.6	36.4	70.5
2018	23	39.1	60.9	42.9
2019	23	34.8	65.2	50.0
1998–2019	393	61.8	38.2	72.6

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	2	65.1	65.1		65.1
1999	2	79.3	77.5	81.2	79.3
2000	3	81.4	81.4		81.4
2001	4	66.0	66.0		66.0
2002	6	66.7	59.0	89.5	59.0
2003	7	69.9	70.7	67.1	69.9
2004	1	73.7	73.7		73.7
2005	2	74.0	77.3	70.8	74.0
2006	10	79.0	79.0	80.1	74.8
2007	12	76.3	76.3	77.0	76.3
2008	13	76.5	75.9	76.5	70.6
2009	6	81.4	80.6	91.8	79.1
2010	9	78.3	77.5	79.8	78.3
2011	14	73.3	72.7	78.3	73.2
2012	15	77.6	76.1	81.4	76.1
2013	12	85.2	82.5	85.7	88.9
2014	9	71.7	71.7	74.2	66.9
2015	13	80.4	77.4	86.1	78.3
2016	17	76.5	77.6	73.9	77.0
2017	22	80.3	75.8	89.2	75.9
2018	16	78.5	75.9	79.6	66.5
2019	14	78.3	78.3	78.3	75.0
1998-2019	209	77.6	75.9	81.2	74.9

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998					
1999	2	81.0	81.0		81.0
2000	1	88.1	88.1		88.1
2001					
2002	9	79.5	73.2	93.0	79.5
2003	5	77.2	82.5	75.5	78.2
2004	6	75.0	74.9	76.1	76.0
2005	5	82.4	82.3	86.1	83.7
2006	7	86.1	86.1	82.8	86.1
2007	12	79.7	81.4	79.2	81.4
2008	9	72.1	66.5	90.2	69.4
2009	9	78.1	76.1	91.6	77.1
2010	11	84.9	77.1	87.3	82.8
2011	15	80.3	84.6	79.1	80.3
2012	5	71.9	72.7	71.9	71.9
2013	12	76.9	81.8	74.8	82.6
2014	9	82.0	81.5	84.1	82.0
2015	16	81.2	80.9	83.5	80.1
2016	13	86.2	86.6	85.4	86.2
2017	22	85.8	85.5	87.5	84.2
2018	7	80.8	86.5	75.6	81.1
2019	9	87.5	84.4	87.9	77.1
1998-2019	184	81.2	80.9	84.1	80.9

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

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

Table 11a

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

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	2	0.2	0.22	0.1	0.21	0.2	0.21	0.2	0.17
1999	1	0.1	0.08	0.0	0.07	0.1	0.08	0.1	0.10
2000	3	0.3	0.38	0.1	0.28	0.2	0.36	0.4	0.50
2001	4	0.3	0.33	0.2	0.33	0.3	0.33	0.4	0.35
2002	5	0.3	0.21	0.2	0.23	0.3	0.23	0.3	0.22
2003	4	0.2	0.19	0.1	0.16	0.2	0.17	0.2	0.19
2004	1	0.1	0.10	0.0	0.09	0.0	0.10	0.1	0.12
2005	1	0.1	0.06	0.0	0.03	0.0	0.05	0.1	0.07
2006	4	0.2	0.13	0.1	0.11	0.2	0.12	0.3	0.17
2007	10	0.5	0.40	0.2	0.31	0.3	0.37	0.5	0.41
2008	10	0.4	0.38	0.2	0.35	0.3	0.38	0.5	0.41
2009	5	0.2	0.25	0.1	0.16	0.1	0.21	0.2	0.27
2010	3	0.1	0.09	0.1	0.06	0.1	0.08	0.1	0.10
2011	8	0.4	0.32	0.2	0.21	0.2	0.26	0.3	0.30
2012	11	0.5	0.33	0.2	0.24	0.3	0.29	0.4	0.34
2013	7	0.3	0.27	0.1	0.21	0.2	0.24	0.3	0.27
2014	5	0.2	0.22	0.1	0.19	0.2	0.20	0.2	0.21
2015	4	0.2	0.11	0.1	0.07	0.1	0.09	0.1	0.11
2016	9	0.4	0.43	0.2	0.39	0.2	0.41	0.3	0.43
2017	13	0.5	0.52	0.2	0.43	0.3	0.47	0.5	0.52
2018	7	0.3	0.54	0.1	0.41	0.2	0.47	0.2	0.51
2019	6	0.2	0.40	0.1	0.19	0.1	0.26	0.2	0.39
1998-2019	123	0.3	0.27	0.1	0.21	0.2	0.24	0.3	0.27

Table 11b

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

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998									
1999	2	0.2	0.20	0.0	0.11	0.1	0.14	0.2	0.23
2000	1	0.1	0.13	0.0	0.04	0.0	0.05	0.0	0.06
2001									
2002	8	0.4	0.35	0.2	0.28	0.2	0.27	0.3	0.31
2003	3	0.2	0.13	0.0	0.07	0.1	0.08	0.1	0.09
2004	4	0.2	0.18	0.1	0.12	0.1	0.14	0.2	0.18
2005	4	0.2	0.22	0.0	0.10	0.1	0.13	0.1	0.19
2006	5	0.2	0.22	0.0	0.09	0.1	0.12	0.2	0.16
2007	10	0.4	0.32	0.1	0.20	0.2	0.23	0.3	0.27
2008	6	0.3	0.25	0.1	0.28	0.2	0.26	0.2	0.24
2009	7	0.3	0.28	0.1	0.19	0.2	0.21	0.3	0.26
2010	6	0.3	0.20	0.1	0.13	0.1	0.14	0.2	0.14
2011	9	0.4	0.25	0.1	0.15	0.2	0.18	0.3	0.19
2012	4	0.2	0.15	0.1	0.12	0.1	0.14	0.1	0.15
2013	9	0.4	0.28	0.1	0.18	0.2	0.20	0.3	0.22
2014	6	0.2	0.25	0.1	0.15	0.1	0.17	0.2	0.21
2015	11	0.5	0.35	0.1	0.16	0.2	0.21	0.3	0.27
2016	6	0.2	0.29	0.1	0.12	0.1	0.16	0.1	0.18
2017	15	0.6	0.54	0.1	0.24	0.2	0.32	0.3	0.38
2018	2	0.1	0.13	0.0	0.05	0.0	0.07	0.0	0.09
2019	3	0.1	0.60	0.0	0.33	0.1	0.37	0.1	0.46
1998-2019	121	0.3	0.25	0.1	0.15	0.1	0.17	0.2	0.20

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									
25-29									
30-34									
35-39									
40-44	2	1.0	1.0			0.0	2	2.1	2.1
45-49	1	0.5	1.6			0.0	1	1.1	3.2
50-54	7	3.6	5.2	4	4.1	4.1	3	3.2	6.4
55-59	8	4.2	9.4	6	6.1	10.2	2	2.1	8.5
60-64	8	4.2	13.5	6	6.1	16.3	2	2.1	10.6
65-69	19	9.9	23.4	9	9.2	25.5	10	10.6	21.3
70-74	29	15.1	38.5	17	17.3	42.9	12	12.8	34.0
75-79	35	18.2	56.8	23	23.5	66.3	12	12.8	46.8
80-84	33	17.2	74.0	14	14.3	80.6	19	20.2	67.0
85+	50	26.0	100.0	19	19.4	100.0	31	33.0	100.0
All ages	192	100.0		98	100.0		94	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								
25-29								
30-34								
35-39								
40-44		2			0.1	0.25		0.2
45-49		1			0.0	0.06		0.1
50-54	4	3	0.2	0.20	0.1	0.09	0.2	0.1
55-59	6	2	0.3	0.24	0.1	0.07	0.1	0.1
60-64	6	2	0.4	0.14	0.1	0.05	0.1	0.0
65-69	9	10	0.6	0.22	0.6	0.28	0.1	0.2
70-74	17	12	1.2	0.33	0.7	0.25	0.2	0.1
75-79	23	12	2.1	0.53	0.9	0.21	0.2	0.1
80-84	14	19	2.1	0.67	2.0	0.61	0.1	0.2
85+	19	31	4.5	0.61	3.2	2.21	0.2	0.3
All ages	98	94					0.2	0.2
Mortality								
Raw			0.3	0.31	0.3	0.29		
WS			0.1	0.23	0.1	0.17		
ES			0.2	0.27	0.1	0.20		
BRD-S			0.3	0.31	0.2	0.23		
PYLL-70								
per 100,000			0.8		0.7			
ES			0.7		0.6			
AYLL-70			8.5		9.8			

Table 14a

Further malignancies in deaths in period 1998-2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C12-C13 Hypopharynx	1	1.1			1	100.0		
C15 Oesophagus	1	1.1					1	100.0
C16 Stomach	3	3.3			2	66.7	1	33.3
C18 Colon	7	7.6	4	57.1	2	28.6	1	14.3
C19-C20 Rectum	3	3.3	1	33.3	1	33.3	1	33.3
C22 Liver	4	4.3	1	25.0			3	75.0
C25 Pancreas	5	5.4			1	20.0	4	80.0
C30-C31 Sinuses	1	1.1					1	100.0
C32 Larynx	1	1.1	1	100.0				
C33-C34 Lung	10	10.9	3	30.0	3	30.0	4	40.0
C38,C45 Mesothelioma	2	2.2			1	50.0	1	50.0
C43 Malign. melanoma	1	1.1	1	100.0				
C44 Skin others	10	10.9	2	20.0			8	80.0
C46,C49 Soft tissue	1	1.1	1	100.0				
C50 Breast	1	1.1					1	100.0
C60 Penis	1	1.1					1	100.0
C61 Prostate	16	17.4	9	56.3			7	43.8
C62 Testis	1	1.1	1	100.0				
C64 Kidney	6	6.5	2	33.3	1	16.7	3	50.0
C65 Renal pelvis	1	1.1					1	100.0
C67 Bladder	2	2.2					2	100.0
C70-C72 CNS cancer	1	1.1					1	100.0
C76-C79 CUP	1	1.1			1	100.0		
C82-C85 NHL	11	12.0					11	100.0
C91-C96 Leukaemia	1	1.1					1	100.0
All further malignancies	92	100.0	26	28.3	13	14.1	53	57.6

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 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	1	1.4					1	100.0
C16 Stomach	4	5.8					4	100.0
C18 Colon	2	2.9	1	50.0			1	50.0
C19-C20 Rectum	1	1.4					1	100.0
C21 Anus/canal	1	1.4					1	100.0
C23-C24 Bile	1	1.4					1	100.0
C25 Pancreas	4	5.8					4	100.0
C33-C34 Lung	9	13.0			1	11.1	8	88.9
C43 Malign. melanoma	3	4.3					3	100.0
C44 Skin others	5	7.2	3	60.0	1	20.0	1	20.0
C48 Peritoneal	2	2.9					2	100.0
C50 Breast	11	15.9	8	72.7	1	9.1	2	18.2
C51 Vulva	1	1.4					1	100.0
C53 Cervix uteri	2	2.9	2	100.0				
C54 Corpus uteri	1	1.4	1	100.0				
C55,C57 Fem. genitals un	1	1.4	1	100.0				
C56 Ovary	2	2.9	1	50.0			1	50.0
C64 Kidney	1	1.4			1	100.0		
C69 Eye melanoma	1	1.4					1	100.0
C76-C79 CUP	2	2.9					2	100.0
C81 Hodgkin lymphoma	3	4.3	3	100.0				
C82-C85 NHL	8	11.6	2	25.0			6	75.0
C91-C96 Leukaemia	3	4.3	1	33.3			2	66.7
All further malignancies	69	100.0	23	33.3	4	5.8	42	60.9

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

Table 15

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

Age at death Years	Males 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								
40-44		2		0.1	0.29	0.3		
45-49		1		0.0	0.06	0.1		
50-54	4	3	0.2	0.25	0.1	0.11	0.2	0.1
55-59	6	2	0.3	0.26	0.1	0.08	0.2	0.1
60-64	2	1	0.1	0.06	0.1	0.03	0.0	0.0
65-69	9	6	0.6	0.29	0.4	0.20	0.1	0.1
70-74	8	10	0.6	0.24	0.6	0.24	0.1	0.2
75-79	16	10	1.4	0.55	0.7	0.26	0.2	0.1
80-84	7	12	1.1	0.54	1.2	0.52	0.1	0.2
85+	13	20	3.0	0.59	2.1	1.82	0.2	0.2
All ages	65	67					0.1	0.1
Mortality								
Raw			0.2	0.27	0.2	0.25		
WS			0.1	0.20	0.1	0.15		
ES			0.1	0.23	0.1	0.17		
BRD-S			0.2	0.26	0.1	0.20		
PYLL-70								
per 100,000			0.7		0.7			
ES			0.6		0.6			
AYLL-70			8.7		11.8			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males 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								
40-44		1			0.0	0.14		0.1
45-49								
50-54		3			0.1	0.13		0.1
55-59	3	1	0.2	0.14	0.1	0.04	0.1	0.0
60-64								
65-69	4	3	0.3	0.18	0.2	0.13	0.1	0.1
70-74	7	5	0.5	0.26	0.3	0.15	0.1	0.1
75-79	6	6	0.5	0.25	0.4	0.16	0.1	0.1
80-84	6	8	0.9	0.50	0.8	0.44	0.1	0.1
85+	8	16	1.9	0.44	1.7	1.78	0.1	0.2
All ages	34	43					0.1	0.1
Mortality								
Raw			0.1	0.17	0.1	0.19		
WS			0.0	0.11	0.0	0.10		
ES			0.1	0.14	0.1	0.12		
BRD-S			0.1	0.17	0.1	0.14		
PYLL-70								
per 100,000			0.2		0.4			
ES			0.2		0.3			
AYLL-70			6.8		12.5			

* See corresponding tables with multiple malignancies.

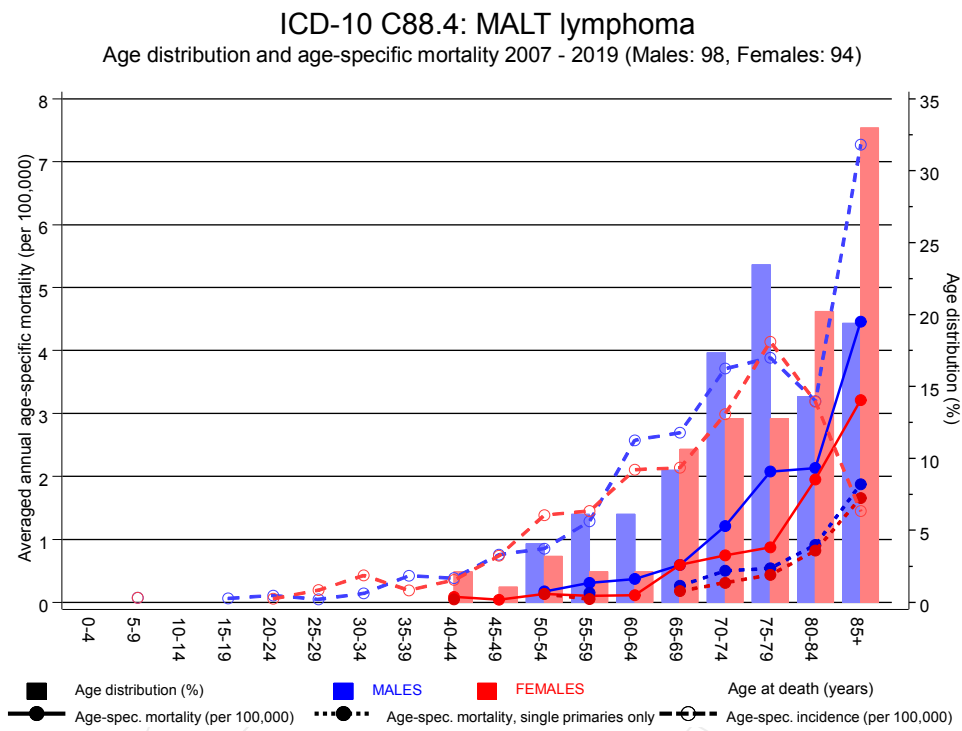
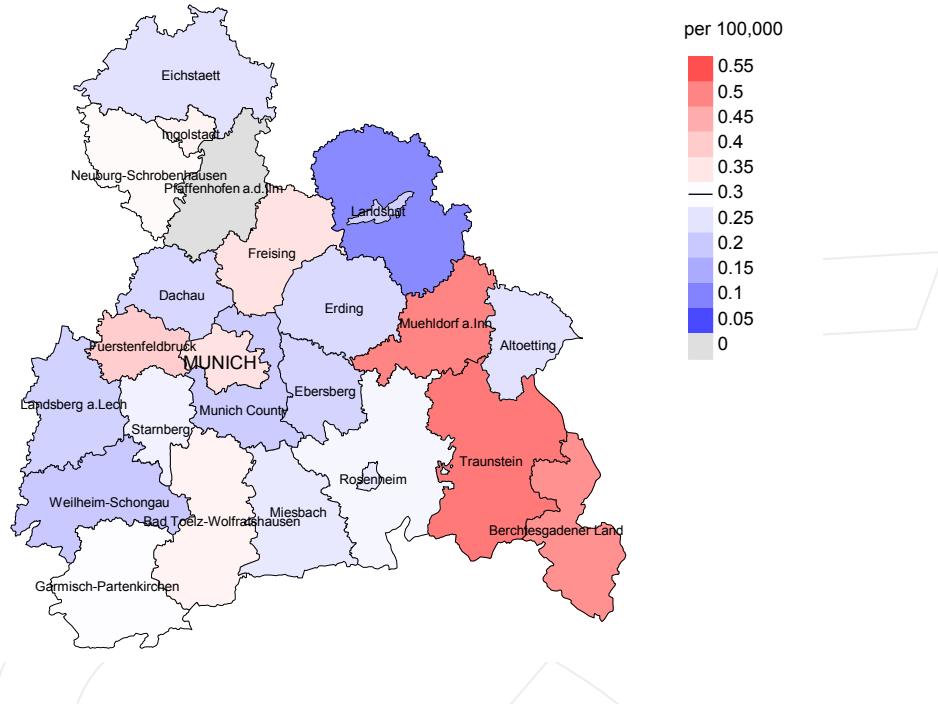


Figure 17. Distribution of age at death (bars; males: mean=69.1 yrs, median=70.6 yrs; females: mean=71.1 yrs, median=72.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

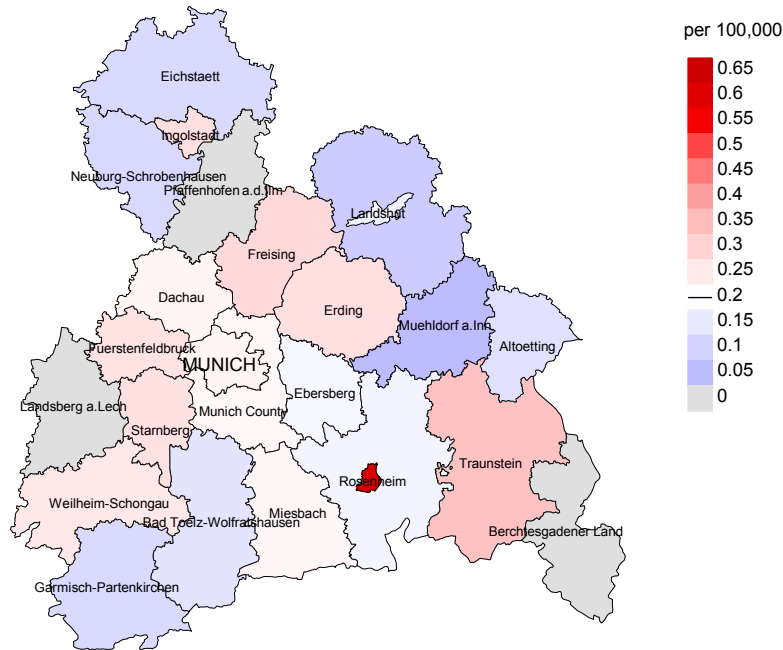
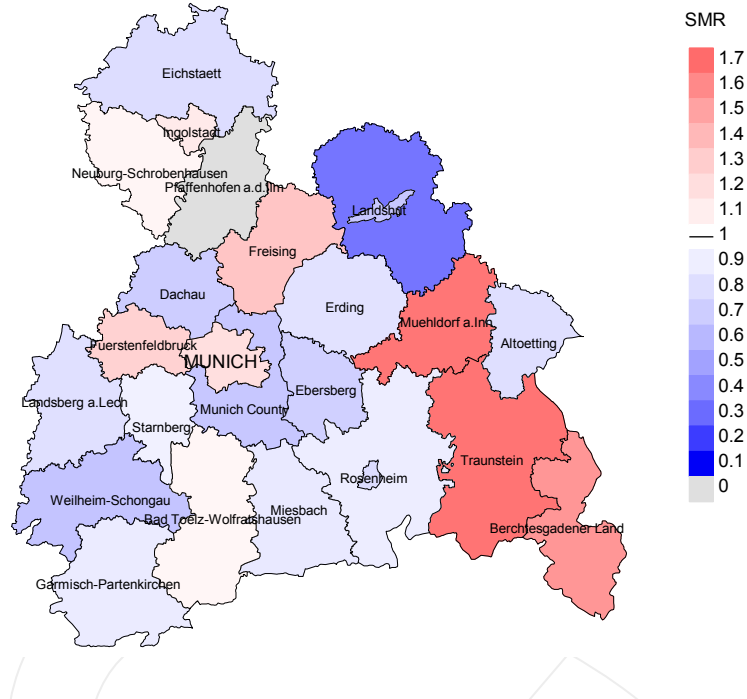


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.3/100,000 WS N=98, females 0.2/100,000 WS N=94).

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 2 women died from MALT lymphoma. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.9/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

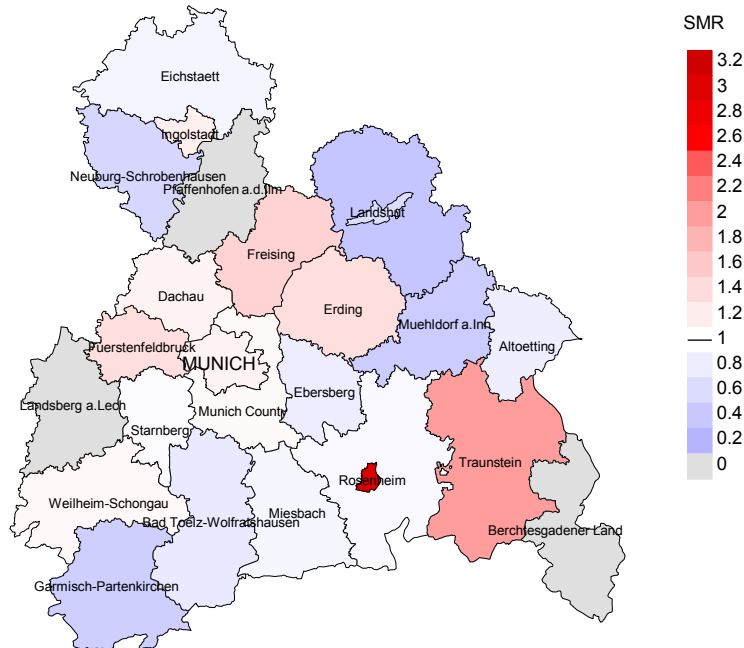


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=98, females N=94).

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 2 women died from MALT lymphoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.80. Though, the value of this parameter may vary with an underlying probability of 99% between 0.04 and 3.73, 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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