Munich Cancer Registry

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ICD-10 C85: Non-Hodgkin lymphoma NOS

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	2,748
Diseases	2,749
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC85__E-ICD-10-C85-Non-Hodgkin-lymphoma-NOS-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
C85.-	Other and unspecified types of non-Hodgkin lymphoma
C85.1	B-cell lymphoma, unspecified
C85.2	Mediastinal (thymic) large B-cell lymphoma
C85.7	Other specified types of non-Hodgkin lymphoma
C85.9	Non-Hodgkin 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	180	39	21.7	11.1	9.5	81.1	98.9	
1999	165	54	32.7	9.0	9.5	83.6	98.2	
2000	102	42	41.2	9.6	9.3	83.3	96.1	
2001	97	44	45.4	9.6	9.1	87.6	97.9	
2002	197	105	53.3	10.8	9.0	91.4	98.5	#
2003	141	67	47.5	11.1	9.2	89.4	99.3	
2004	147	58	39.5	11.5	9.4	83.7	98.0	
2005	124	59	47.6	11.4	9.1	87.1	100.0	
2006	127	50	39.4	11.7	9.0	83.5	99.2	
2007	155	65	41.9	12.1	9.1	78.7	94.8	#
2008	120	40	33.3	12.5	9.2	80.8	100.0	
2009	128	43	33.6	12.7	8.9	74.2	99.2	
2010	118	49	41.5	13.0	8.9	75.4	98.3	
2011	133	54	40.6	13.3	8.3	82.0	98.5	
2012	122	37	30.3	13.6	7.4	66.4	97.5	
2013	104	38	36.5	14.3	7.4	71.2	100.0	
2014	113	33	29.2	14.7	7.1	69.0	97.3	
2015	132	41	31.1	15.1	5.6	62.1	97.0	
2016	112	46	41.1	15.3	4.8	65.2	98.2	
2017	87	33	37.9	15.4	4.8	59.8	98.9	
2018	65	21	32.3	15.4	4.3	60.0	96.9	
2019	45	3	6.7	15.6	2.5	46.7	97.8	
2020	35			15.7	2.9	34.3	100.0	##
1998-2020	2749	1021	37.1	15.7	9.5	77.2	98.3	

2,749 cases diagnosed 1998-2020 are related to a total of 2,748 patients. Currently, in 691 (25.1 %) of these 2,748 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 529 / 118 / 44 (19.3 % / 4.3 % / 1.6 %) 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 65 cases has been diagnosed, of which 15.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.3 % 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	96	53.3	19	19.8	10.4	9.9	83.3	99.0
1999	87	52.7	25	28.7	9.8	10.0	88.5	98.9
2000	54	52.9	23	42.6	10.1	9.9	81.5	96.3
2001	55	56.7	20	36.4	10.3	9.5	87.3	96.4
2002	98	49.7	50	51.0	12.3	9.4	91.8	98.0 #
2003	68	48.2	36	52.9	12.2	9.5	92.6	98.5
2004	74	50.3	28	37.8	13.2	9.7	82.4	97.3
2005	53	42.7	24	45.3	13.2	9.4	86.8	100.0
2006	76	59.8	27	35.5	13.6	9.4	84.2	100.0
2007	92	59.4	38	41.3	13.4	9.6	76.1	93.5 #
2008	69	57.5	21	30.4	13.9	9.5	79.7	100.0
2009	74	57.8	25	33.8	14.2	9.1	73.0	98.6
2010	59	50.0	25	42.4	14.7	8.7	79.7	100.0
2011	60	45.1	22	36.7	14.7	7.9	83.3	100.0
2012	61	50.0	20	32.8	15.1	6.9	70.5	100.0
2013	64	61.5	24	37.5	16.1	6.3	71.9	100.0
2014	54	47.8	16	29.6	16.5	6.6	64.8	96.3
2015	84	63.6	22	26.2	17.1	4.6	59.5	97.6
2016	68	60.7	26	38.2	17.4	2.8	61.8	97.1
2017	45	51.7	13	28.9	17.4	1.7	53.3	100.0
2018	34	52.3	10	29.4	17.5	1.4	64.7	100.0
2019	21	46.7	2	9.5	17.6	0.0	33.3	95.2
2020	16	45.7			17.6	0.0	31.3	100.0 ##
1998-2020	1462	53.2	516	35.3	17.6	9.9	76.8	98.3

1,462 cases diagnosed 1998-2020 are related to a total of 1,462 patients. Currently, in 399 (27.3 %) of these 1,462 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 301 / 73 / 25 (20.6 % / 5.0 % / 1.7 %) 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 34 cases has been diagnosed, of which 17.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 1.4 % 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 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	84	46.7	20	23.8	11.9	9.1	78.6	98.8	
1999	78	47.3	29	37.2	8.0	8.9	78.2	97.4	
2000	48	47.1	19	39.6	9.0	8.7	85.4	95.8	
2001	42	43.3	24	57.1	8.7	8.7	88.1	100.0	
2002	99	50.3	55	55.6	9.1	8.6	90.9	99.0	#
2003	73	51.8	31	42.5	9.9	8.9	86.3	100.0	
2004	73	49.7	30	41.1	9.7	8.9	84.9	98.6	
2005	71	57.3	35	49.3	9.7	8.7	87.3	100.0	
2006	51	40.2	23	45.1	9.7	8.5	82.4	98.0	
2007	63	40.6	27	42.9	10.7	8.4	82.5	96.8	#
2008	51	42.5	19	37.3	10.9	8.9	82.4	100.0	
2009	54	42.2	18	33.3	11.1	8.6	75.9	100.0	
2010	59	50.0	24	40.7	11.1	9.2	71.2	96.6	
2011	73	54.9	32	43.8	11.9	8.8	80.8	97.3	
2012	61	50.0	17	27.9	11.9	8.0	62.3	95.1	
2013	40	38.5	14	35.0	12.3	8.6	70.0	100.0	
2014	59	52.2	17	28.8	12.7	7.7	72.9	98.3	
2015	48	36.4	19	39.6	12.7	6.9	66.7	95.8	
2016	44	39.3	20	45.5	12.8	7.1	70.5	100.0	
2017	42	48.3	20	47.6	13.0	8.0	66.7	97.6	
2018	31	47.7	11	35.5	13.1	7.0	54.8	93.5	
2019	24	53.3	1	4.2	13.3	4.8	58.3	100.0	
2020	19	54.3			13.5	5.6	36.8	100.0	##
1998-2020	1287	46.8	505	39.2	13.5	9.1	77.5	98.2	

1,287 cases diagnosed 1998-2020 are related to a total of 1,286 patients. Currently, in 292 (22.7 %) of these 1,286 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 228 / 45 / 19 (17.7 % / 3.5 % / 1.5 %) 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 31 cases has been diagnosed, of which 13.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.0 % 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 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	96	84	8.7	7.1	5.6	3.6	8.1	4.9	10.8	6.3
1999	87	78	7.8	6.6	4.8	3.0	7.1	4.4	9.6	5.6
2000	54	48	4.7	4.0	2.8	1.7	4.2	2.6	5.5	3.5
2001	55	42	4.7	3.5	3.0	1.2	4.2	1.9	5.4	2.7
2002	98	99	5.3	5.1	3.0	2.0	4.4	3.0	5.9	4.0
2003	68	73	3.6	3.7	2.0	1.5	3.1	2.2	4.2	3.0
2004	74	73	3.9	3.7	2.1	1.6	3.3	2.2	4.3	2.9
2005	53	71	2.8	3.6	1.5	1.4	2.3	2.0	3.2	2.8
2006	76	51	4.0	2.5	2.1	1.1	3.1	1.6	4.3	2.1
2007	92	63	4.2	2.7	2.1	1.2	3.2	1.7	4.3	2.1
2008	69	51	3.1	2.2	1.6	0.8	2.4	1.2	3.2	1.6
2009	74	54	3.3	2.3	1.7	0.9	2.4	1.3	3.1	1.7
2010	59	59	2.6	2.5	1.2	1.0	1.9	1.4	2.6	1.9
2011	60	73	2.7	3.1	1.3	1.1	1.9	1.7	2.7	2.2
2012	61	61	2.7	2.6	1.1	1.1	1.8	1.6	2.6	2.0
2013	64	40	2.8	1.7	1.5	0.6	2.0	0.9	2.7	1.2
2014	54	59	2.3	2.5	1.0	0.9	1.6	1.4	2.1	1.8
2015	84	48	3.5	2.0	1.7	0.7	2.5	1.1	3.2	1.4
2016	68	44	2.8	1.8	1.2	0.6	1.8	0.9	2.5	1.3
2017	45	42	1.9	1.7	0.8	0.6	1.2	0.9	1.6	1.2
2018	34	31	1.4	1.2	0.6	0.4	1.0	0.7	1.2	0.9
2019	21	24	0.9	1.0	0.4	0.4	0.6	0.6	0.7	0.7
2020	16	19	0.7	0.8	0.3	0.3	0.4	0.5	0.6	0.6
1998–2020	1462	1287	3.1	2.7	1.6	1.0	2.3	1.5	3.1	2.0

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	180	67.1	18.0	5.9	100	43.6	55.9	71.0	80.6	86.6
1999	165	67.9	16.3	2.8	93.9	46.3	57.5	71.8	80.7	87.3
2000	102	68.5	14.9	15.7	91.6	48.6	58.0	71.9	80.4	85.2
2001	97	68.6	16.7	24.8	98.7	41.2	61.6	71.6	79.9	87.2
2002	197	71.4	15.8	1.2	95.5	51.5	64.3	74.3	81.1	89.3
2003	141	72.5	14.1	16.7	96.3	58.0	65.1	74.9	82.2	87.4
2004	147	70.8	16.0	8.4	97.8	49.1	63.4	73.1	82.9	87.0
2005	124	71.7	15.2	12.9	92.9	49.5	64.6	75.6	82.5	86.8
2006	127	70.5	15.5	1.9	98.5	55.8	65.2	72.5	79.3	86.1
2007	155	69.5	17.0	19.4	98.2	43.3	63.2	73.1	81.3	87.6
2008	120	72.0	13.7	25.2	95.6	55.5	63.8	73.9	82.3	87.8
2009	128	69.9	15.2	11.7	92.9	43.8	65.4	72.9	81.0	85.6
2010	118	73.1	15.5	14.3	94.9	52.8	67.7	76.9	84.4	88.9
2011	133	73.0	17.1	11.4	97.7	50.9	67.6	77.3	85.1	90.0
2012	122	72.7	14.8	11.5	96.0	55.5	65.5	76.3	81.8	87.4
2013	104	70.9	18.5	7.0	96.3	47.0	67.7	75.7	83.4	87.7
2014	113	73.5	15.1	15.7	94.7	53.1	67.8	75.6	83.5	89.8
2015	132	71.2	15.8	17.7	97.8	47.3	65.1	75.7	81.8	87.3
2016	112	72.8	16.2	24.3	96.4	45.9	67.0	77.2	83.7	87.7
2017	87	74.3	16.4	24.5	104	50.2	68.1	77.9	84.7	91.4
2018	65	73.4	13.4	36.6	93.7	57.8	66.8	76.2	83.6	87.9
2019	45	69.6	17.3	30.1	98.0	40.8	63.4	74.7	82.5	85.2
2020	35	69.7	17.3	23.8	90.1	48.9	52.3	77.8	81.3	87.2
1998-2020	2749	71.0	16.0	1.2	104	48.4	63.5	74.5	82.3	87.6

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	96	65.3	17.6	8.3	91.4	40.4	54.9	68.8	78.7	85.8
1999	87	65.8	17.1	2.8	93.8	44.9	57.1	67.1	78.8	84.4
2000	54	66.7	13.4	31.9	90.0	49.8	58.0	67.4	77.9	82.1
2001	55	63.1	16.3	24.8	88.2	38.0	51.9	66.9	75.9	78.4
2002	98	68.3	15.9	1.2	95.5	46.8	61.4	71.1	80.1	82.9
2003	68	71.3	13.4	19.8	94.3	58.5	63.0	73.1	81.8	87.7
2004	74	69.1	15.3	31.8	97.8	48.6	58.9	71.6	80.3	85.5
2005	53	70.0	17.5	12.9	90.9	44.9	61.1	76.1	82.9	85.6
2006	76	70.7	16.1	1.9	98.5	54.1	65.1	75.3	79.4	86.0
2007	92	69.2	15.5	19.4	92.7	48.1	64.0	71.8	79.4	85.2
2008	69	69.6	13.7	25.2	93.1	50.6	62.7	72.2	78.8	84.6
2009	74	67.9	15.8	11.7	92.9	43.6	62.5	71.2	77.7	84.4
2010	59	73.1	15.1	28.2	92.2	52.0	62.8	76.7	85.2	89.1
2011	60	71.7	16.5	11.4	94.6	52.0	66.5	76.7	83.3	85.9
2012	61	73.6	13.7	11.5	96.0	55.7	68.6	77.2	81.9	85.9
2013	64	68.5	21.2	7.0	96.3	23.6	61.7	74.8	82.0	87.4
2014	54	73.3	14.9	22.3	93.4	53.1	65.0	76.9	83.2	90.4
2015	84	69.6	16.8	17.7	91.6	44.2	61.4	74.8	81.8	87.3
2016	68	71.5	15.8	29.1	93.5	40.9	65.9	75.9	82.8	87.0
2017	45	73.4	16.4	24.5	97.4	50.2	65.6	77.1	83.6	93.3
2018	34	71.8	15.1	36.6	90.3	40.8	66.0	76.2	83.4	87.4
2019	21	70.8	15.8	34.0	98.0	53.3	64.0	71.2	82.3	83.7
2020	16	69.0	14.8	48.9	90.1	50.4	52.0	73.8	81.0	85.0
1998-2020	1462	69.4	16.1	1.2	98.5	47.0	61.6	73.0	80.6	86.4

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	84	69.2	18.4	5.9	100	45.9	60.5	74.4	82.7	88.3
1999	78	70.2	15.3	25.0	93.9	46.4	57.5	72.9	82.8	87.9
2000	48	70.6	16.3	15.7	91.6	48.1	58.3	75.4	82.9	85.7
2001	42	75.9	14.6	39.6	98.7	49.6	71.3	79.5	86.6	88.5
2002	99	74.5	15.0	6.6	94.6	55.0	67.7	77.4	85.8	90.4
2003	73	73.6	14.8	16.7	96.3	51.4	66.9	78.1	83.4	87.4
2004	73	72.6	16.7	8.4	94.1	53.7	67.7	77.2	83.1	87.0
2005	71	73.0	13.3	26.4	92.9	56.1	66.2	74.9	82.5	86.8
2006	51	70.3	14.6	21.8	95.8	61.1	65.9	70.9	79.3	86.1
2007	63	69.9	19.0	22.6	98.2	39.9	59.5	73.7	83.1	89.5
2008	51	75.1	13.2	38.6	95.6	57.5	67.2	78.8	85.4	88.4
2009	54	72.6	14.0	37.1	91.6	49.3	67.3	74.9	83.1	85.9
2010	59	73.2	16.1	14.3	94.9	54.8	69.4	77.1	83.7	88.6
2011	73	74.1	17.6	25.2	97.7	47.8	69.7	77.6	86.5	91.0
2012	61	71.9	15.8	19.9	95.5	55.5	63.4	74.5	81.7	88.6
2013	40	74.7	12.6	41.3	91.8	52.2	70.0	75.9	84.9	87.9
2014	59	73.7	15.5	15.7	94.7	51.4	68.4	75.5	85.0	89.6
2015	48	74.0	13.6	26.1	97.8	53.6	68.5	77.0	81.7	88.4
2016	44	74.8	16.7	24.3	96.4	45.9	69.8	79.9	85.1	90.4
2017	42	75.2	16.6	25.0	104	52.9	70.3	80.1	85.8	88.7
2018	31	75.3	11.3	54.0	93.7	58.7	67.5	75.8	85.3	88.1
2019	24	68.5	18.8	30.1	91.9	36.8	55.6	75.7	82.7	85.2
2020	19	70.3	19.5	23.8	89.9	32.0	61.9	78.4	85.4	88.0
1998-2020	1287	72.7	15.7	5.9	104	50.2	66.8	76.2	84.0	88.5

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	1	0.1	0.1			0.0
10-14	5	0.3	0.4	4	0.5	0.6	1	0.1	0.1
15-19	6	0.4	0.8	4	0.5	1.1	2	0.3	0.4
20-24	13	0.9	1.7	7	0.9	2.0	6	0.9	1.3
25-29	14	1.0	2.7	7	0.9	2.9	7	1.0	2.4
30-34	18	1.2	3.9	10	1.2	4.1	8	1.2	3.6
35-39	35	2.4	6.3	18	2.2	6.4	17	2.5	6.1
40-44	27	1.8	8.1	16	2.0	8.4	11	1.6	7.8
45-49	31	2.1	10.2	17	2.1	10.5	14	2.1	9.9
50-54	53	3.6	13.8	37	4.6	15.1	16	2.4	12.3
55-59	68	4.6	18.4	39	4.9	20.0	29	4.3	16.6
60-64	77	5.2	23.7	47	5.9	25.8	30	4.5	21.1
65-69	160	10.9	34.6	90	11.2	37.1	70	10.5	31.6
70-74	202	13.8	48.3	111	13.9	50.9	91	13.6	45.2
75-79	236	16.1	64.4	146	18.2	69.2	90	13.5	58.7
80-84	243	16.5	80.9	126	15.7	84.9	117	17.5	76.2
85+	280	19.1	100.0	121	15.1	100.0	159	23.8	100.0
All ages	1469	100.0		801	100.0		668	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=264 %	Females DCO rate n=239 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0– 4								
5– 9	1		0.1				0.9	
10–14	4	1	0.3	0.1			2.9	0.8
15–19	4	2	0.2	0.1	25.0		1.3	0.8
20–24	7	6	0.3	0.3			1.1	1.2
25–29	7	7	0.3	0.3			0.7	0.6
30–34	10	8	0.4	0.4	10.0		0.8	0.4
35–39	18	17	0.8	0.7		5.9	1.0	0.5
40–44	16	11	0.6	0.5	6.3		0.6	0.2
45–49	17	14	0.6	0.5	5.9		0.3	0.1
50–54	37	16	1.5	0.6	16.2	12.5	0.4	0.1
55–59	39	29	1.8	1.3	10.3	6.9	0.3	0.2
60–64	47	30	2.7	1.6	21.3	13.3	0.3	0.2
65–69	90	70	5.5	3.9	28.9	20.0	0.4	0.4
70–74	111	91	7.4	5.3	34.2	22.0	0.4	0.5
75–79	146	90	12.1	6.0	32.2	37.8	0.6	0.5
80–84	126	117	17.4	11.0	38.9	51.3	0.8	0.8
85+	121	159	25.9	15.3	66.1	64.2	1.2	1.0
All ages	801	668			33.0	35.8	0.5	0.4
Incidence								
Raw			2.5	2.0				
WS			1.2	0.8				
ES			1.7	1.1				
BRD-S			2.3	1.4				

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).

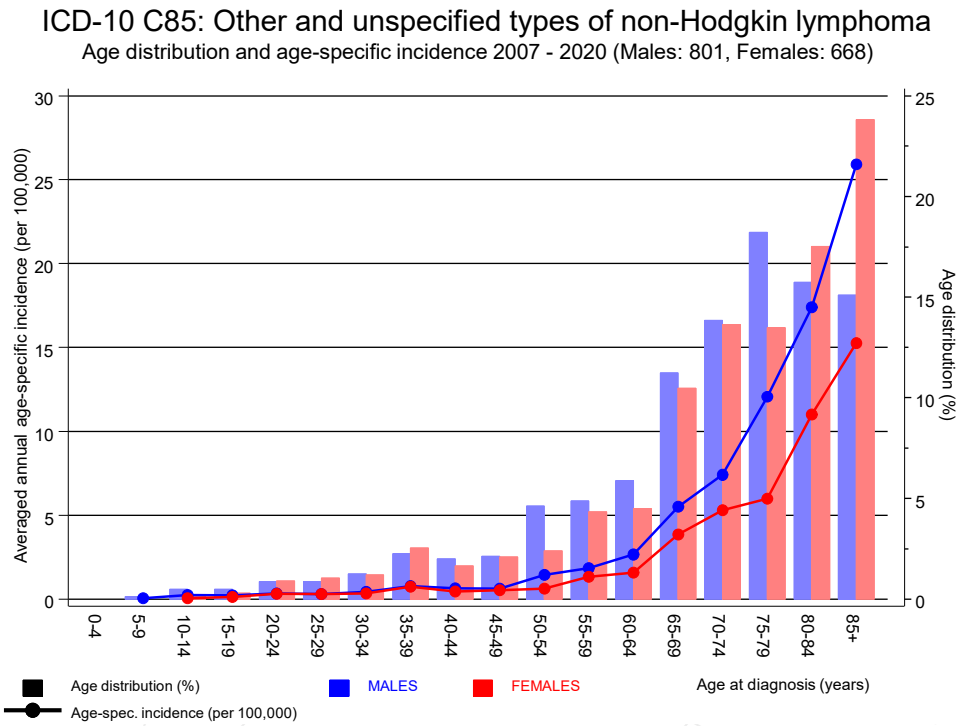


Figure 6. Age distribution (males: mean=70.8 yrs, median=74.7 yrs; females: mean=73.2 yrs, median=76.5 yrs) and age-specific incidence.

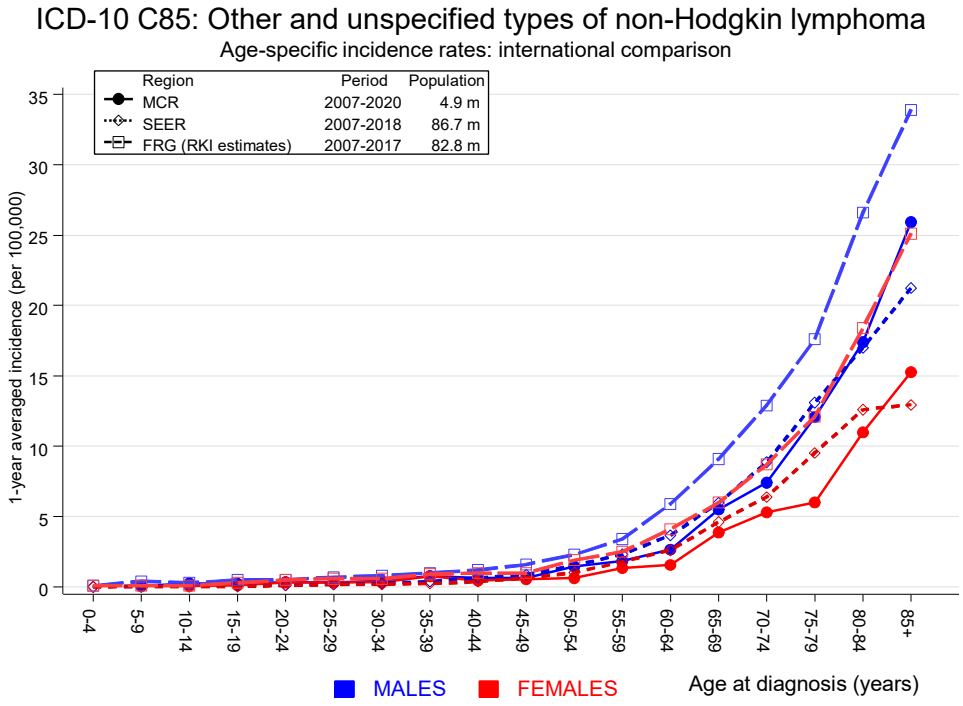


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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	1	0.4	2.4	0.1	13.6		1.8	
C07–C08	Salivary gland	1	0.1	8.0	0.2	44.6		2.6	
C09–C10	Oropharynx	2	0.5	4.1	0.5	15.0		4.5	
C15	Oesophagus	1	1.0	1.0	0.0	5.8		0.1	
C16	Stomach	5	2.2	2.3	0.8	5.4		8.5	20.0
C17	Small intestine	1	0.3	3.4	0.1	18.9		2.1	
C18	Colon	8	5.2	1.5	0.7	3.0		8.3	12.5
C19–C20	Rectum	6	2.7	2.2	0.8	4.8		9.9	
C21	Anus/canal	1	0.1	8.5	0.2	47.5		2.6	
C22	Liver	3	1.5	2.1	0.4	6.0		4.6	
C23–C24	Bile	1	0.5	1.8	0.0	10.1		1.3	
C25	Pancreas	6	2.0	3.0	1.1	6.5	#	11.9	
C32	Larynx	1	0.5	2.0	0.1	11.2		1.5	
C33–C34	Lung	23	6.0	3.8	2.4	5.7	#	50.7	13.0
C38,C45	Mesothelioma	2	0.3	5.7	0.7	20.7		4.9	
C43	Malign. melanoma	10	2.3	4.4	2.1	8.2	#	23.1	
C46,C49	Soft tissue	2	0.3	6.5	0.8	23.6		5.1	
C50	Breast	1	0.1	7.3	0.2	40.5		2.6	
C60	Penis	1	0.1	7.7	0.2	42.7		2.6	
C61	Prostate	35	14.7	2.4	1.7	3.3	#	60.6	2.9
C64	Kidney	10	1.7	5.7	2.7	10.5	#	24.6	
C66	Ureter	2	0.1	14.6	1.8	52.9	#	5.6	
C67	Bladder	9	2.5	3.6	1.6	6.8	#	19.3	
C68	Urethra	2	0.0	43.7	5.3	158.0	#	5.8	
C69	Eye lymphoma	1	0.0	86.2	2.2	480.1	#	3.0	
C70–C72	CNS cancer	4	0.7	6.1	1.7	15.6	#	10.0	25.0
C76–C79	CUP	2	0.9	2.2	0.3	8.0		3.3	
C81	Hodgkin lymphoma	4	0.1	32.9	9.0	84.2	#	11.6	25.0
C82–C85	NHL	6	2.2	2.7	1.0	5.9		11.3	16.7
C90	Mult. myeloma	1	0.7	1.5	0.0	8.1		0.9	
C91–C96	Leukaemia	9	0.8	11.1	5.1	21.0	#	24.4	22.2
Not observed		0	1.7	0.0	0.0	2.2		-5.0	
All further malignancies		161	52.4	3.1	2.6	3.6	#	324.2	6.8

Patients	1019
Median age at next malignancy (years)	72.6
Person-years	3349
Mean observation time (years)	3.3
Median observation time (years)	1.3

The occurrence of further specified malignancy is statistically significant.

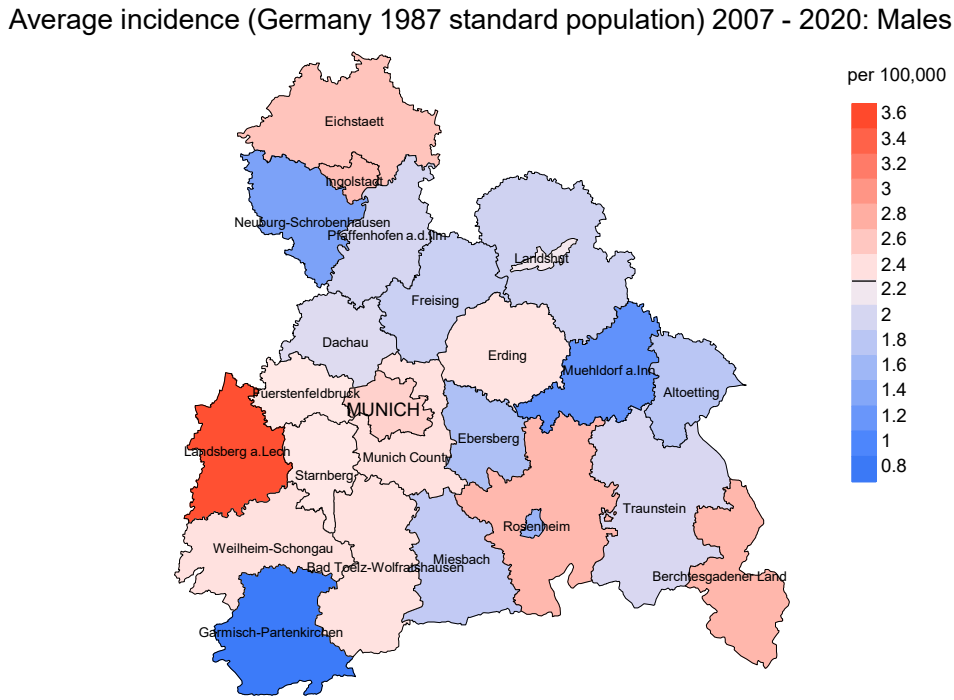
Table 7b

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	1	0.2	4.8	0.1	26.6		2.4	
C09–C10	Oropharynx	1	0.1	7.0	0.2	39.0		2.6	
C15	Oesophagus	1	0.2	4.3	0.1	24.1		2.3	
C16	Stomach	2	1.3	1.5	0.2	5.4		2.0	50.0
C18	Colon	8	3.7	2.1	0.9	4.2		13.0	
C19–C20	Rectum	3	1.5	2.0	0.4	5.8		4.5	
C21	Anus/canal	1	0.2	5.1	0.1	28.4		2.5	
C22	Liver	1	0.5	2.2	0.1	12.2		1.7	
C23–C24	Bile	5	0.5	9.1	3.0	21.3	#	13.6	
C25	Pancreas	4	1.7	2.3	0.6	6.0		7.0	
C33–C34	Lung	7	2.7	2.6	1.1	5.4	#	13.2	
C43	Malign. melanoma	5	1.3	3.7	1.2	8.7	#	11.2	
C46,C49	Soft tissue	2	0.2	9.5	1.2	34.3	#	5.5	
C50	Breast	31	10.8	2.9	2.0	4.1	#	61.7	6.5
C53	Cervix uteri	2	0.5	4.3	0.5	15.6		4.7	50.0
C54	Corpus uteri	8	2.0	4.0	1.7	7.9	#	18.3	
C56	Ovary	2	1.5	1.4	0.2	4.9		1.6	
C69	Eye lymphoma	1	0.0	86.3	2.2	481.0	#	3.0	
C69	Eye melanoma	1	0.0	20.8	0.5	116.0		2.9	
C70–C72	CNS cancer	1	0.5	2.1	0.1	11.5		1.6	100.0
C73	Thyroid	6	0.6	10.7	3.9	23.4	#	16.6	16.7
C76–C79	CUP	1	0.7	1.5	0.0	8.1		1.0	
C82–C85	NHL	5	1.5	3.4	1.1	8.0	#	10.8	
C90	Mult. myeloma	2	0.5	4.4	0.5	15.8		4.7	
C91–C96	Leukaemia	6	0.5	11.1	4.1	24.2	#	16.7	33.3
Not observed		0	3.4	0.0	0.0	1.1		−10.4	
All further malignancies		107	36.7	2.9	2.4	3.5	#	214.7	7.5

Patients	852
Median age at next malignancy (years)	73.7
Person-years	3273
Mean observation time (years)	3.8
Median observation time (years)	1.7

The occurrence of further specified malignancy is statistically significant.



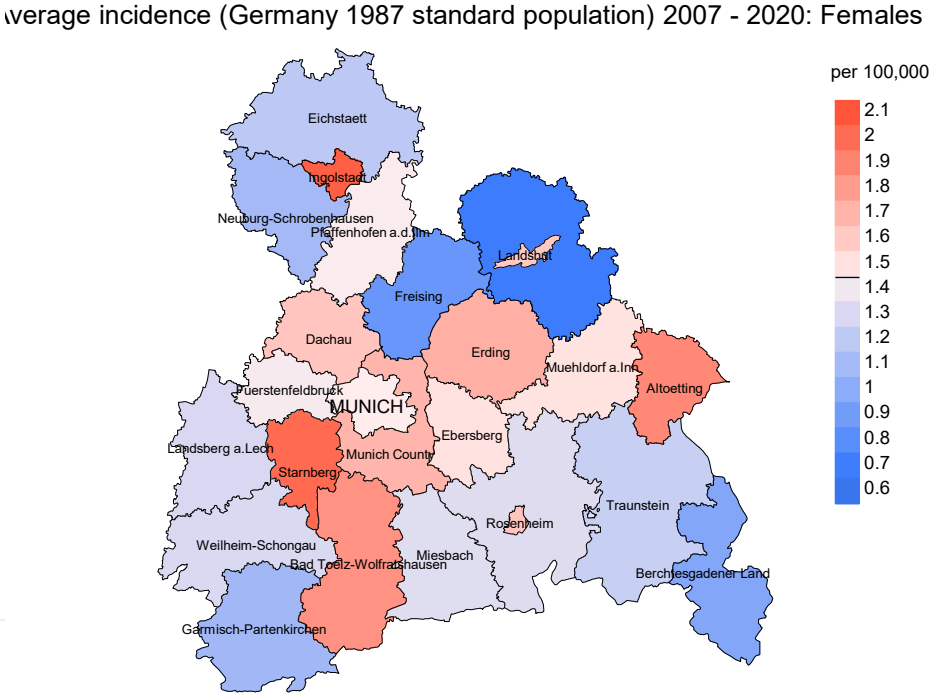
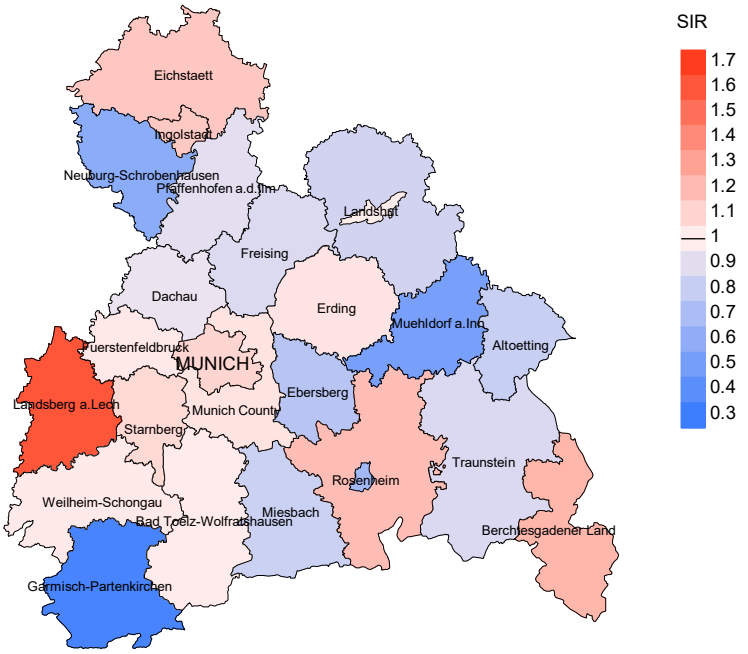


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.3/100,000 WS N=801, females 1.4/100,000 WS N=668).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 18 women were identified with newly diagnosed non-Hodgkin lymphoma NOS. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.7 and 2.7/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

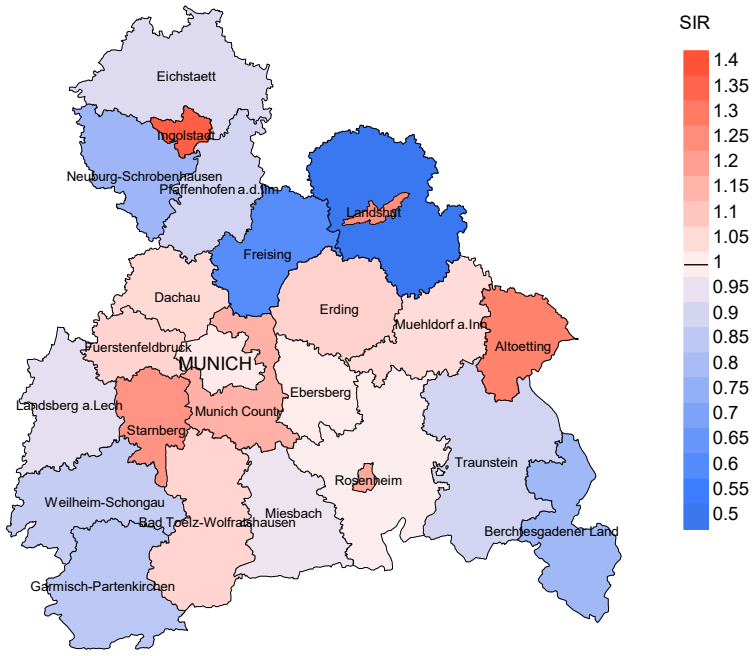


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=801, females N=668).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2020 a total of 18 women were identified with newly diagnosed non-Hodgkin lymphoma NOS. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.01. Though, the value of this parameter may vary with an underlying probability of 99% between 0.50 and 1.80, 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	180	98.9	21.7	146	81.1	94.5
1999	165	98.2	32.7	138	83.6	97.1
2000	102	96.1	41.2	85	83.3	98.8
2001	97	97.9	45.4	85	87.6	96.5
2002	197	98.5	53.3	180	91.4	96.1
2003	141	99.3	47.5	126	89.4	98.4
2004	147	98.0	39.5	123	83.7	99.2
2005	124	100.0	47.6	108	87.1	99.1
2006	127	99.2	39.4	106	83.5	98.1
2007	155	94.8	41.9	122	78.7	98.4
2008	120	100.0	33.3	97	80.8	96.9
2009	128	99.2	33.6	95	74.2	95.8
2010	118	98.3	41.5	89	75.4	96.6
2011	133	98.5	40.6	109	82.0	97.2
2012	122	97.5	30.3	81	66.4	96.3
2013	104	100.0	36.5	74	71.2	97.3
2014	113	97.3	29.2	78	69.0	92.3
2015	132	97.0	31.1	82	62.1	95.1
2016	112	98.2	41.1	73	65.2	95.9
2017	87	98.9	37.9	52	59.8	100.0
2018	65	96.9	32.3	39	60.0	89.7
2019	45	97.8	6.7	21	46.7	66.7
2020	35	100.0		12	34.3	91.7
1998-2020	2749	98.3	37.1	2121	77.2	96.5

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 4.94 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	180	123	97.6	59	32.8
1999	165	159	94.3	71	43.0
2000	102	104	97.1	47	46.1
2001	97	109	97.2	44	45.4
2002	197	174	96.6	110	55.8
2003	141	154	97.4	79	56.0
2004	147	131	98.5	69	46.9
2005	124	135	97.0	67	54.0
2006	127	133	100.0	58	45.7
2007	155	122	95.1	78	50.3
2008	120	102	100.0	60	50.0
2009	128	112	98.2	60	46.9
2010	118	98	99.0	58	49.2
2011	133	102	98.0	67	50.4
2012	122	121	97.5	51	41.8
2013	104	88	97.7	43	41.3
2014	113	100	97.0	45	39.8
2015	132	93	97.8	53	40.2
2016	112	83	98.8	55	49.1
2017	87	92	100.0	43	49.4
2018	65	74	81.1	28	43.1
2019	45	47	53.2	16	35.6
2020	35	57	82.5	6	17.1
1998–2020	2749	2513	95.9	1267	46.1

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 %
1998	123	61.8	38.2	90.8
1999	159	69.8	30.2	93.3
2000	104	81.7	18.3	95.0
2001	109	78.0	22.0	91.5
2002	174	77.0	23.0	90.5
2003	154	76.6	23.4	92.7
2004	131	86.3	13.7	92.2
2005	135	72.6	27.4	91.6
2006	133	75.9	24.1	88.0
2007	122	75.4	24.6	88.8
2008	102	79.4	20.6	87.3
2009	112	72.3	27.7	76.4
2010	98	76.5	23.5	81.4
2011	102	70.6	29.4	87.0
2012	121	73.6	26.4	82.2
2013	88	70.5	29.5	82.6
2014	100	66.0	34.0	85.6
2015	93	67.7	32.3	82.4
2016	83	69.9	30.1	81.7
2017	92	64.1	35.9	85.9
2018	74	55.4	44.6	70.0
2019	47	34.0	66.0	72.0
2020	57	50.9	49.1	78.7
1998-2020	2513	71.8	28.2	87.1

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	62	74.6	72.7	80.2	74.0
1999	96	73.4	67.4	77.9	72.8
2000	56	71.1	66.7	76.6	69.9
2001	49	70.4	69.5	81.2	69.9
2002	85	72.2	69.2	77.8	70.0
2003	75	72.2	68.0	73.6	71.4
2004	68	75.2	74.8	75.5	75.2
2005	66	77.8	78.2	76.7	78.2
2006	71	75.5	75.0	79.2	75.0
2007	58	73.1	72.3	77.6	72.3
2008	56	75.1	73.9	82.8	73.8
2009	60	76.0	75.4	79.8	75.4
2010	58	77.8	77.2	80.7	75.6
2011	49	77.6	77.2	79.5	76.6
2012	63	77.9	78.1	77.7	78.0
2013	42	79.1	78.3	79.3	78.9
2014	54	78.0	75.1	82.5	78.0
2015	43	82.1	81.3	85.7	81.8
2016	46	80.1	78.4	84.4	79.3
2017	50	83.2	81.7	87.6	81.6
2018	43	80.6	81.7	77.8	81.5
2019	22	84.1	77.8	85.9	75.8
2020	26	79.8	80.7	78.4	79.8
1998-2020	1298	76.5	75.2	79.7	75.7

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	61	82.5	81.2	84.6	82.6
1999	63	79.1	76.3	83.7	79.2
2000	48	76.6	75.9	83.9	75.9
2001	60	80.0	79.2	84.1	79.7
2002	89	78.9	77.7	82.8	78.9
2003	79	77.7	73.8	85.2	75.8
2004	63	80.3	79.9	83.2	80.3
2005	69	80.4	75.3	84.5	80.0
2006	62	79.3	78.6	83.3	78.1
2007	64	80.8	79.7	83.7	80.2
2008	46	81.5	81.2	84.8	81.3
2009	52	84.4	83.0	86.8	83.1
2010	40	81.2	80.7	83.7	81.2
2011	53	80.4	79.4	84.4	79.9
2012	58	79.1	77.3	85.2	77.7
2013	46	80.6	79.5	81.4	79.0
2014	46	77.7	75.7	83.2	76.7
2015	50	81.7	81.4	81.9	81.2
2016	37	81.3	83.2	80.7	81.3
2017	42	81.0	81.0	81.0	81.0
2018	31	83.4	83.6	81.1	83.4
2019	25	82.2	81.4	82.7	75.8
2020	31	81.1	78.4	86.6	80.7
1998–2020	1215	80.4	79.1	84.0	80.0

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	37	3.3	0.39	2.0	0.36	3.1	0.38	4.5	0.41
1999	70	6.3	0.80	3.8	0.79	5.6	0.80	7.2	0.75
2000	44	3.9	0.81	2.1	0.78	3.3	0.80	4.5	0.82
2001	38	3.3	0.69	2.0	0.66	2.9	0.69	3.7	0.69
2002	69	3.7	0.70	2.1	0.69	3.2	0.72	4.2	0.71
2003	62	3.3	0.91	1.9	0.95	2.7	0.89	3.6	0.88
2004	57	3.0	0.77	1.6	0.74	2.5	0.77	3.5	0.81
2005	53	2.8	1.00	1.3	0.86	2.2	0.96	3.3	1.03
2006	55	2.9	0.72	1.4	0.68	2.3	0.73	3.1	0.72
2007	43	1.9	0.47	1.0	0.47	1.5	0.48	2.0	0.47
2008	45	2.0	0.65	0.9	0.60	1.5	0.63	2.1	0.65
2009	39	1.7	0.53	0.8	0.46	1.2	0.50	1.8	0.57
2010	47	2.1	0.80	0.9	0.73	1.4	0.74	2.0	0.78
2011	36	1.6	0.60	0.7	0.58	1.1	0.59	1.6	0.60
2012	42	1.9	0.69	0.8	0.69	1.3	0.70	1.8	0.70
2013	28	1.2	0.44	0.5	0.33	0.8	0.40	1.1	0.42
2014	39	1.7	0.72	0.7	0.73	1.1	0.72	1.5	0.71
2015	27	1.1	0.32	0.4	0.21	0.7	0.26	1.0	0.31
2016	31	1.3	0.46	0.5	0.40	0.8	0.44	1.1	0.45
2017	32	1.3	0.71	0.4	0.50	0.7	0.60	1.1	0.68
2018	23	0.9	0.68	0.3	0.41	0.5	0.50	0.8	0.64
2019	8	0.3	0.38	0.1	0.36	0.2	0.38	0.3	0.38
2020	13	0.5	0.81	0.2	0.64	0.3	0.70	0.5	0.81
1998-2020	938	2.0	0.64	0.9	0.59	1.5	0.63	2.0	0.64

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	39	3.3	0.46	1.3	0.36	2.0	0.40	2.7	0.44
1999	41	3.5	0.53	1.4	0.45	2.1	0.49	3.0	0.54
2000	41	3.4	0.85	1.4	0.78	2.1	0.83	2.7	0.78
2001	47	3.9	1.12	1.4	1.15	2.2	1.16	3.1	1.16
2002	65	3.3	0.66	1.2	0.63	1.9	0.64	2.6	0.67
2003	56	2.8	0.77	1.3	0.88	1.9	0.85	2.4	0.81
2004	56	2.8	0.77	0.9	0.60	1.5	0.68	2.2	0.75
2005	45	2.3	0.63	0.8	0.60	1.3	0.63	1.7	0.62
2006	46	2.3	0.90	0.8	0.70	1.2	0.78	1.7	0.85
2007	49	2.1	0.78	0.8	0.62	1.2	0.69	1.6	0.73
2008	36	1.6	0.71	0.4	0.57	0.7	0.60	1.1	0.70
2009	42	1.8	0.78	0.5	0.56	0.8	0.63	1.2	0.68
2010	28	1.2	0.47	0.3	0.32	0.5	0.38	0.8	0.43
2011	36	1.5	0.49	0.5	0.44	0.8	0.47	1.0	0.48
2012	47	2.0	0.77	0.6	0.58	1.0	0.63	1.4	0.69
2013	34	1.4	0.85	0.5	0.80	0.7	0.83	1.0	0.88
2014	27	1.1	0.46	0.3	0.36	0.6	0.41	0.7	0.42
2015	36	1.5	0.75	0.4	0.51	0.6	0.58	1.0	0.67
2016	27	1.1	0.61	0.3	0.52	0.5	0.57	0.7	0.55
2017	27	1.1	0.64	0.3	0.50	0.5	0.56	0.7	0.59
2018	18	0.7	0.58	0.1	0.30	0.3	0.37	0.4	0.47
2019	8	0.3	0.33	0.1	0.19	0.1	0.23	0.2	0.29
2020	16	0.6	0.84	0.2	0.59	0.3	0.67	0.5	0.77
1998-2020	867	1.8	0.67	0.6	0.56	0.9	0.61	1.3	0.64

Table 12

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

Age at death	Cases			Males			Females		
Years	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14	1	0.1	0.1	1	0.2	0.2			0.0
15-19	2	0.2	0.3	2	0.4	0.7			0.0
20-24	1	0.1	0.5	1	0.2	0.9			0.0
25-29	3	0.3	0.8	1	0.2	1.1	2	0.5	0.5
30-34	3	0.3	1.1	1	0.2	1.3	2	0.5	0.9
35-39	4	0.5	1.6	3	0.7	2.0	1	0.2	1.2
40-44	5	0.6	2.1	3	0.7	2.6	2	0.5	1.6
45-49	11	1.2	3.4	7	1.5	4.2	4	0.9	2.6
50-54	19	2.1	5.5	13	2.9	7.1	6	1.4	3.9
55-59	23	2.6	8.1	13	2.9	9.9	10	2.3	6.3
60-64	40	4.5	12.7	22	4.9	14.8	18	4.2	10.4
65-69	82	9.3	21.9	47	10.4	25.2	35	8.1	18.6
70-74	122	13.8	35.7	64	14.1	39.3	58	13.5	32.0
75-79	168	19.0	54.8	100	22.1	61.4	68	15.8	47.8
80-84	174	19.7	74.4	80	17.7	79.0	94	21.8	69.6
85+	226	25.6	100.0	95	21.0	100.0	131	30.4	100.0
All ages	884	100.0		453	100.0		431	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.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14	1		0.1	0.25			3.6	
15-19	2		0.1	0.50			4.2	
20-24	1		0.0	0.14			1.4	
25-29	1	2	0.0	0.14	0.1	0.29	1.1	2.0
30-34	1	2	0.0	0.10	0.1	0.25	0.7	1.1
35-39	3	1	0.1	0.17	0.0	0.06	1.1	0.2
40-44	3	2	0.1	0.19	0.1	0.18	0.5	0.2
45-49	7	4	0.3	0.41	0.2	0.29	0.5	0.2
50-54	13	6	0.5	0.35	0.2	0.38	0.5	0.2
55-59	13	10	0.6	0.33	0.5	0.34	0.3	0.3
60-64	22	18	1.2	0.47	0.9	0.60	0.3	0.4
65-69	47	35	2.9	0.52	1.9	0.50	0.5	0.5
70-74	64	58	4.3	0.58	3.4	0.64	0.5	0.7
75-79	100	68	8.3	0.68	4.5	0.76	0.8	0.7
80-84	80	94	11.0	0.63	8.8	0.80	0.8	1.0
85+	95	131	20.3	0.79	12.6	0.82	1.0	1.1
All ages	453	431					0.7	0.7
Mortality								
Raw			1.4	0.57	1.3	0.65		
WS			0.6	0.49	0.4	0.50		
ES			0.9	0.53	0.6	0.55		
BRD-S			1.3	0.56	0.9	0.60		
PYLL-70								
per 100,000			4.5		2.8			
ES			4.2		2.3			
AYLL-70			11.4		9.9			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	1	0.3	1	100.0				
C03–C06	Oral cavity	2	0.5	2	100.0				
C07–C08	Salivary gland	2	0.5			1	50.0	1	50.0
C09–C10	Oropharynx	3	0.8	2	66.7			1	33.3
C15	Oesophagus	6	1.5	1	16.7	1	16.7	4	66.7
C16	Stomach	16	4.0	3	18.8	3	18.8	10	62.5
C17	Small intestine	2	0.5					2	100.0
C18	Colon	22	5.5	9	40.9	4	18.2	9	40.9
C19–C20	Rectum	20	5.0	10	50.0			10	50.0
C21	Anus/canal	1	0.3	1	100.0				
C22	Liver	7	1.8			1	14.3	6	85.7
C23–C24	Bile	1	0.3					1	100.0
C25	Pancreas	10	2.5			1	10.0	9	90.0
C30–C31	Sinuses	2	0.5	2	100.0				
C32	Larynx	7	1.8	4	57.1	1	14.3	2	28.6
C33–C34	Lung	47	11.8	4	8.5	5	10.6	38	80.9
C38,C45	Mesothelioma	5	1.3	1	20.0	2	40.0	2	40.0
C40–C41	Bone	1	0.3	1	100.0				
C43	Malign. melanoma	22	5.5	6	27.3	2	9.1	14	63.6
C44	Skin others	49	12.3	14	28.6	4	8.2	31	63.3
C46,C49	Soft tissue	6	1.5	5	83.3	1	16.7		
C48	Peritoneal	1	0.3					1	100.0
C50	Breast	1	0.3					1	100.0
C60	Penis	2	0.5	1	50.0	1	50.0		
C61	Prostate	69	17.3	41	59.4	9	13.0	19	27.5
C64	Kidney	8	2.0	4	50.0	1	12.5	3	37.5
C66	Ureter	3	0.8	1	33.3			2	66.7
C67	Bladder	15	3.8	7	46.7	2	13.3	6	40.0
C68	Urethra	1	0.3			1	100.0		
C70–C72	CNS cancer	5	1.3			1	20.0	4	80.0
C73	Thyroid	3	0.8	2	66.7			1	33.3
C76–C79	CUP	10	2.5	3	30.0	1	10.0	6	60.0
C81	Hodgkin lymphoma	9	2.3	2	22.2	1	11.1	6	66.7
C82–C85	NHL	21	5.3	3	14.3			18	85.7
C90	Mult. myeloma	3	0.8	1	33.3	1	33.3	1	33.3
C91–C96	Leukaemia	15	3.8	2	13.3	7	46.7	6	40.0
All further malignancies		398	100.0	133	33.4	51	12.8	214	53.8

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 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	1	0.3					1	100.0
C03–C06	Oral cavity	3	1.0	1	33.3	1	33.3	1	33.3
C07–C08	Salivary gland	1	0.3	1	100.0				
C15	Oesophagus	2	0.7					2	100.0
C16	Stomach	14	4.7	3	21.4	2	14.3	9	64.3
C18	Colon	27	9.2	9	33.3	4	14.8	14	51.9
C19–C20	Rectum	5	1.7	2	40.0	1	20.0	2	40.0
C21	Anus/canal	4	1.4	1	25.0			3	75.0
C22	Liver	3	1.0			2	66.7	1	33.3
C23–C24	Bile	6	2.0			1	16.7	5	83.3
C25	Pancreas	5	1.7					5	100.0
C26	GI cancer	1	0.3					1	100.0
C30–C31	Sinuses	2	0.7	1	50.0			1	50.0
C32	Larynx	1	0.3					1	100.0
C33–C34	Lung	18	6.1	2	11.1	2	11.1	14	77.8
C43	Malign. melanoma	8	2.7	1	12.5	1	12.5	6	75.0
C44	Skin others	18	6.1	8	44.4			10	55.6
C46,C49	Soft tissue	4	1.4			2	50.0	2	50.0
C48	Peritoneal	1	0.3			1	100.0		
C50	Breast	77	26.1	38	49.4	6	7.8	33	42.9
C51	Vulva	2	0.7	1	50.0			1	50.0
C53	Cervix uteri	6	2.0	3	50.0			3	50.0
C54	Corpus uteri	8	2.7	4	50.0			4	50.0
C55,C57	Fem. genitals un	1	0.3	1	100.0				
C56	Ovary	8	2.7			1	12.5	7	87.5
C64	Kidney	4	1.4					4	100.0
C65	Renal pelvis	1	0.3	1	100.0				
C66	Ureter	1	0.3					1	100.0
C67	Bladder	5	1.7	3	60.0			2	40.0
C70–C72	CNS cancer	8	2.7	3	37.5	1	12.5	4	50.0
C73	Thyroid	2	0.7	1	50.0			1	50.0
C76–C79	CUP	6	2.0					6	100.0
C81	Hodgkin lymphoma	6	2.0	4	66.7	1	16.7	1	16.7
C82–C85	NHL	17	5.8					17	100.0
C90	Mult. myeloma	7	2.4	3	42.9	1	14.3	3	42.9
C91–C96	Leukaemia	12	4.1			2	16.7	10	83.3
All further malignancies		295	100.0	91	30.8	29	9.8	175	59.3

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	1		0.1	0.25			3.6	
15-19	2		0.1	0.50			4.3	
20-24								
25-29	1	1	0.0	0.14	0.0	0.20	1.2	1.1
30-34	1	1	0.0	0.10	0.0	0.13	0.7	0.6
35-39	3	1	0.1	0.18	0.0	0.06	1.2	0.3
40-44	2	2	0.1	0.13	0.1	0.22	0.4	0.3
45-49	7	3	0.3	0.44	0.1	0.27	0.5	0.2
50-54	11	4	0.4	0.34	0.2	0.29	0.5	0.2
55-59	11	9	0.5	0.31	0.4	0.33	0.3	0.3
60-64	20	16	1.1	0.53	0.8	0.70	0.4	0.4
65-69	37	26	2.3	0.49	1.4	0.43	0.5	0.5
70-74	50	48	3.3	0.63	2.8	0.73	0.6	0.7
75-79	86	57	7.1	0.82	3.8	0.83	0.9	0.8
80-84	57	77	7.9	0.62	7.2	0.81	0.8	1.1
85+	68	110	14.6	0.79	10.6	0.86	1.0	1.2
All ages	357	355					0.7	0.7
Mortality								
Raw			1.1	0.57	1.1	0.65		
WS			0.5	0.48	0.3	0.48		
ES			0.7	0.53	0.5	0.54		
BRD-S			1.0	0.57	0.7	0.60		
PYLL-70								
per 100,000			3.9		2.1			
ES			3.6		1.8			
AYLL-70			11.7		9.6			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14	1		0.1	0.25			3.6	
15-19	2		0.1	0.50			4.3	
20-24								
25-29	1	1	0.0	0.14	0.0	0.20	1.2	1.1
30-34	1	1	0.0	0.11	0.0	0.13	0.7	0.6
35-39	3	1	0.1	0.18	0.0	0.06	1.2	0.3
40-44	2	2	0.1	0.13	0.1	0.22	0.4	0.3
45-49	5	3	0.2	0.33	0.1	0.27	0.4	0.2
50-54	10	2	0.4	0.32	0.1	0.14	0.4	0.1
55-59	8	6	0.4	0.26	0.3	0.29	0.2	0.2
60-64	16	7	0.9	0.48	0.4	0.35	0.3	0.2
65-69	27	18	1.7	0.46	1.0	0.37	0.4	0.3
70-74	30	34	2.0	0.42	2.0	0.57	0.3	0.5
75-79	62	41	5.1	0.64	2.7	0.65	0.7	0.6
80-84	46	63	6.4	0.55	5.9	0.68	0.7	0.9
85+	54	92	11.6	0.66	8.8	0.74	0.9	1.0
All ages	268	271					0.5	0.6
Mortality								
Raw			0.8	0.47	0.8	0.54		
WS			0.3	0.40	0.2	0.38		
ES			0.5	0.44	0.4	0.44		
BRD-S			0.8	0.47	0.5	0.49		
PYLL-70								
per 100,000			3.4		1.6			
ES			3.2		1.3			
AYLL-70			12.8		10.8			

* See corresponding tables with multiple malignancies.

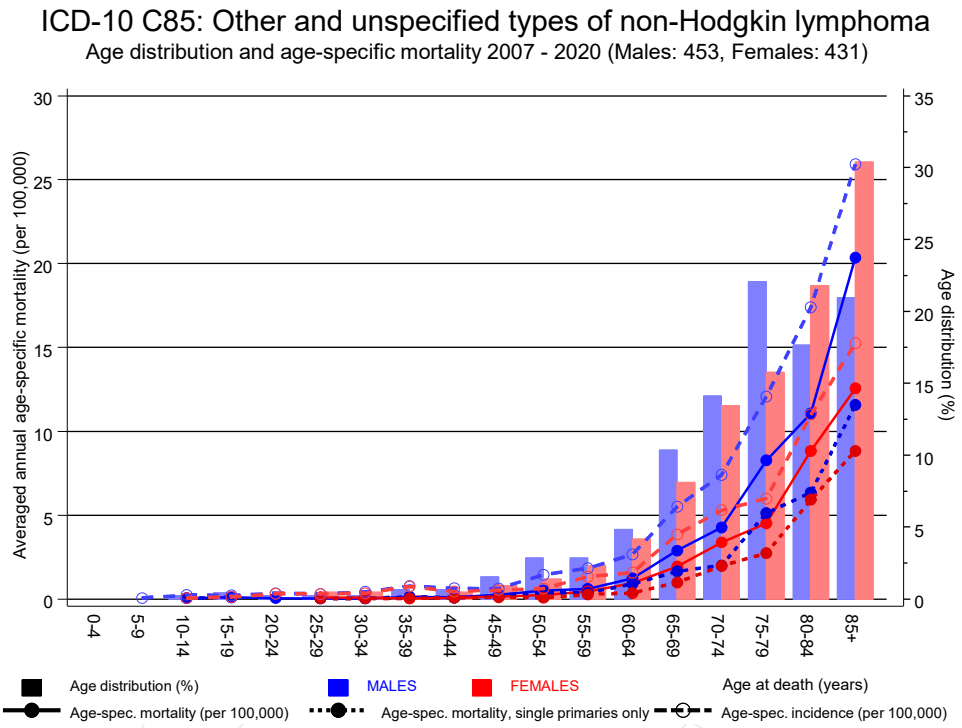
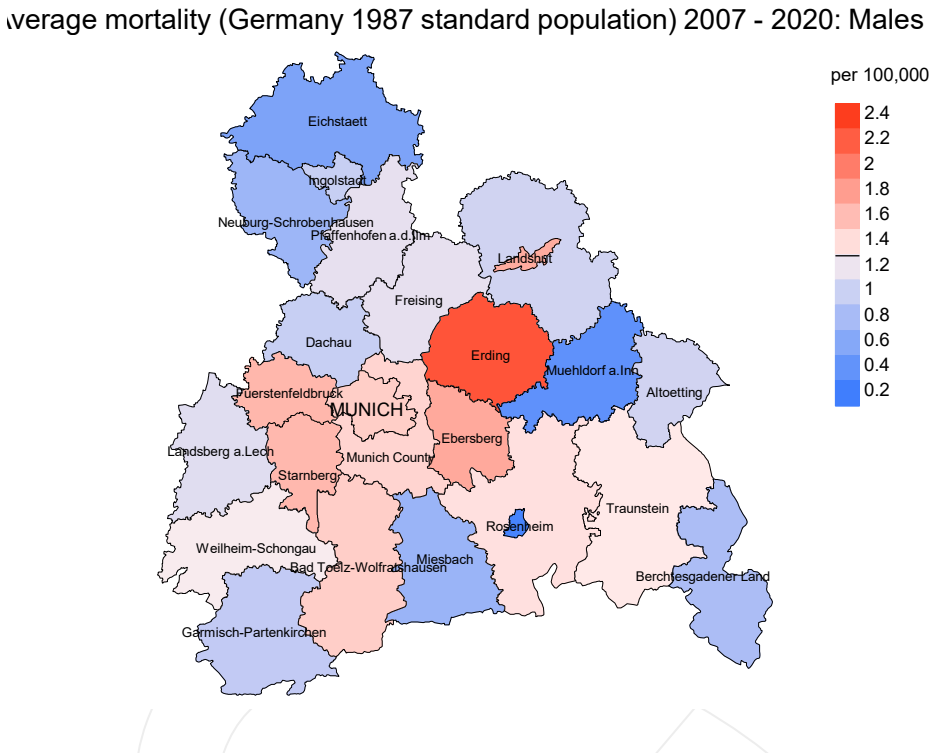


Figure 17. Distribution of age at death (bars; males: mean=69.3 yrs, median=72.8 yrs; females: mean=71.5 yrs, median=74.1 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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



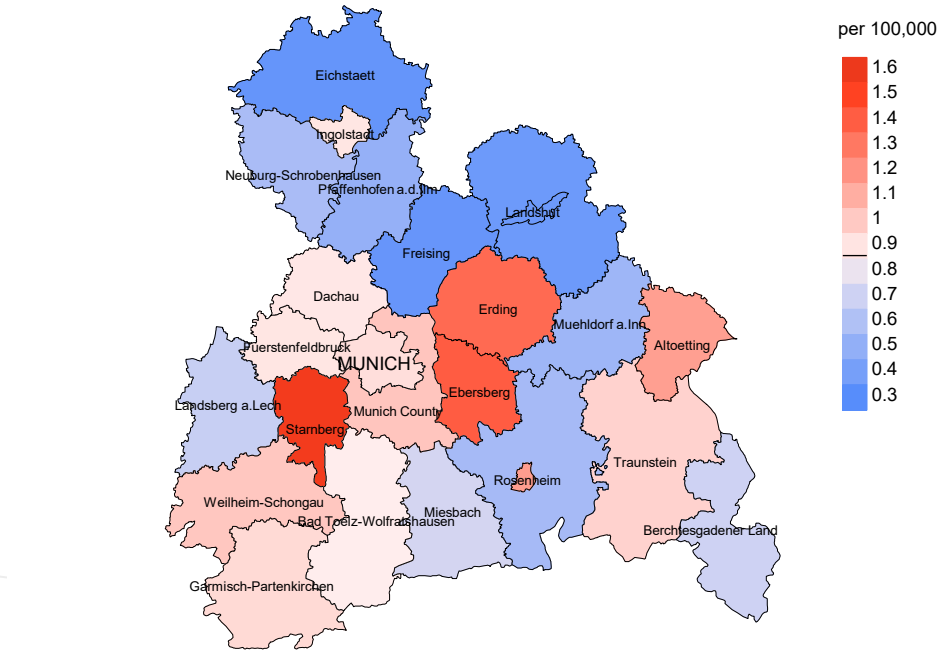
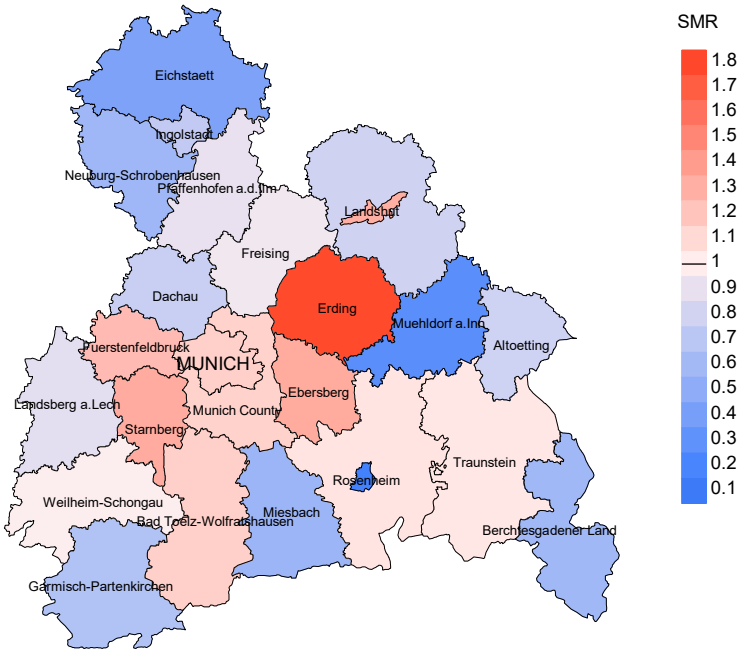


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.3/100,000 WS N=453, females 0.9/100,000 WS N=431).

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

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

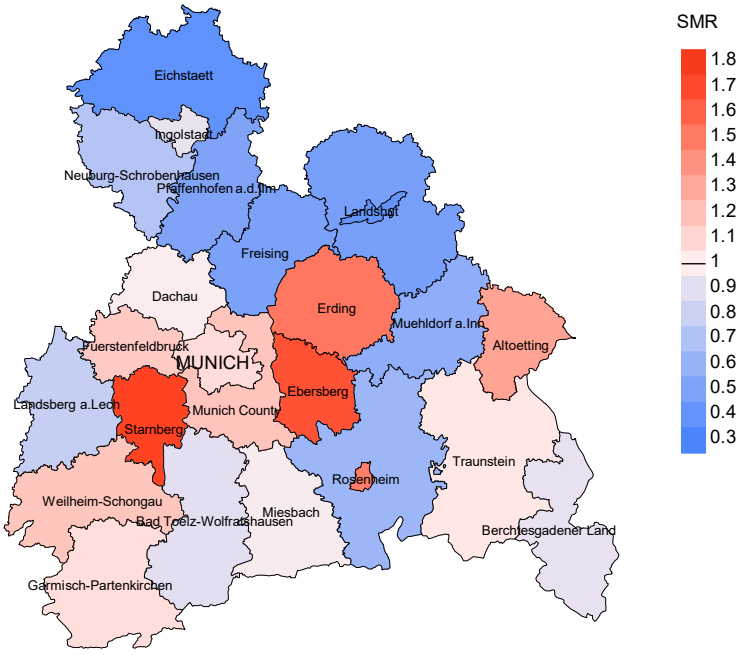


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=453, females N=431).

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 19 women died from non-Hodgkin lymphoma NOS. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.67. Though, the value of this parameter may vary with an underlying probability of 99% between 0.85 and 2.94, 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

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