Munich Cancer Registry

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ICD-10 C82-C85: NHL

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	9,416
Diseases	9,498
Creation date	04/13/2016
Export date	12/23/2015
Population	4.64 m

Munich Cancer Registry at Munich Cancer Center
Marchioninistr. 15
Munich, 81377
Germany

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

http://www.tumorregister-muenchen.de/en/facts/base/bC8285E-ICD-10-C82-C85-NHL-incidence-and-mortality.pdf

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 4.64 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, April 2016

[#] 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 2.51 million to 3.96 in 2002, and to 4.52 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
C82.-	Follicular lymphoma
C82.0	Follicular lymphoma grade I
C82.1	Follicular lymphoma grade II
C82.2	Follicular lymphoma grade III, unspecified
C82.3	Follicular lymphoma grade IIIa
C82.4	Follicular lymphoma grade IIIb
C82.5	Diffuse follicle centre lymphoma
C82.6	Cutaneous follicle centre lymphoma
C82.7	Other types of follicular lymphoma
C82.9	Follicular lymphoma, unspecified
C83.-	Non-follicular lymphoma
C83.0	Small cell B-cell lymphoma
C83.1	Mantle cell lymphoma
C83.3	Diffuse large B-cell lymphoma
C83.5	Lymphoblastic (diffuse) lymphoma
C83.7	Burkitt lymphoma
C83.8	Other non-follicular lymphoma
C83.9	Non-follicular (diffuse) lymphoma, unspecified
C84.-	Mature T/NK-cell lymphomas
C84.0	Mycosis fungoides
C84.1	Sézary disease
C84.4	Peripheral T-cell lymphoma, not elsewhere classified
C84.5	Other mature T/NK-cell lymphomas
C84.6	Anaplastic large cell lymphoma, ALK-positive
C84.7	Anaplastic large cell lymphoma, ALK-negative
C84.8	Cutaneous T-cell lymphoma, unspecified
C84.9	Mature T/NK-cell lymphoma, unspecified
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

... if not existing ...

Morphology codes (ICD-O-3 2011) used for specifying cancer site

Code	Description
9823/3	B-cell lymphocytic leukemia/small lymphocytic lymphoma

INCIDENCE

Table 1

All patients by year of diagnosis,
proportions of DCO, multiple primaries, deaths, and active follow-up
(incl. DCO)

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	336	38	11.3	22.6	72.9	98.5
1999	348	54	15.5	19.5	72.7	98.6
2000	303	41	13.5	25.7	70.6	98.0
2001	351	41	11.7	25.6	65.2	96.9
2002	577	101	17.5	24.6	67.6	96.9 #
2003	577	68	11.8	25.3	59.8	96.5
2004	610	60	9.8	25.1	55.9	95.7
2005	565	58	10.3	25.5	53.8	91.5
2006	629	47	7.5	26.7	53.9	92.5
2007	713	67	9.4	27.3	55.0	79.2 #
2008	685	47	6.9	25.0	50.7	70.7
2009	747	44	5.9	26.9	43.6	70.7
2010	722	50	6.9	26.3	43.9	74.5
2011	732	61	8.3	25.1	44.5	72.5
2012	668	40	6.0	28.7	38.6	76.9
2013	651	41	6.3	29.6	35.8	99.4
2014	284	37	13.0	34.9	27.8	97.5 ##
1998-2014	9498	895	9.4	26.2	52.0	86.3

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 found in the respective headings.

Table 1a

All patients
by year of diagnosis and gender
(incl. DCO)

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	336	176	160	52.4
1999	348	177	171	50.9
2000	303	158	145	52.1
2001	351	169	182	48.1
2002	577	300	277	52.0
2003	577	279	298	48.4
2004	610	313	297	51.3
2005	565	286	279	50.6
2006	629	355	274	56.4
2007	713	373	340	52.3
2008	685	375	310	54.7
2009	747	402	345	53.8
2010	722	387	335	53.6
2011	732	403	329	55.1
2012	668	348	320	52.1
2013	651	341	310	52.4
2014	284	152	132	53.5
1998–2014	9498	4994	4504	52.6

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 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	176	160	15.9	13.6	10.4	6.9	14.6	9.7	18.8	11.9
1999	177	171	15.8	14.4	10.3	7.2	14.3	10.1	18.2	12.5
2000	158	145	13.9	12.1	8.8	5.9	12.4	8.6	15.9	10.8
2001	169	182	14.6	15.0	9.2	7.4	13.0	10.5	16.2	12.8
2002	300	277	16.1	14.1	9.6	6.5	13.7	9.4	17.1	11.8
2003	279	298	14.9	15.1	9.2	7.8	12.8	10.8	15.9	13.0
2004	313	297	16.6	15.0	10.2	7.1	14.2	10.0	17.0	12.6
2005	286	279	15.1	14.0	9.1	6.8	12.6	9.5	15.7	11.7
2006	355	274	18.5	13.6	10.6	6.5	15.0	9.2	18.8	11.4
2007	373	340	16.8	14.7	9.4	7.0	13.5	9.9	17.2	12.2
2008	375	310	16.8	13.4	9.3	6.1	13.0	8.6	16.4	10.8
2009	402	345	18.0	14.8	10.1	6.8	13.9	9.6	17.3	12.0
2010	387	335	17.2	14.3	9.3	6.8	13.2	9.4	16.5	11.7
2011	403	329	17.6	13.9	9.5	6.3	13.3	8.8	16.6	10.9
2012	348	320	15.2	13.6	7.6	6.2	11.1	8.8	14.5	10.8
2013	341	310	14.9	13.1	7.8	6.1	11.1	8.6	14.4	10.6
2014	152	132	6.7	5.6	3.5	2.4	5.1	3.6	6.3	4.6
1998–2014	4994	4504	15.6	13.5	8.9	6.4	12.5	9.0	15.7	11.1

The computation of the incidence measures includes all primaries, 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	336	64.9	16.9	5.9	100	41.9	55.2	67.4	77.6	83.8
1999	348	64.8	17.1	2.8	93.9	41.5	56.2	66.1	78.0	84.4
2000	303	65.1	15.8	11.0	91.6	44.2	56.5	67.6	76.9	82.5
2001	351	64.5	16.3	4.9	98.7	40.7	55.1	66.3	76.9	84.0
2002	577	66.8	15.3	1.2	95.5	45.2	58.8	68.8	78.3	84.7
2003	577	64.9	15.8	1.7	96.3	42.6	55.9	66.8	76.5	82.8
2004	610	65.9	15.0	8.0	97.8	47.8	57.2	66.7	77.1	83.3
2005	565	65.6	15.8	3.4	98.4	44.5	57.7	67.9	77.2	83.9
2006	629	66.4	15.4	1.9	98.5	44.0	59.4	68.6	77.1	83.3
2007	713	67.0	15.8	4.0	101	45.6	57.6	69.5	78.3	84.6
2008	685	67.3	15.8	2.3	96.2	45.7	59.9	70.0	77.9	84.6
2009	747	66.7	15.6	4.3	95.2	45.6	59.5	68.9	77.9	84.4
2010	722	67.2	15.8	0.1	96.7	44.5	59.1	70.2	78.3	85.0
2011	732	67.1	16.0	7.8	99.2	44.3	58.2	70.9	77.8	84.6
2012	668	68.4	14.4	6.4	97.7	48.7	59.8	71.2	78.7	84.4
2013	651	68.1	16.0	1.0	96.3	47.5	60.7	71.8	78.8	85.0
2014	284	68.4	14.2	14.7	99.6	48.3	58.5	71.2	78.3	85.4
1998-2014	9498	66.6	15.7	0.1	101	45.4	58.1	69.2	77.9	84.2

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	176	62.6	17.3	6.6	91.4	38.0	53.1	66.0	76.4	81.8
1999	177	62.3	17.3	2.8	93.8	38.4	55.7	63.8	74.7	82.5
2000	158	63.2	16.5	11.0	90.0	38.0	56.2	65.3	75.3	81.3
2001	169	62.3	16.0	4.9	90.3	38.5	54.4	64.5	74.4	79.8
2002	300	64.7	14.8	1.2	95.5	43.9	57.8	65.5	74.5	81.8
2003	279	63.2	16.2	1.7	94.3	39.7	54.7	66.1	75.0	81.6
2004	313	63.3	14.6	9.1	97.8	45.5	54.5	64.4	73.6	81.6
2005	286	63.3	16.2	3.4	90.9	42.5	54.8	65.2	75.6	81.2
2006	355	65.2	15.8	1.9	98.5	42.8	58.3	67.7	76.9	80.9
2007	373	65.5	15.9	10.6	94.8	43.5	54.9	68.7	77.3	83.4
2008	375	65.5	15.9	2.3	93.1	43.8	57.5	68.9	76.1	82.3
2009	402	64.4	15.9	6.6	94.8	42.7	54.2	67.8	75.6	81.9
2010	387	66.4	16.1	0.1	92.2	44.5	56.8	69.5	78.0	85.2
2011	403	65.6	15.9	7.8	94.6	43.6	56.6	69.8	77.1	82.9
2012	348	67.8	14.2	11.5	96.0	47.9	57.5	71.2	77.9	83.4
2013	341	68.1	16.6	1.0	96.3	47.5	61.0	72.2	78.8	84.2
2014	152	67.0	15.3	14.7	99.6	46.8	56.6	68.8	78.4	86.0
1998-2014	4994	65.0	15.9	0.1	99.6	43.5	56.2	67.7	76.6	82.6

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	160	67.4	16.2	5.9	100	46.1	58.5	69.2	79.0	85.7
1999	171	67.3	16.7	4.2	93.9	45.0	56.9	72.0	79.5	87.3
2000	145	67.2	14.7	22.0	91.6	48.7	57.4	69.9	78.8	84.4
2001	182	66.5	16.3	27.1	98.7	41.4	57.6	69.2	79.4	86.4
2002	277	69.0	15.5	6.6	94.6	46.3	60.0	72.4	80.2	87.2
2003	298	66.5	15.3	10.9	96.3	47.0	57.0	67.6	78.4	84.3
2004	297	68.7	15.0	8.0	94.2	49.7	61.8	70.2	79.6	84.2
2005	279	68.0	15.1	10.7	98.4	48.8	60.7	69.2	78.9	85.3
2006	274	68.0	14.8	19.9	95.8	47.5	61.1	70.0	77.8	84.9
2007	340	68.6	15.5	4.0	101	48.1	60.3	71.2	79.9	85.7
2008	310	69.4	15.3	5.4	96.2	48.6	62.7	71.0	80.3	86.0
2009	345	69.4	14.8	4.3	95.2	50.4	62.2	70.7	80.2	85.9
2010	335	68.2	15.5	10.6	96.7	44.4	61.5	70.9	79.2	84.8
2011	329	68.9	16.0	14.1	99.2	47.8	61.4	72.0	79.6	87.8
2012	320	69.1	14.7	6.4	97.7	49.3	61.3	71.2	79.9	86.6
2013	310	68.1	15.4	3.3	91.8	47.6	59.5	71.7	78.8	85.3
2014	132	70.1	12.7	35.1	94.7	51.3	61.5	73.4	78.2	85.0
1998–2014	4504	68.4	15.3	3.3	101	48.2	60.1	70.9	79.4	85.6

Table 4

Age distribution by 5-year age group and gender for period 2007-2014
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	9	0.2	0.2	6	0.2	0.2	3	0.1	0.1
5-9	13	0.2	0.4	8	0.3	0.5	5	0.2	0.3
10-14	16	0.3	0.7	10	0.4	0.9	6	0.2	0.6
15-19	23	0.4	1.2	13	0.5	1.3	10	0.4	1.0
20-24	33	0.6	1.8	22	0.8	2.1	11	0.5	1.4
25-29	46	0.9	2.7	24	0.9	3.0	22	0.9	2.4
30-34	54	1.0	3.7	34	1.2	4.2	20	0.8	3.2
35-39	107	2.1	5.8	62	2.2	6.4	45	1.9	5.0
40-44	161	3.1	8.9	99	3.6	10.0	62	2.6	7.6
45-49	241	4.6	13.5	163	5.9	15.9	78	3.2	10.8
50-54	311	6.0	19.5	181	6.5	22.4	130	5.4	16.2
55-59	336	6.5	26.0	175	6.3	28.7	161	6.7	22.8
60-64	482	9.3	35.2	249	9.0	37.6	233	9.6	32.5
65-69	712	13.7	48.9	392	14.1	51.7	320	13.2	45.7
70-74	846	16.3	65.2	444	16.0	67.7	402	16.6	62.3
75-79	745	14.3	79.5	412	14.8	82.5	333	13.8	76.0
80-84	577	11.1	90.6	282	10.1	92.6	295	12.2	88.2
85+	490	9.4	100.0	205	7.4	100.0	285	11.8	100.0
All ages	5202	100.0		2781	100.0		2421	100.0	

Included in the statistics are 36.5% multiple primaries in males and 32.9% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2014

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=209 %	Females DCO rate n=178 %	Males Prop.all cancers n=91183 %	Females Prop.all cancers n=89596 %
0- 4	6	3	0.7	0.4	16.7		3.4	2.2
5- 9	8	5	0.9	0.6			8.3	6.4
10-14	10	6	1.1	0.7			10.0	6.7
15-19	13	10	1.3	1.1	7.7		6.0	6.1
20-24	22	11	2.0	1.0			5.9	3.5
25-29	24	22	2.0	1.8			4.3	3.3
30-34	34	20	2.7	1.6	5.9		4.4	1.7
35-39	62	45	4.8	3.6		2.2	5.4	2.3
40-44	98	62	6.0	4.1			5.4	1.7
45-49	163	78	10.3	5.1	0.6		5.1	1.4
50-54	180	130	13.9	10.2	3.9	1.5	3.7	1.9
55-59	174	161	16.4	14.3	2.3	1.2	2.4	2.2
60-64	249	232	25.3	21.9	4.4	1.7	2.3	2.5
65-69	392	319	40.7	30.6	5.1	3.8	2.5	2.8
70-74	443	401	48.7	38.4	7.0	5.2	2.6	3.4
75-79	411	333	74.6	46.7	9.5	7.5	3.3	3.3
80-84	281	294	80.5	52.4	12.5	12.6	3.3	3.3
85+	204	285	88.1	49.3	27.9	26.0	3.3	2.8
All ages	2774	2417			7.5	7.4	3.0	2.7
Incidence								
Raw			15.4	12.9				
WS			8.3	6.0				
ES			11.7	8.4				
BRD-S			14.8	10.4				

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).

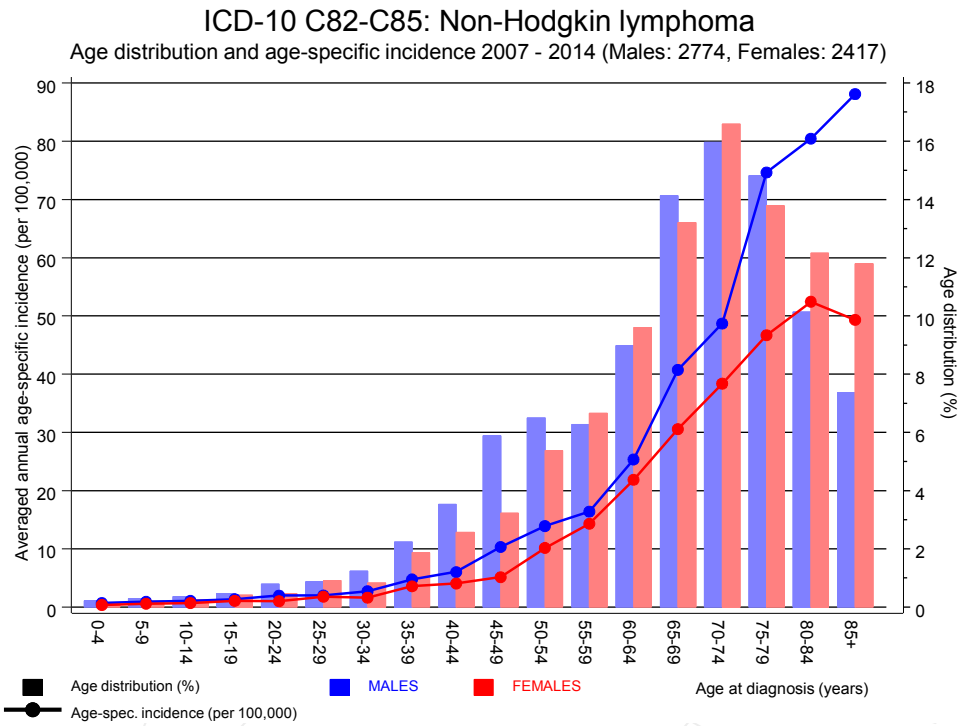


Figure 6. Age distribution and age-specific incidence

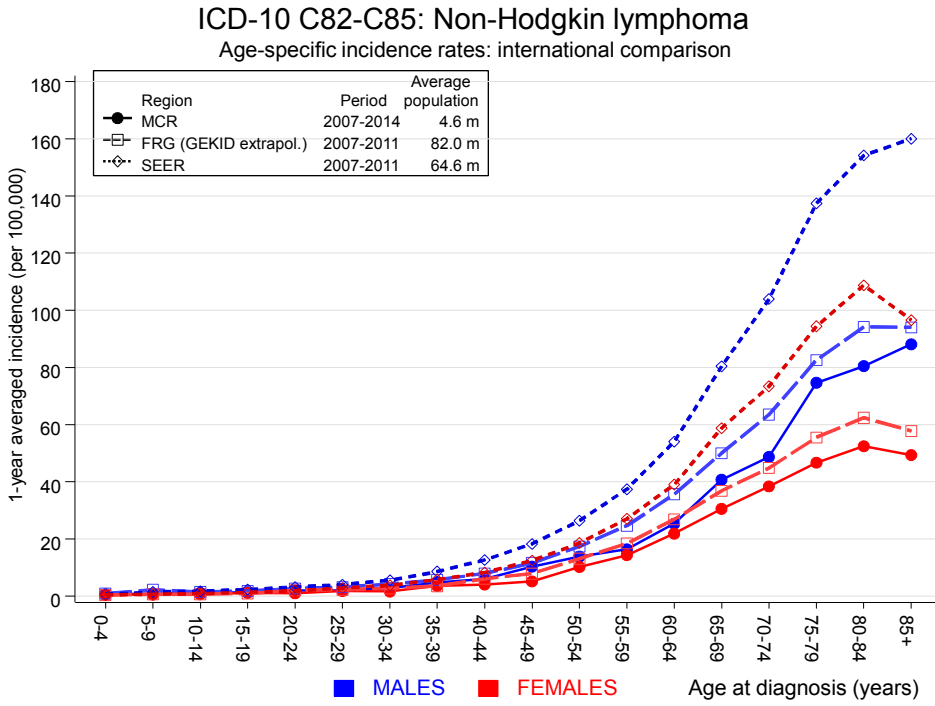


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. http://www.gekid.de. Last access: 02/11/2015

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 submission. http://www.seer.cancer.gov.

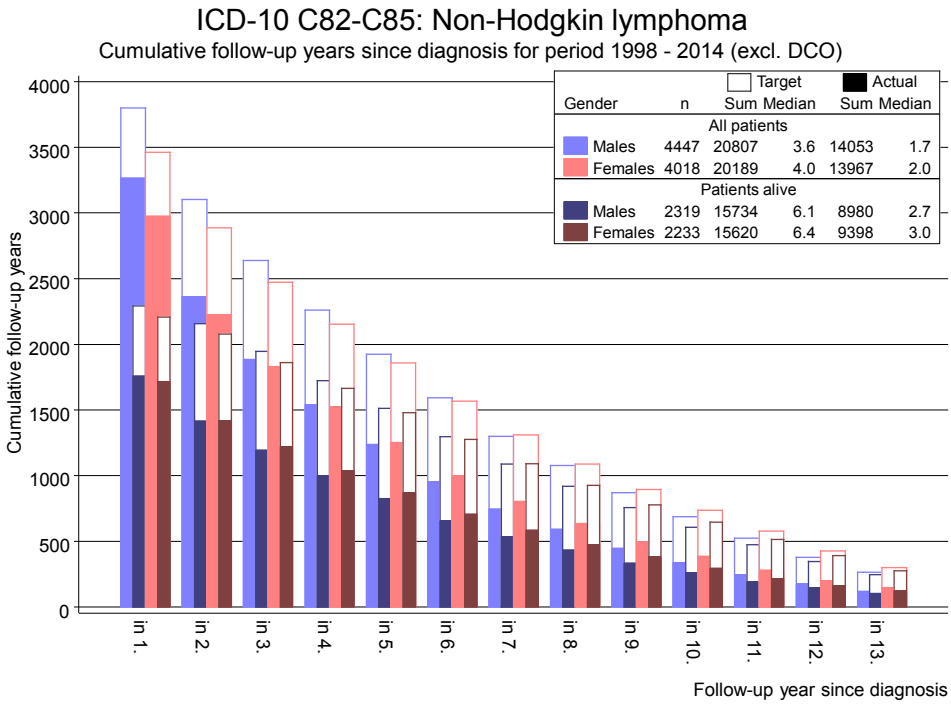


Figure 7. Cumulative follow-up years depending on time since diagnosis

The increase of the lost to follow-up rate can be interpreted as a consequence of a declining number of survivors over time.

Table 8a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	11	1.8	6.2	3.1	11.0	#	6.6	
C07-C08	Salivary gland	2	0.5	4.3	0.5	15.6		1.1	
C09-C10	Oropharynx	5	2.2	2.3	0.7	5.3		2.0	
C14	ENT cancer	2	0.1	38.4	4.6	138.6	#	1.4	50.0
C15	Oesophagus	5	3.8	1.3	0.4	3.1		0.9	
C16	Stomach	16	8.4	1.9	1.1	3.1	#	5.4	6.3
C18	Colon	37	20.2	1.8	1.3	2.5	#	12.0	5.4
C19-C20	Rectum	20	11.2	1.8	1.1	2.7	#	6.2	5.0
C21	Anus/canal	5	0.5	11.1	3.6	25.8	#	3.2	
C22	Liver	12	5.7	2.1	1.1	3.7	#	4.5	16.7
C23-C24	Bile	3	2.0	1.5	0.3	4.4		0.7	
C25	Pancreas	14	7.6	1.9	1.0	3.1	#	4.6	
C32	Larynx	5	2.1	2.4	0.8	5.5		2.1	
C33-C34	Lung	59	24.3	2.4	1.8	3.1	#	24.7	6.8
C37	Thymus	2	0.1	18.0	2.2	65.0	#	1.3	
C38,C45	Mesothelioma	6	1.4	4.4	1.6	9.6	#	3.3	
C43	Malign. melanoma	38	8.9	4.3	3.0	5.8	#	20.7	
C46,C49	Soft tissue	7	1.1	6.2	2.5	12.7	#	4.2	
C61	Prostate	102	60.0	1.7	1.4	2.1	#	29.9	3.9
C64	Kidney	31	7.3	4.3	2.9	6.1	#	16.9	
C66	Ureter	4	0.5	8.1	2.2	20.8	#	2.5	
C67	Bladder	17	9.3	1.8	1.1	2.9	#	5.5	
C68	Urethra	2	0.2	12.5	1.5	45.2	#	1.3	
C69	Eye lymphoma	2	0.1	39.7	4.8	143.5	#	1.4	
C70-C72	CNS cancer	6	2.8	2.1	0.8	4.7		2.3	33.3
C73	Thyroid	3	1.4	2.1	0.4	6.2		1.1	
C76-C79	CUP	10	3.5	2.8	1.4	5.2	#	4.6	
C81	Hodgkin lymphoma	10	0.5	20.3	9.7	37.3	#	6.8	10.0
C82-C85	NHL	39	8.4	4.7	3.3	6.4	#	21.8	2.6
C90	Mult. myeloma	9	2.6	3.4	1.6	6.5	#	4.5	
C91-C96	Leukaemia	23	3.4	6.7	4.2	10.0	#	13.9	13.0
Other primaries		6	2.6	2.3	0.9	5.1		2.5	
Not observed		0	4.8	0.0	0.0	0.8	#	-3.4	
All mult. primaries		513	209.1	2.5	2.2	2.7	#	216.6	4.3

Patients	4492
Median age at second malignancy (years)	71.1
Person-years	14033
Mean observation time (years)	3.1
Median observation time (years)	1.7

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category “Other primaries”

Table 8b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998–2014
FEMALES

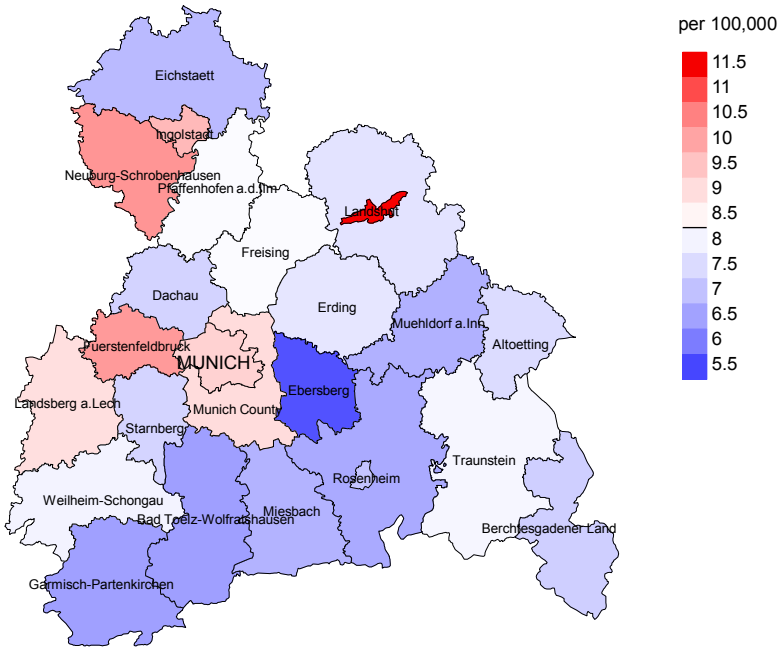
Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C07–C08	Salivary gland	3	0.3	11.9	2.5	34.9	#	2.0	33.3
C09–C10	Oropharynx	2	0.6	3.3	0.4	11.7		1.0	
C16	Stomach	11	5.5	2.0	1.0	3.6		3.9	9.1
C17	Small intestine	5	0.7	6.7	2.2	15.7	#	3.1	
C18	Colon	25	15.5	1.6	1.0	2.4	#	6.9	4.0
C19–C20	Rectum	8	6.6	1.2	0.5	2.4		1.0	12.5
C21	Anus/canal	3	0.8	3.7	0.8	10.9		1.6	
C22	Liver	7	1.8	3.8	1.5	7.9	#	3.7	14.3
C23–C24	Bile	7	2.2	3.1	1.3	6.4	#	3.4	14.3
C25	Pancreas	10	7.0	1.4	0.7	2.6		2.2	20.0
C33–C34	Lung	35	11.2	3.1	2.2	4.3	#	17.1	5.7
C38,C45	Mesothelioma	2	0.3	7.0	0.8	25.3		1.2	
C43	Malign. melanoma	17	5.7	3.0	1.7	4.8	#	8.1	
C46,C49	Soft tissue	4	0.9	4.6	1.2	11.7	#	2.2	
C50	Breast	92	46.5	2.0	1.6	2.4	#	32.7	2.2
C51	Vulva	5	1.6	3.2	1.0	7.4	#	2.5	
C53	Cervix uteri	5	2.0	2.5	0.8	5.7		2.1	20.0
C54	Corpus uteri	14	8.6	1.6	0.9	2.7		3.9	
C56	Ovary	11	6.3	1.7	0.9	3.1		3.3	9.1
C64	Kidney	8	3.9	2.1	0.9	4.1		3.0	
C67	Bladder	4	2.9	1.4	0.4	3.5		0.8	
C69	Eye lymphoma	3	0.1	53.0	10.9	155.0	#	2.1	
C73	Thyroid	10	2.6	3.8	1.8	6.9	#	5.3	10.0
C76–C79	CUP	6	2.8	2.1	0.8	4.7		2.3	
C82–C85	NHL	51	6.0	8.5	6.3	11.1	#	32.3	
C90	Mult. myeloma	5	1.9	2.6	0.8	6.1		2.2	
C91–C96	Leukaemia	17	2.5	6.7	3.9	10.8	#	10.4	17.6
Other primaries		7	5.5	1.3	0.5	2.6		1.1	14.3
Not observed		0	3.1	0.0	0.0	1.2		-2.3	
All mult. primaries		377	155.6	2.4	2.2	2.7	#	159.0	5.0

Patients	4029
Median age at second malignancy (years)	73.8
Person-years	13924
Mean observation time (years)	3.5
Median observation time (years)	1.9

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category “Other primaries”

Average incidence (world standard population) 2007 - 2014: Males



Average incidence (world standard population) 2007 - 2014: Females

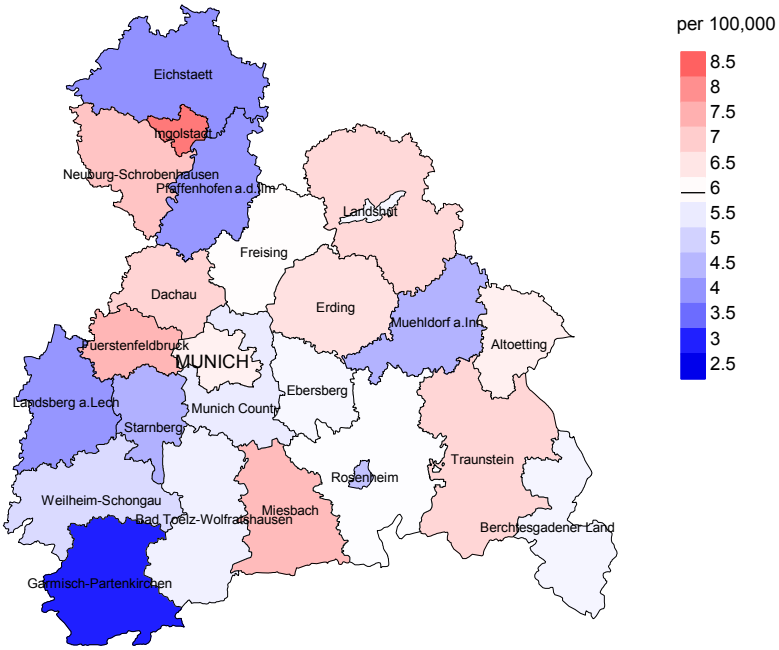
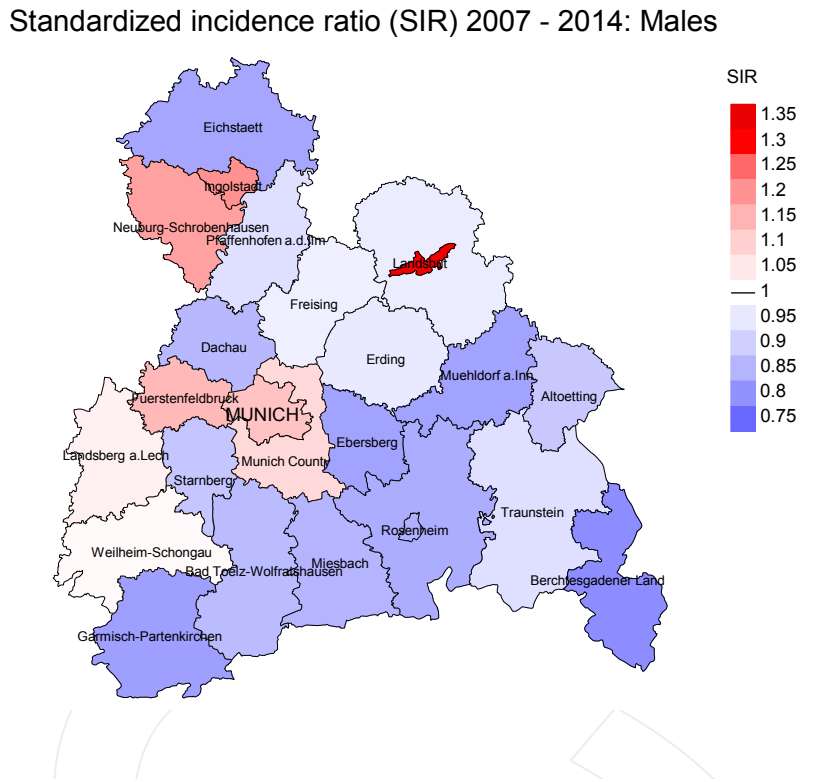


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 8.3/100,000 WS N=2,774, females 5.9/100,000 WS N=2,417).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 53 women were identified with newly diagnosed NHL. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 5.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.6 and 9.4/100,000.



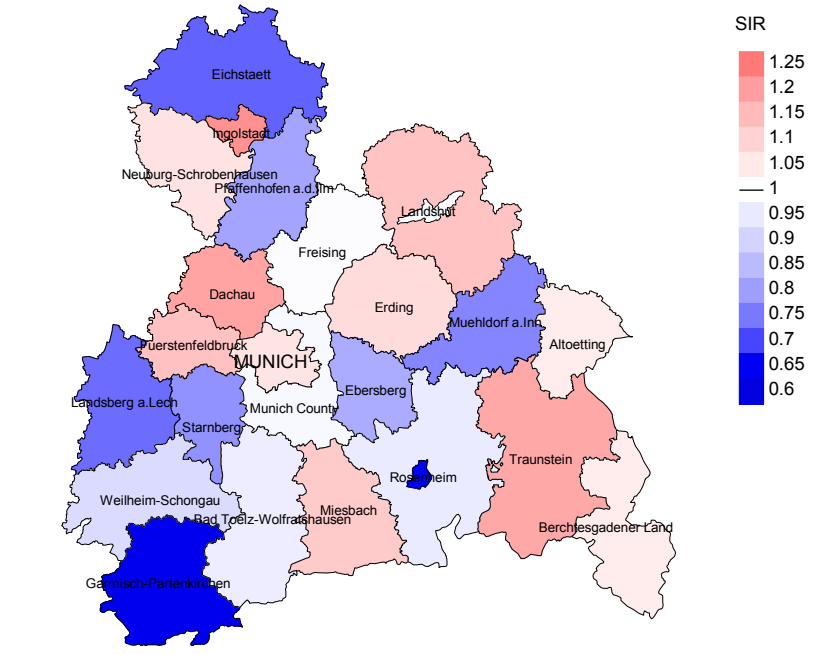


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=2,774, females N=2,417).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 53 women were identified with newly diagnosed NHL. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.82. Though, the value of this parameter may vary with an underlying probability of 99% between 0.56 and 1.16, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 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	336	98.5	11.3	245	72.9	93.9
1999	348	98.6	15.5	253	72.7	95.3
2000	303	98.0	13.5	214	70.6	98.6
2001	351	96.9	11.7	229	65.2	96.5
2002	577	96.9	17.5	390	67.6	96.4
2003	577	96.5	11.8	345	59.8	98.3
2004	610	95.7	9.8	341	55.9	98.2
2005	565	91.5	10.3	304	53.8	99.7
2006	629	92.5	7.5	339	53.9	97.3
2007	713	79.2	9.4	392	55.0	98.2
2008	685	70.7	6.9	347	50.7	98.6
2009	747	70.7	5.9	326	43.6	97.9
2010	722	74.5	6.9	317	43.9	97.8
2011	732	72.5	8.3	326	44.5	98.2
2012	668	76.9	6.0	258	38.6	97.3
2013	651	99.4	6.3	233	35.8	95.7
2014	284	97.5	13.0	79	27.8	97.5
1998-2014	9498	86.3	9.4	4938	52.0	97.5

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 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	336	192	95.8	74	22.0
1999	348	225	92.9	87	25.0
2000	303	189	96.3	65	21.5
2001	351	212	96.7	71	20.2
2002	577	319	97.2	151	26.2
2003	577	322	97.5	131	22.7
2004	610	338	97.3	127	20.8
2005	565	320	97.5	115	20.4
2006	629	362	98.6	121	19.2
2007	713	416	96.9	164	23.0
2008	685	383	98.2	136	19.9
2009	747	425	98.1	152	20.3
2010	722	407	98.0	138	19.1
2011	732	420	98.3	139	19.0
2012	668	461	98.5	136	20.4
2013	651	468	98.3	139	21.4
2014	284	394	97.2	74	26.1
1998–2014	9498	5853	97.5	2020	21.3

Table 10c

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 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	192	67.7	32.3	92.4
1999	225	73.8	26.2	92.8
2000	189	83.1	16.9	92.9
2001	212	81.1	18.9	93.7
2002	319	81.8	18.2	91.9
2003	322	80.7	19.3	92.4
2004	338	86.1	13.9	93.6
2005	320	80.0	20.0	92.3
2006	362	80.1	19.9	89.9
2007	416	82.2	17.8	91.1
2008	383	79.6	20.4	88.8
2009	425	78.6	21.4	87.1
2010	407	75.9	24.1	83.7
2011	420	76.7	23.3	85.0
2012	461	78.3	21.7	85.7
2013	468	73.5	26.5	83.5
2014	394	71.8	28.2	84.9
1998-2014	5853	78.3	21.7	88.7

Table 11a

Medians of age at death according to the grouping in Table 10
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	94	73.2	71.0	80.2	72.9
1999	125	72.0	66.4	77.0	72.0
2000	99	69.4	68.3	73.6	69.7
2001	98	68.3	67.6	78.1	67.9
2002	165	73.2	72.8	75.7	73.0
2003	164	71.7	69.9	77.0	71.5
2004	173	73.8	73.7	74.3	74.0
2005	172	74.9	74.9	73.7	74.9
2006	192	72.4	71.7	78.3	72.2
2007	224	72.5	72.3	75.1	72.1
2008	205	73.9	73.3	76.5	73.4
2009	234	75.5	75.0	80.9	74.9
2010	227	75.4	73.6	78.3	73.9
2011	227	74.8	73.4	79.8	74.2
2012	248	75.7	75.4	77.1	75.5
2013	264	77.8	77.2	81.4	77.5
2014	212	76.2	75.1	79.0	75.8
1998-2014	3123	74.3	73.3	78.1	73.7

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 11b

Medians of age at death according to the grouping in Table 10
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	98	80.1	75.5	84.0	80.2
1999	100	78.5	76.7	84.4	79.1
2000	90	77.8	76.9	85.1	75.9
2001	114	78.2	76.7	84.5	77.9
2002	154	78.4	77.5	81.9	78.4
2003	158	78.2	76.0	82.8	77.0
2004	165	78.0	77.9	80.3	78.0
2005	148	79.3	76.5	85.4	78.3
2006	170	78.0	77.4	83.3	77.2
2007	192	79.4	78.6	81.2	78.6
2008	178	80.4	77.8	84.6	78.8
2009	191	81.2	79.8	85.1	80.3
2010	180	78.8	76.6	84.9	78.1
2011	193	79.0	77.7	83.0	77.9
2012	213	79.4	78.0	84.9	78.6
2013	204	78.9	76.9	81.7	77.5
2014	182	78.4	77.3	82.3	78.2
1998-2014	2730	78.8	77.5	83.7	78.3

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 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 12a

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	61	5.5	0.35	3.4	0.32	5.1	0.35	7.1	0.38
1999	93	8.3	0.53	5.1	0.49	7.4	0.52	9.5	0.52
2000	82	7.2	0.52	4.4	0.50	6.4	0.52	8.5	0.53
2001	82	7.1	0.49	4.3	0.47	6.3	0.49	8.1	0.50
2002	138	7.4	0.46	4.1	0.43	6.3	0.47	8.6	0.50
2003	137	7.3	0.49	4.0	0.44	6.0	0.47	8.1	0.51
2004	148	7.9	0.47	4.1	0.40	6.4	0.45	8.8	0.52
2005	143	7.5	0.50	3.6	0.39	5.8	0.46	8.4	0.53
2006	151	7.9	0.43	3.9	0.37	6.1	0.41	8.2	0.44
2007	183	8.3	0.49	4.3	0.45	6.5	0.48	8.7	0.51
2008	168	7.5	0.45	3.6	0.39	5.6	0.43	7.7	0.47
2009	180	8.1	0.45	3.7	0.36	5.8	0.42	8.2	0.47
2010	179	7.9	0.46	3.7	0.40	5.6	0.43	7.8	0.48
2011	169	7.4	0.42	3.4	0.36	5.2	0.39	7.1	0.43
2012	186	8.1	0.53	3.6	0.47	5.6	0.50	7.9	0.54
2013	193	8.4	0.57	3.5	0.45	5.7	0.52	8.2	0.58
2014	155	6.8	1.02	2.9	0.84	4.7	0.92	6.5	1.03
1998-2014	2448	7.6	0.49	3.8	0.43	5.9	0.47	8.0	0.51

Table 12b

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	69	5.9	0.43	2.5	0.36	3.7	0.38	4.9	0.41
1999	73	6.2	0.43	2.4	0.33	3.8	0.37	5.4	0.43
2000	75	6.2	0.52	2.4	0.40	3.8	0.44	5.0	0.46
2001	90	7.4	0.49	3.0	0.41	4.6	0.44	6.2	0.49
2002	123	6.3	0.45	2.3	0.36	3.6	0.38	5.0	0.42
2003	123	6.2	0.41	2.5	0.32	3.7	0.34	5.0	0.38
2004	143	7.2	0.48	2.7	0.38	4.2	0.42	5.9	0.47
2005	113	5.7	0.41	2.1	0.31	3.2	0.34	4.4	0.37
2006	139	6.9	0.51	2.5	0.39	3.9	0.43	5.3	0.47
2007	159	6.9	0.47	2.4	0.35	3.8	0.39	5.1	0.42
2008	137	5.9	0.44	2.0	0.33	3.1	0.36	4.3	0.40
2009	154	6.6	0.45	2.0	0.30	3.3	0.35	4.7	0.40
2010	132	5.6	0.39	2.0	0.29	3.1	0.33	4.2	0.36
2011	153	6.5	0.47	2.2	0.34	3.4	0.38	4.7	0.43
2012	175	7.4	0.55	2.4	0.39	3.8	0.43	5.2	0.48
2013	151	6.4	0.49	2.1	0.35	3.4	0.39	4.7	0.45
2014	128	5.4	0.98	1.8	0.76	2.9	0.82	4.0	0.89
1998-2014	2137	6.4	0.48	2.3	0.36	3.5	0.39	4.9	0.44

Table 13

Age distribution of age at death (cancer-related) for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.0	0.0	1	0.1	0.1			0.0
5-9	1	0.0	0.1	1	0.1	0.1			0.0
10-14	3	0.1	0.2	2	0.1	0.3	1	0.1	0.1
15-19	3	0.1	0.3	3	0.2	0.5			0.1
20-24	3	0.1	0.4	3	0.2	0.7			0.1
25-29	7	0.3	0.7	1	0.1	0.8	6	0.5	0.6
30-34	10	0.4	1.1	7	0.5	1.2	3	0.2	0.8
35-39	15	0.6	1.6	11	0.8	2.0	4	0.3	1.1
40-44	29	1.1	2.7	21	1.5	3.5	8	0.7	1.8
45-49	57	2.1	4.9	43	3.0	6.5	14	1.1	3.0
50-54	92	3.5	8.3	57	4.0	10.4	35	2.9	5.8
55-59	105	3.9	12.3	64	4.4	14.9	41	3.4	9.2
60-64	177	6.7	18.9	111	7.7	22.6	66	5.4	14.6
65-69	311	11.7	30.6	171	11.9	34.4	140	11.5	26.1
70-74	430	16.2	46.8	247	17.1	51.6	183	15.0	41.1
75-79	488	18.4	65.1	285	19.8	71.3	203	16.7	57.8
80-84	464	17.5	82.6	230	16.0	87.3	234	19.2	77.0
85+	463	17.4	100.0	183	12.7	100.0	280	23.0	100.0
All ages	2659	100.0		1441	100.0		1218	100.0	

Included in the statistics are 36.5% multiple primaries in males and 32.9% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**incl. multiple primaries**)

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	1		0.1	0.17	0.0		8.3	
5- 9	1		0.1	0.13	0.0		4.8	
10-14	2	1	0.2	0.20	0.1	0.17	11.1	5.0
15-19	3		0.3	0.23	0.0		8.3	
20-24	3		0.3	0.14	0.0		6.3	
25-29	1	6	0.1	0.04	0.5	0.27	1.6	9.4
30-34	7	3	0.6	0.21	0.2	0.15	8.0	2.7
35-39	11	4	0.8	0.18	0.3	0.09	6.2	1.6
40-44	21	8	1.3	0.21	0.5	0.13	4.6	1.3
45-49	43	14	2.7	0.26	0.9	0.18	4.2	1.1
50-54	57	35	4.4	0.31	2.7	0.27	3.1	2.0
55-59	64	41	6.0	0.37	3.6	0.25	2.1	1.6
60-64	111	66	11.3	0.45	6.2	0.28	2.3	1.9
65-69	171	140	17.8	0.44	13.4	0.44	2.4	2.7
70-74	247	183	27.1	0.56	17.5	0.46	2.7	2.8
75-79	285	203	51.8	0.69	28.5	0.61	3.3	3.2
80-84	230	234	65.8	0.82	41.7	0.79	3.1	3.6
85+	183	280	79.0	0.89	48.5	0.98	3.0	3.2
All ages	1441	1218					2.9	2.8
Mortality								
Raw			8.0	0.52	6.5	0.50		
WS			3.7	0.44	2.2	0.37		
ES			5.7	0.49	3.4	0.41		
BRD-S			7.9	0.53	4.8	0.46		
PYLL-70								
per 100,000			36.3		19.3			
ES			32.6		16.7			
AYLL-70			11.7		9.6			

The rates underestimate the prognosis if other synchronous cancers are prognostic unfavorable.

Table 15a

Multiple primaries in deaths in period 1998–2014
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	36	3.3	12	33.3	8	22.2	16	44.4
C18	Colon	68	6.3	32	47.1	13	19.1	23	33.8
C19–C20	Rectum	40	3.7	18	45.0	5	12.5	17	42.5
C22	Liver	18	1.7	3	16.7	2	11.1	13	72.2
C25	Pancreas	21	1.9	1	4.8	4	19.0	16	76.2
C32	Larynx	11	1.0	6	54.5	2	18.2	3	27.3
C33–C34	Lung	95	8.8	18	18.9	11	11.6	66	69.5
C43	Malign. melanoma	44	4.1	20	45.5	3	6.8	21	47.7
C44	Skin others	140	12.9	33	23.6	14	10.0	93	66.4
C46,C49	Soft tissue	11	1.0	7	63.6	1	9.1	3	27.3
C61	Prostate	174	16.1	109	62.6	24	13.8	41	23.6
C64	Kidney	36	3.3	26	72.2	5	13.9	5	13.9
C67	Bladder	56	5.2	28	50.0	7	12.5	21	37.5
C70–C72	CNS cancer	22	2.0	8	36.4	4	18.2	10	45.5
C76–C79	CUP	21	1.9	3	14.3	2	9.5	16	76.2
C81	Hodgkin lymphoma	26	2.4	15	57.7	2	7.7	9	34.6
C82–C85	NHL	60	5.5			2	3.3	58	96.7
C90	Mult. myeloma	33	3.0	15	45.5	12	36.4	6	18.2
C91–C96	Leukaemia	61	5.6	22	36.1	10	16.4	29	47.5
Other primaries		109	10.1	43	39.4	12	11.0	54	49.5
All mult. primaries		1082	100.0	419	38.7	143	13.2	520	48.1

Multiple primaries with number of cases 1 to 9 are pooled in category “Other primaries”

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 multiple malignancy.

Table 15b

Multiple primaries in deaths in period 1998–2014
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	31	3.7	10	32.3	3	9.7	18	58.1
C18	Colon	52	6.3	19	36.5	8	15.4	25	48.1
C19–C20	Rectum	19	2.3	9	47.4	3	15.8	7	36.8
C21	Anus/canal	11	1.3	4	36.4	1	9.1	6	54.5
C23–C24	Bile	12	1.5	1	8.3	1	8.3	10	83.3
C25	Pancreas	13	1.6			2	15.4	11	84.6
C33–C34	Lung	48	5.8	5	10.4	3	6.3	40	83.3
C43	Malign. melanoma	23	2.8	11	47.8	1	4.3	11	47.8
C44	Skin others	78	9.4	32	41.0	3	3.8	43	55.1
C50	Breast	188	22.7	118	62.8	16	8.5	54	28.7
C53	Cervix uteri	16	1.9	11	68.8	1	6.3	4	25.0
C54	Corpus uteri	22	2.7	20	90.9			2	9.1
C56	Ovary	27	3.3	8	29.6	3	11.1	16	59.3
C64	Kidney	18	2.2	9	50.0	4	22.2	5	27.8
C67	Bladder	18	2.2	9	50.0			9	50.0
C70–C72	CNS cancer	18	2.2	6	33.3	2	11.1	10	55.6
C73	Thyroid	10	1.2	8	80.0			2	20.0
C76–C79	CUP	13	1.6	5	38.5			8	61.5
C81	Hodgkin lymphoma	16	1.9	13	81.3			3	18.8
C82–C85	NHL	58	7.0			1	1.7	57	98.3
C90	Mult. myeloma	30	3.6	11	36.7	11	36.7	8	26.7
C91–C96	Leukaemia	42	5.1	6	14.3	4	9.5	32	76.2
Other primaries		64	7.7	26	40.6	7	10.9	31	48.4
All mult. primaries		827	100.0	341	41.2	74	8.9	412	49.8

Multiple primaries with number of cases 1 to 8 are pooled in category “Other primaries”

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 multiple malignancy.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**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			0.0		0.0			
5- 9	1		0.1	0.13	0.0		5.0	
10-14	2	1	0.2	0.20	0.1	0.17	11.1	5.3
15-19	3		0.3	0.23	0.0		9.1	
20-24	2		0.2	0.10	0.0		4.7	
25-29	1	5	0.1	0.04	0.4	0.28	1.8	8.5
30-34	7	2	0.6	0.21	0.2	0.10	8.1	2.1
35-39	10	3	0.8	0.18	0.2	0.07	6.1	1.3
40-44	15	8	0.9	0.17	0.5	0.14	3.5	1.4
45-49	40	13	2.5	0.27	0.9	0.18	4.4	1.3
50-54	47	28	3.6	0.30	2.2	0.25	2.9	1.9
55-59	52	38	4.9	0.33	3.4	0.27	2.0	1.8
60-64	86	53	8.8	0.44	5.0	0.29	2.2	1.9
65-69	139	95	14.4	0.44	9.1	0.38	2.5	2.3
70-74	179	146	19.7	0.56	14.0	0.49	2.6	2.9
75-79	228	168	41.4	0.83	23.6	0.65	3.7	3.5
80-84	162	179	46.4	0.83	31.9	0.81	3.0	3.6
85+	122	218	52.7	0.90	37.7	0.96	2.8	3.2
All ages	1096	957					2.8	2.8
Mortality								
Raw			6.1	0.51	5.1	0.50		
WS			2.8	0.42	1.7	0.35		
ES			4.4	0.47	2.7	0.40		
BRD-S			6.0	0.52	3.8	0.45		
PYLL-70								
per 100,000			30.2		16.1			
ES			27.1		14.0			
AYLL-70			11.9		10.4			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4			0.0		0.0			
5- 9	1		0.1	0.13	0.0		5.0	
10-14	2	1	0.2	0.20	0.1	0.17	11.1	5.6
15-19	3		0.3	0.25	0.0		9.1	
20-24	1		0.1	0.05	0.0		2.6	
25-29	1	4	0.1	0.05	0.3	0.22	2.0	7.1
30-34	6	2	0.5	0.18	0.2	0.11	7.1	2.4
35-39	10	3	0.8	0.18	0.2	0.07	6.3	1.5
40-44	15	7	0.9	0.17	0.5	0.13	3.8	1.4
45-49	37	11	2.3	0.26	0.7	0.16	4.3	1.2
50-54	38	24	2.9	0.27	1.9	0.23	2.6	1.8
55-59	43	28	4.0	0.30	2.5	0.22	1.8	1.5
60-64	65	37	6.6	0.35	3.5	0.23	1.9	1.5
65-69	112	67	11.6	0.42	6.4	0.29	2.4	2.0
70-74	140	120	15.4	0.49	11.5	0.45	2.5	2.9
75-79	179	131	32.5	0.71	18.4	0.55	3.7	3.3
80-84	139	144	39.8	0.79	25.7	0.71	3.4	3.5
85+	101	187	43.6	0.78	32.4	0.86	3.0	3.3
All ages	893	766					2.8	2.7
Mortality								
Raw			4.9	0.45	4.1	0.43		
WS			2.3	0.37	1.4	0.30		
ES			3.6	0.41	2.1	0.34		
BRD-S			4.9	0.46	3.0	0.38		
PYLL-70								
per 100,000			26.1		13.0			
ES			23.4		11.3			
AYLL-70			12.5		11.2			

* See corresponding tables with multiple primaries.

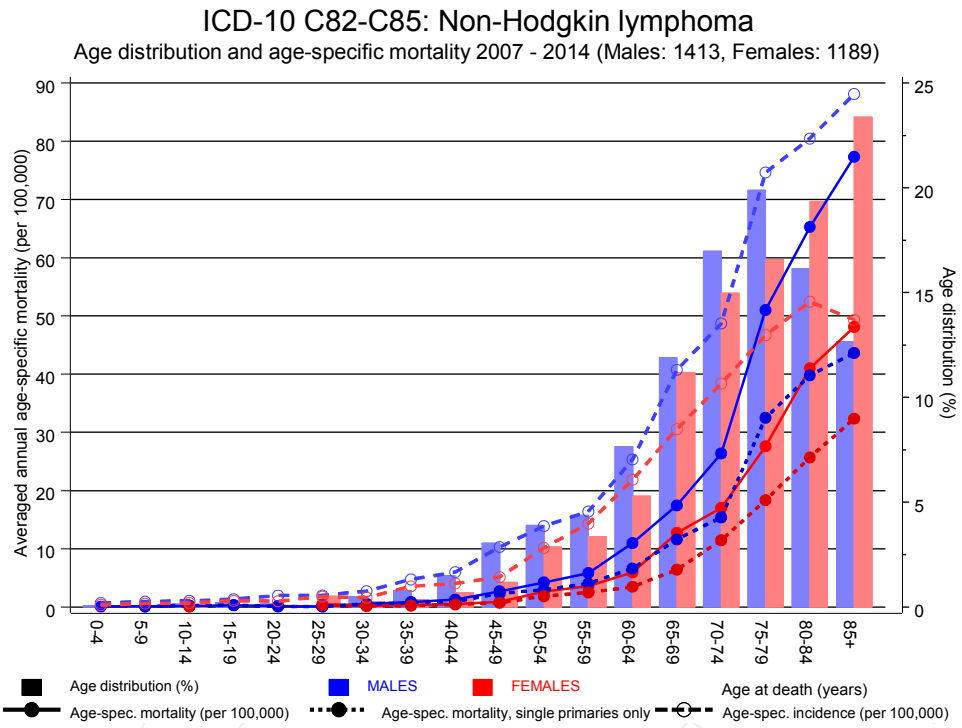
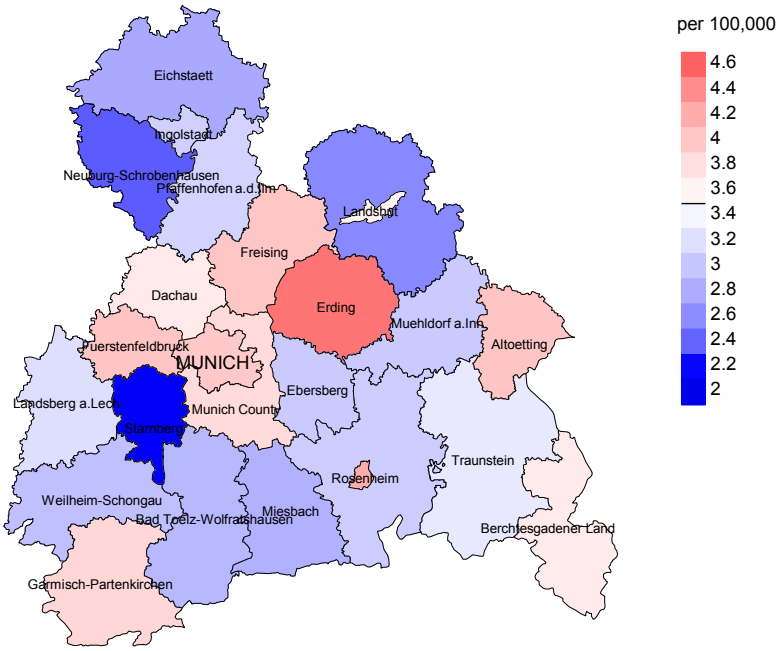


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2014: Males



Average mortality (world standard population) 2007 - 2014: Females

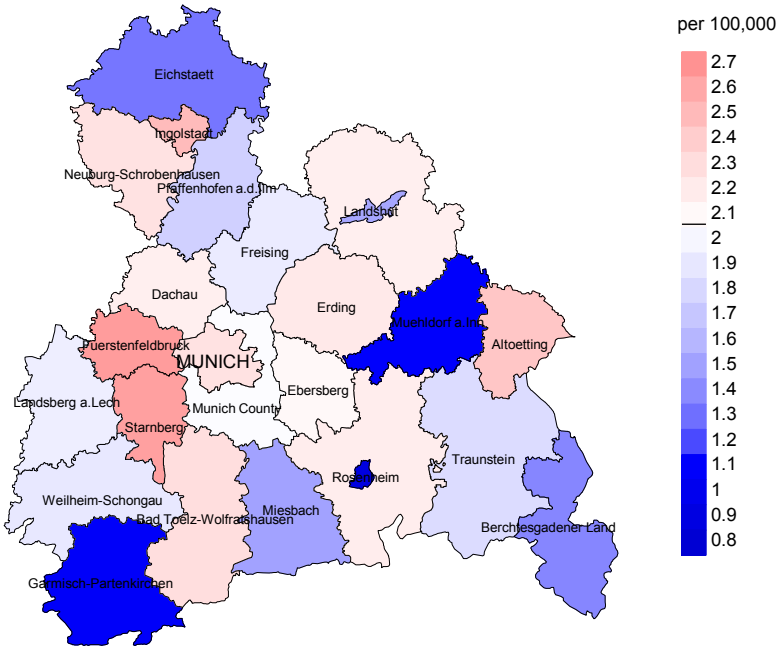
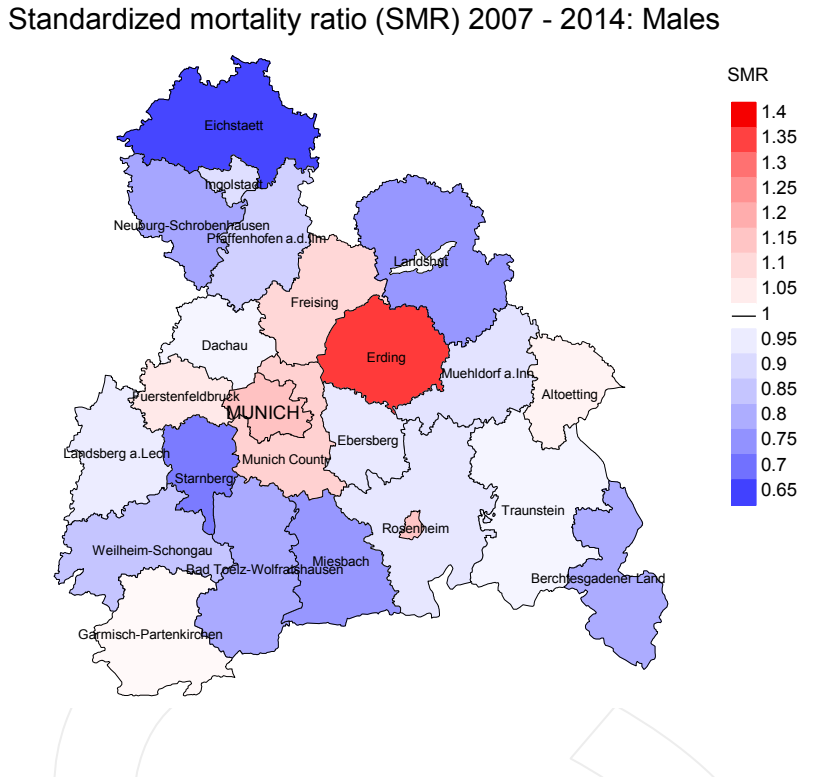


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 3.5/100,000 WS N=1,391, females 2.1/100,000 WS N=1,167).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 26 women died from NHL. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.1/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.1 and 3.7/100,000.



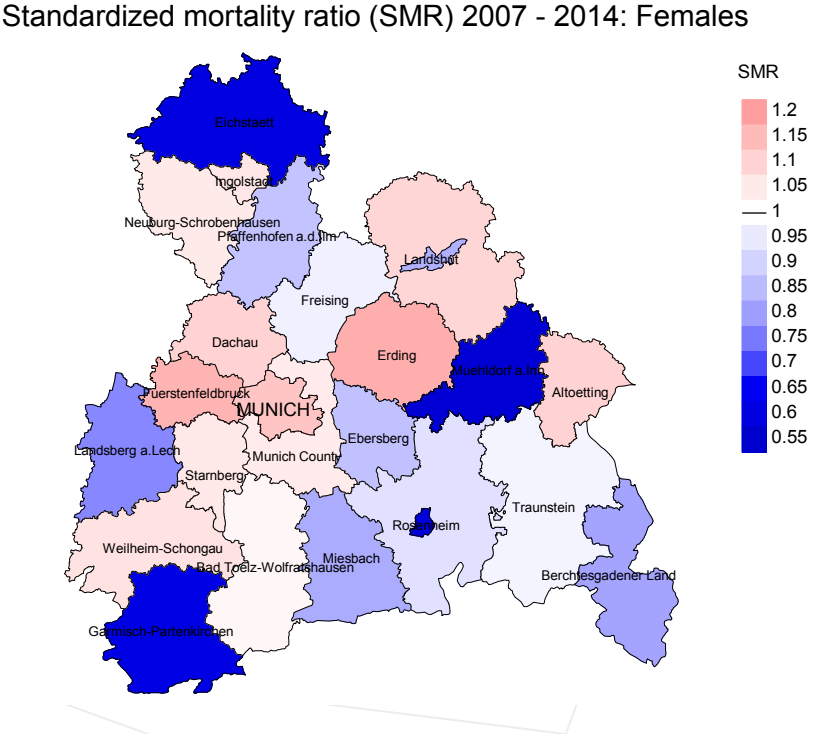


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,391, females N=1,167).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 26 women died from NHL. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.86. Though, the value of this parameter may vary with an underlying probability of 99% between 0.49 and 1.40, 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 index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic 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 MI- index. 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

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

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