Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
- ▶ Homepage

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

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

Cancer statistics: Baseline statistics

C82-C85: NHL

Year of diagnosis	1998-2011
Patients	7371
Diseases	7388
Creation date	04/02/2013
Export date	01/03/2013
Population	4.5 m



http://www.tumorregister-muenchen.de/en/facts/base/base_C8285E.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 4.5 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. The time-delayed acquisition of data and the occasionally high DCO-rates indicate optimizing reserves, among others, because of current financial and legal conditions that hinder the analyses.

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 2013

- 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). Death certificates from 2011 are incorporated into these analyses.
- 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. A high proportion of DCO cases (≥5%) in particular cancer types indicate insufficient participation of specific cancer specializations.



INCIDENCE

Table 1

Patient cohorts by year of diagnosis including DCO cases and multiple primaries, and with proportion of deaths and active follow-up

				Prop.		Prop.
		DCO	Prop.	mult.	Prop.	actively
Year of	Cases #	cases	DCO	primaries	deaths	followed
diagnosis	n	n	%	%	%	%
1998	336	38	11.3	20.5	71.7	99.1
1999	347	54	15.6	18.7	70.6	98.8
2000	301	41	13.6	22.9	67.8	98.7
2001	348	41	11.8	22.4	61.8	98.3
2002	571	101	17.7	23.3	64.1	97.9
2003	570	69	12.1	22.5	55.6	98.4
2004	600	60	10.0	22.3	53.7	96.7
2005	554	57	10.3	22.2	49.6	95.7
2006	617	47	7.6	22.4	47.8	95.1
2007	685	69	10.1	23.9	49.9	86.7 ##
2008	649	47	7.2	21.4	43.5	72.6
2009	695	43	6.2	23.2	38.3	76.3
2010	628	50	8.0	19.7	36.3	90.0
2011	487	59	12.1	20.7	30.0	75.6 ###
1998-2011	7388	776	10.5	22.0	50.7	90.1

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

^{##} Since 2007 the percentage of actively followed patients sharply declined compared to the previous years. This is a consequence of ambiguous data protection rules that currently forbid cancer registries in Bavaria to obtain the essential life status informations from competent registration offices.

^{###} Please be aware that data of recent annual patient cohorts may not yet be fully processed. Therefore, the presented figures and tables are potentially related to different time periods as pointed out in the respective headlines or legends.

Table 1a

Patient cohorts by year of diagnosis and gender including DCO cases

Year of	All	Males	Females	Prop. males	
diagnosis	n	n	n	%	
1998	336	175	161	52.1	
1999	347	/177	170	51.0	
2000	301	158	143	52.5	
2001	348	167	181	48.0	
2002	571	296	275	51.8	
2003	570	278	292	48.8	
2004	600	308	292	51.3	
2005	554	284	270	51.3	
2006	617	352	265	57.1	
2007	685	353	332	51.5	
2008	649	358	291	55.2	
2009	695	378	317	54.4	
2010	628	338	290	53.8	
2011	487	257	230	52.8	
1998-2011	7388	3879	3509	52.5	

Table 2

Incidence measures by year of diagnosis and gender including DCO cases (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.52 m as of 2007, respectively)

			Males	Fem.	Males	Fem.	Males	Fem.	Males	Fem.
Year of	Males	Females	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.
diagnosis	n	n	raw	raw	WS	WS	ES	ES	BRD-S	BRD-S
1998	175	161	15.8	13.7	10.4	7.0	14.5	9.7	18.7	12.0
1999	177	170	15.8	14.3	10.3	7.1	14.3	10.0	18.2	12.5
2000	158	143	13.9	/11.9	8.8	5.8	12.4	8.5	16.0	10.6
2001	167	181	14.4	14.9	9.1	7.4	12.8	10.4	15.9	12.7
2002	296	275	15.9	14.0	9.5	6.5	13.5	9.3	16.9	11.7
2003	278	292	14.8	14.8	9.1	7.6	12.7	10.6	15.8	12.7
2004	308	292	16.4	14.8	10.0	7.0	14.0	9.8	16.7	12.4
2005	284	270	15.0	13.6	9.0	6.6	12.5	9.2	15.5	11.3
2006	352	265	18.4	13.2	10.5	6.3	14.9	8.9	18.7	11.0
2007	353	332	15.9	14.4	8.9	6.7	12.8	9.5	16.3	11.9
2008	358	291	16.1	12.5	8.8	5.8	12.4	8.1	15.7	10.1
2009	378	317	16.9	13.6	9.5	6.2	13.1	8.8	16.3	11.0
2010	338	290	15.0	12.4	8.1	6.0	11.5	8.2	14.4	10.2
2011	257	230	11.4	9.8	6.4	4.5	8.8	6.3	10.9	7.8
1998-2011	3879	3509	15.4	13.3	9.0	6.4	12.7	9.0	15.8	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) (incl. DCO)

Year of	Cases		Std.					Median		
diagnosis	n	Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	336	64.8	16.8	5.9	100	41.9	55.2	67.3	77.5	83.8
1999	347	64.8	17.2	2.8	93.9	41.5	56.1	66.0	78.0	84.4
2000	301	65.2	15.8	11,0	91.6	44.2	57.2	67.7	76.9	82.5
2001	348	64.4	16.3	4.9	98.7	40.7	55.2	66.0	76.9	84.6
2002	571	66.7	15.6	1.2	95.5	44.6	58.6	68.8	78.3	84.7
2003	570	65.0	15.6	10.9	96.3	42.7	56.1	66.9	76.7	82.8
2004	600	66.1	15.0	8.0	97.8	47.9	57.4	66.7	77.1	83.4
2005	554	65.8	15.7	3.4	98.4	44.8	57.8	67.9	77.1	84.0
2006	617	66.4	15.4	1.9	98.5	44.0	59.4	68.6	77.3	83.4
2007	685	67.3	15.6	4.0	101	46.0	57.6	69.8	78.5	84.8
2008	649	67.3	15.6	2.3	96.2	45.7	59.9	70.0	78.0	84.6
2009	695	66.8	15.3	6.4	95.2	45.7	59.5	68.8	77.7	84.4
2010	628	67.2	16.0	0.1	96.7	44.4	59.1	70.2	78.5	85.1
2011	487	66.6	16.5	7.8	99.2	43.6	57.9	70.5	77.8	84.8
1998-2011	7388	66.2	15.8	0.1	101	44.4	57.9	68.7	77.7	84.1

Table 3a

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

Year of	Cases		Std.					Median		
diagnosis	n	Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	175	62.5	17.2	6.6	91.4	38.0	52.9	65.2	76.3	81.7
1999	177	62.3	17.3	2.8	93.8	38.4	55.7	63.8	74.7	82.8
2000	158	63.2	16.5	11.0	90.0	38.0	56.2	65.3	75.3	81.3
2001	167	62.1	16.0	4.9	90.3	38.5	54.4	64.0	74.0	79.8
2002	296	64.5	15.3	1.2	95.5	43.8	57.1	65.5	74.7	81.9
2003	278	63.4	15.8	19.0	94.3	40.1	55.2	66.0	75.0	81.6
2004	308	63.5	14.5	9.1	97.8	46.2	54.6	64.6	73.6	81.9
2005	284	63.6	15.9	3.4	90.9	43.7	55.0	65.4	75.5	81.2
2006	352	65.2	15.8	1.9	98.5	42.9	58.4	67.7	77.0	80.9
2007	353	65.7	15.8	10.6	94.8	43.5	54.8	68.7	77.6	83.5
2008	358	65.9	15.7	2.3	93.1	43.8	58.3	69.1	76.2	82.4
2009	378	64.4	15.7	9.4	92.9	43.2	53.7	67.5	75.6	82.4
2010	338	66.5	16.1	0.1	92.2	44.9	56.8	69.9	78.2	85.1
2011	257	64.6	16.8	7.8	94.6	42.1	56.2	68.6	76.6	82.5
1998-2011	3879	64.4	15.9	0.1	98.5	42.8	55.6	67.0	75.8	82.2

Table 3b

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

Year of	Cases		Std.					Median		
diagnosis	n	Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	161	67.3	16.1	5.9	100	46.4	58.6	69.1	78.8	85.7
1999	170	67.3	16.7	4.2	93.9	45.0	56.9	71.9	79.5	87.3
2000	143	67.4	14.8	22,0	91.6	48.7	57.4	71.1	78.9	84.4
2001	181	66.5	16.3	27.1	98.7	41.4	57.7	69.1	79.4	86.4
2002	275	69.0	15.5	6.6	94.6	46.3	60.0	72.4	80.3	87.2
2003	292	66.5	15.3	10.9	96.3	47.0	57.0	67.7	78.5	84.3
2004	292	68.8	15.0	8.0	94.2	49.7	62.0	70.2	79.7	84.2
2005	270	68.0	15.2	10.7	98.4	48.7	61.1	69.3	78.9	85.3
2006	265	68.1	14.7	19.9	95.8	47.5	61.1	70.0	77.9	84.9
2007	332	68.9	15.2	4.0	101	49.2	61.5	71.4	80.0	85.6
2008	291	69.1	15.4	5.4	96.2	46.7	61.4	70.7	80.3	85.9
2009	317	69.6	14.4	6.4	95.2	51.1	62.5	70.6	80.1	85.9
2010	290	68.0	15.9	10.6	96.7	44.1	61.4	70.5	79.3	85.1
2011	230	68.8	15.8	20.2	99.2	47.2	60.2	71.8	79.5	86.9
1998-2011	3509	68.2	15.4	4.0	101	47.5	60.0	70.4	79.4	85.6

Age at									
diagnosis	Cases			Males			Females		
Years	n	ક	Cum.%	n	%	Cum.%	n	왕	Cum.%
0-4	13	0.2	0.2	11	0.3	0.3	2	0.1	0.1
5-9	21	0.3	0.5	14	0.4	0.6	7	0.2	0.3
10-14	18	0.2	0.7	/ 11	0.3	0.9	7	0.2	0.5
15-19	29	0.4	1.1	20	0.5	1.4	9	0.3	0.7
20-24	58	0.8	1.9	39	1.0	2.4	19	0.5	1.3
25-29	73	1.0	2.9	37	1.0	3.4	36	1.0	2.3
30-34	122	1.7	4.5	73	1.9	5.3	49	1.4	3.7
35-39	174	2.4	6.9	102	2.6	7.9	72	2.1	5.7
40 - 44	258	3.5	10.4	163	4.2	12.1	95	2.7	8.4
45-49	330	4.5	14.8	208	5.4	17.5	122	3.5	11.9
50-54	454	6.1	21.0	252	6.5	24.0	202	5.8	17.7
55-59	595	8.1	29.0	334	8.6	32.6	261	7.4	25.1
60-64	813	11.0	40.0	446	11.5	44.1	367	10.5	35.6
65-69	1023	13.8	53.9	552	14.2	58.3	471	13.4	49.0
70-74	1029	13.9	67.8	550	14.2	72.5	479	13.7	62.6
75-79	986	13.3	81.2	504	13.0	85.5	482	13.7	76.4
80-84	778	10.5	91.7	338	8.7	94.2	440	12.5	88.9
85+	614	8.3	100.0	225	5.8	100.0	389	11.1	100.0
All ages	7388	100.0		3879	100.0		3509	100.0	

Included in the statistics are 30.0% multiple primaries in males and 25.5% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 1998-2011

			TOT F	periou i	990-2011			
							Males	Females
			Malag	Females	Malag	Females		Prop.all
Age at			Age-	Age-		DCO rate	_	cancers
diagnosis	Malec	Females	spec.	_	n=388	n=388		n=129521
Years	n	n	incid.		%	%	%	%
iears	11	11	mera.	incia.	•	•	•	•
0- 4	11	2	0.9	0.2	9.1		3.9	1.0
5- 9	14	7	1.1	0.6	٠. ـ		9.1	6.7
10-14	11	7	0.8	0.6			8.3	4.6
15-19	20	9	1.5	0.7	5.0		6.9	3.8
20-24	39	19	2.6	1.3	3.3	5.3	7.7	4.3
25-29	37	36	2.2	2.1		3.3	4.6	3.9
30-34	73	49	3.7	2.6	4./1		5.6	2.8
35-39	102	72	4.7	3.5	1.0	4.2	5.2	2.2
40-44	163	95	7.3	4.5	1.8	3.2	5.9	1.8
45-49	208	122	10.7	6.4	3.8	2.5	4.6	1.7
50-54	252	202	15.1	11.8	4.4	3.0	3.5	2.2
55-59	333	261	21.3	15.9	4.2	3.8	2.7	2.2
60-64	446	366	29.3	22.8	5.8	3.3	2.4	2.5
65-69	552	471	40.5	31.6	6.5	4.2	2.4	2.9
70-74	548	479	53.1	38.8	11.7	10.9	2.5	3.2
75-79	504	482	74.6	48.5	15.1	12.0	3.0	3.3
80-84	338	439	83.2	55.2	20.1	20.5	3.1	3.2
85+	225	389	81.1	52.4	33.8	33.4	2.7	2.7
All ages	3876	3507			10.0	11.1	2.9	2.7
Incidence								
Raw			15.4	13.3				
WS			9.0	6.4				
ES			12.7	9.0				
BRD-S			15.8	11.1				

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).

Table 6a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2011

MALES

	Observed	Expected		LCL	UCL		DCO
Diagnosis	'n	n	SIR	95%	95%	EAR	%
GO2 GO6 Omal garritu	4	1.2	3.3	0.9	8.6	3.0	
C03-C06 Oral cavity	2		6.7		24.3	1.8	
C07-C08 Salivary gland	3	0.3					
C09-C10 Oropharynx		1.5	2.0	0.4	5.9	1.6	
C15 Oesophagus	4	2.4	1.7	0.5	4.3	1.8	
C16 Stomach	1/2	5.8	2.1	1.1	3.6 #		8.3
C18 Colon	20	13.5	1.5	0.9	2.3	7.0	5.0
C19-C20 Rectum	13	7.7	1.7	0.9	2.9	5.7	7.7
C21 Anus/canal	4	0.3	14.9		38.1 #		
C22 Liver	5	3.7	/ 1.4/	0.4	3.2	1.4	40.0
C25 Pancreas	7	4.7	1.5	0.6	3.1	2.4	
C32 Larynx	4	1.4	2.8	0.8	7.1	2.7	
C33-C34 Lung	34	16.1	2.1	1.5	2.9 #	19.1	5.9
C38,C45 Mesothelioma	3	0.9	3.5	0.7	10.3	2.3	
C43 Malign. melanoma	21	5.2	4.1	2.5	6.2 #	16.9	
C46,C49 Soft tissue	4	0.7	5.5	1.5	14.1 #	3.5	
C61 Prostate	55	38.8	1.4	_1.1	1.8 #	17.3	3.6
C64 Kidney	21	4.7	4.5/	2.8	6.8 #	17.4	
C67 Bladder	10	5.7	1.7	0.8	3.2	4.6	
C70-C72 CNS cancer	3	1.9	1.6	0.3	4.7	1.2	33.3
C73 Thyroid	2	0.9	2.1	0.3	7.6	1.1	
C76-C79 CUP	7	2.3	3.0	1.2	6.2 #	5.0	
C81 Hodgkin lymphoma	4	0.3	14.1		36.0 #		25.0
C82-C85 NHL	10	5.3	1.9	0.9	3.5	5.1	10.0
C90 Mult. myeloma	6	1.7	3.6	1.3	7.8 #		
C91-C96 Leukaemia	14	2.1	6.7		11.3 #		14.3
CJI CJO ECUNACIIIIA		2.1	0.7	3.7	11.5 π	12.7	11.5
Other primaries	9	1.7	5.4	2.5	10.2 #	7.8	11.1
Not observed	0	4.8	0.0	0.0	0.8 #	-5.1	
All mult. primaries	281	135.3	2.1	1.8	2.3 #	155.7	5.3

Patients	2696
Mean age at second malignancy (years)	69.1
Person-years	9358
Mean observation time (years)	3.5
Median observation time (years)	2.4

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category "Other primaries".

Table 6b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2011 FEMALES

		Observed	Expected		LCL	UCL		DCO
Diagnos	is	n/	n	SIR	95%	95%	EAR	%
C16	Stomach	8	3.8	2.1	0.9	4.1	4.5	12.5
C17	Small intestine	2	0.4	4.5	0.5	16.3	1.7	
C18	Colon	10 /	10.5	1.0	0.5	1.7	-0.6	10.0
C19-C20	Rectum	/ 7/	4.6	1.5	0.6	3.2	2.6	14.3
C21	Anus/canal	2 4	0.5	3.7	0.5	13.5	1.6	
C22	Liver		1.1	3.5	1.0	9.0	3.1	25.0
C23-C24	Bile	3	1.5	2.0	0.4	5.7	1.6	
C25	Pancreas	6	4.4	1.4	0.5	2.9	1.7	16.7
C33-C34		24	7.0	3.4	2.2	5.1 ‡		8.3
C43	Malign. melanoma	9	3.5	2.6	1.2	4.9 ‡	5.9	
C46,C49	Soft tissue	3	0.6	5.3	1.1	15.3 ‡	2.6	
C50	Breast	57	30.7	1.9	1.4	2.4 ‡	28.2	3.5
C51	Vulva	2	1.0	2.0	0.2	7.3	1.1	
C53	Cervix uteri	3	1.4	2.1	0.4	6.2	1.7	33.3
C54	Corpus uteri	9	5.6	1.6	0.7	3.0	3.6	
C56	Ovary	7	4.3	1.6	0.7	3.3	2.9	
C64	Kidney	4	2.6	1.6	0.4	4.0	1.6	
C69	Eye lymphoma	2	0.0	54.6	6.6	197.3 #	2.1	
C73	Thyroid	6	1.9	3.2	1.2	7.0 #	4.4	16.7
C82-C85	NHL	8	3.9	2.1	0.9	4.1	4.4	
C91-C96	Leukaemia	13	1.6	8.3	4.4	14.1	12.2	23.1
_	rimaries	10	7.7	1.3	0.6	2.4	2.4	20.0
Not obs	erved	0	3.6	0.0	0.0	1.0	-3.8	
All mul	t. primaries	199	102.3	1.9	1.7	2.2/#	103.6	8.0

Patients	2443
Mean age at second malignancy (years)	72.8
Person-years	9328
Mean observation time (years)	3.8
Median observation time (years)	2.9

The occurrence of second malignancy is statistically significant.

Observed second malignancy with count 1 are pooled in category "Other primaries".

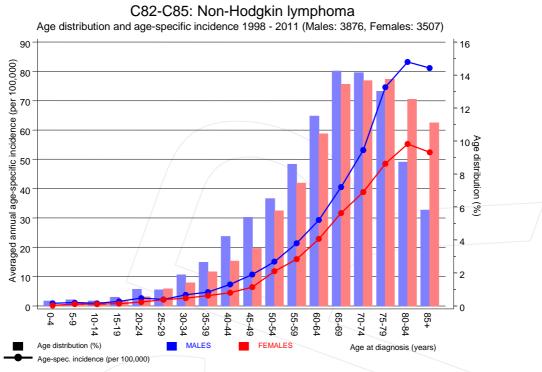
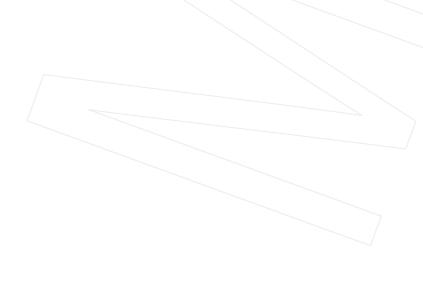


Figure 7. Age distribution and age-specific incidence



C82-C85: Non-Hodgkin lymphoma

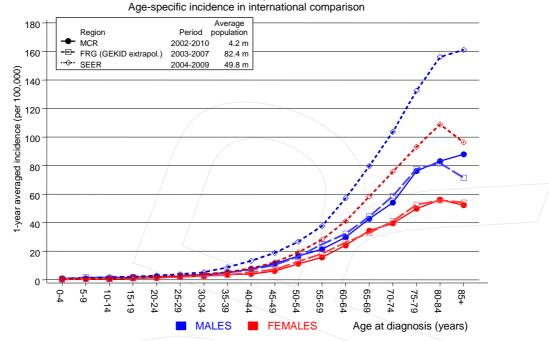


Figure 7a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).



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, 2011. http://www.gekid.de. Last access: 05/12/2011

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2012, based on the November 2011 submission. http://www.seer.cancer.gov.

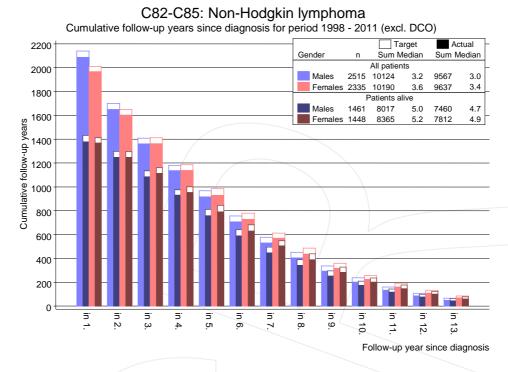
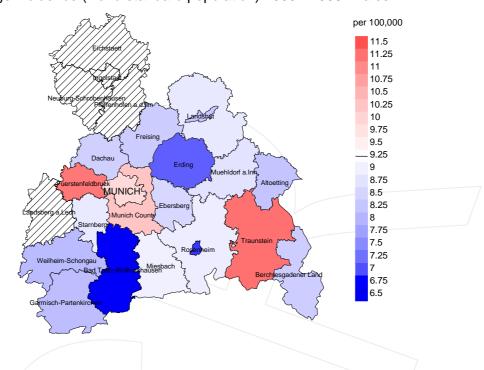


Figure 8. Cumulative follow-up years depending on time since diagnosis

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



Average incidence (world standard population) 2003 - 2008: Males



Average incidence (world standard population) 2003 - 2008: Females



Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. 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 9.3/100,000 WS N=1,839, females 6.7/100,000 WS N=1,680). Since cancer data are not available in some counties until 2007, the local incidence rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 41 women were identified with newly diagnosed NHL. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 5.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.2 and 10.0/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males

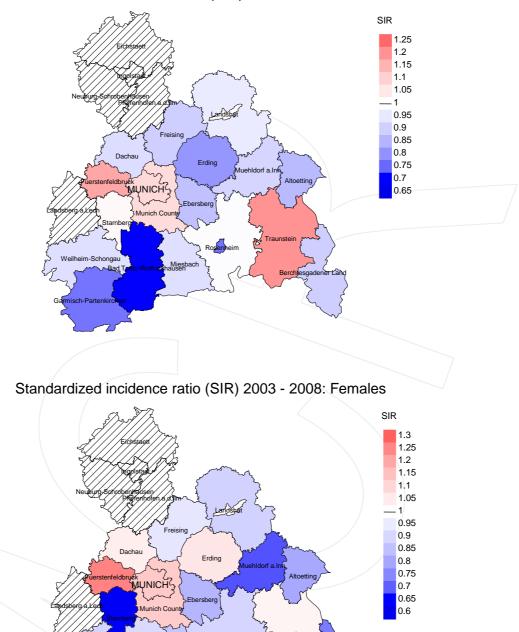


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,839, females N=1,680). Since cancer data are not available in some counties until 2007, the local SIR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 41 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 0.83. Though, the value of this parameter may vary with an underlying probability of 99% between 0.53 and 1.23, 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 4.52 m as of 2007, respectively)

		Prop.				Prop. deaths
	Incident	actively	Prop.		Prop.	with death
Year of	cases	followed	DCO	Deaths	deaths	certific.
diagnosis	n	%	%	/ n /	%	%
1998	336	99.1	11.3	241	71.7	92.9
1999	347	98.8	15.6	245	70.6	95.1
2000	301	98.7	13.6	204	67.8	98.5
2001	348	98.3	11.8	215	61.8	95.3
2002	571	97.9	17.7	366	64.1	96.2
2003	570	98.4	12.1	317	55.6	98.4
2004	600	96.7	10.0	322	53.7	98.1
2005	554	95.7	10.3	275	49.6	99.6
2006	617	95.1	7.6	295	47.8	98.0
2007	685	86.7	10.1	342	49.9	98.2
2008	649	72.6	7.2	282	43.5	98.6
2009	695	76.3	6.2	266	38.3	98.5
2010	628	90.0	8.0	228	36.3	96.9
2011	487	75.6	12.1	146	30.0	96.6
1998-2011	7388	90.1	10.5	3744	50.7	97.3

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis (incl. DCO)

			Prop. deaths		Prop.
Year of	Incident		with death	Deaths in	deaths in
diagnosis/	cases	Deaths	certific.	same year	same year
death	n	n	%	n	%
1998	336	192	95.8	74	22.0
1999	347	225	92.9	87	25.1
2000	301	189	96.3	65	21.6
2001	348	211	96.7	70	20.1
2002	571	319	97.2	152	26.6
2003	570	323	97.5	132	23.2
2004	600	336	97.3	127	21.2
2005	554	320	97.5	115	20.8
2006	617	363	98.3	121	19.6
2007	685	414	96.9	165	24.1
2008	649	377	98.1	136	21.0
2009	695	422	98.3	151	21.7
2010	628	401	98.3	138	22.0
2011	487	365	98.4	106	21.8
1998-2011	7388	4457	97.4	1639	22.2

Table 10c

Annual cohorts of deaths, proportion of cancer-related and not 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 4.52 m as of 2007, respectively)

				Prop.	
				cancer	
		Prop.	Prop.	recorded	
		cancer-	not cancer-	on death	
Year of	Deaths	related	related	certificate	
death	n	%	%	ે	
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	211	81.0	19.0	93.6	
2002	319	81.8	18.2	91.9	
2003	323	80.8	19.2	92.4	
2004	336	86.0	14.0	93.6	
2005	320	79.4	20.6	92.3	
2006	363	79.9	20.1	89.9	
2007	414	82.1	17.9	91.0	
2008	377	79.3	20.7	88.6	
2009	422	78.7	21.3	87.0	
2010	401	75.8	24.2	83.5	
2011	365	75.3	24.7	83.6	
1998-2011	4457	79.2	20.8	89.8	

Table 11a $\begin{tabular}{ll} Means of age at death according to the grouping in Table 10 \\ \hline MALES \end{tabular}$

					Age at
		Age at	Age at	Age at	death
		death	death	death	(according
		(all	(cancer-	(not cancer-	to death
Year of	Deaths	causes)	related)	related)	certificate)
death	n	Years	Years	Years	Years
1998	94	71/.1	68.6	75.6	71.0
1999	125	68.3	65.5	76.5	68.4
2000	99	67.6	66.6	72.5	67.3
2001	98	67.4	66.2	73.4	67.3
2002	165	70.7	70.1	73.7	70.3
2003	164	71.1	69.6	78.5	70.4
2004	172	72.1	71.4	75.7	72.1
2005	173	73.1	73.3	71.8	73.0
2006	193	72.0	71.3	74.6	72.0
2007	223	70.2	69.6	72.6	69.1
2008	202	72.6	71.9	75.8	72.0
2009	233	73.7	72.0	79.1	72.4
2010	224	72.5	71.6	75.7	71.7
2011	195	74.0	72.2	78.8	72.8
1998-2011	2360	71.6	70.5	75.7	71.0

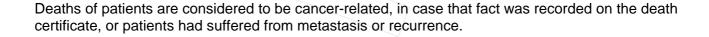
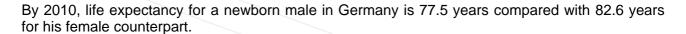


Table 11b Means of age at death according to the grouping in Table 10 FEMALES

Year of death	Deaths n	Age at death (all causes)	Age at death (cancer-related) Years	Age at death (not cancer- related) Years	Age at death (according to death certificate) Years
1998	98	75.5	72.6	82.6	75.8
1999	100	76.8	74.4	83.1	77.4
2000	90	74.9	73.7	80.6	73.7
2001	113	74.9	73.3	80.7	74.6
2002	154	75.2	74.4	78.4	75.5
2003	159	74.5	72.6	81.1	73.5
2004	164	74.3	74.3	74.4	74.2
2005	147	77.3	74.6	85.5	76.2
2006	170	75.9	75.0	80.0	74.8
2007	191	76.3	75.5	79.8	75.5
2008	175	77.1	75.5	82.3	76.7
2009	189	78.8	77.6	83.7	77.9
2010	177	77.3	75.2	82.9	76.2
2011	170	77.4	76.3	81.4	77.0
1998-2011	2097	76.3	74.9	81.5	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 12a $\begin{tabular}{ll} Mortality measures (cancer-related death) and mortality-incidence-index \\ by year of death \\ \hline MALES \\ \end{tabular}$

Year of	Deaths	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index
death	n	raw	raw	WS	WS	ES	ES	BRD-S	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	0.48	6.3	0.49	8.1	0.51
2002	138	7.4	0.47	4.1	0.43	6.3	0.47	8.6	0.51
2003	137	7.3	0.49	4.0	0.44	6.0	0.48	8.1	0.51
2004	147	7.8	0.48	4.0	0.40	6.3	0.45	8.8	0.52
2005	143	7.5	0.50	3.6	0.40	5.8	0.47	8.4	0.54
2006	151	7.9	0.43	3.9	0.37	6.1	0.41	8.2	0.44
2007	182	8.2	0.52	4.3	0.48	6.5	0.51	8.6	0.53
2008	165	7.4	0.46	3.6	0.41	5.5	0.45	7.6	0.48
2009	179	8.0	0.47	3.7	0.39	5.8	0.44	8.1	0.50
2010	177	7.9	0.52	3.6	0.45	5.5	0.48	7.7	0.53
2011	142	6.3	0.56	2.9	0.45	4.5	0.51	6.2	0.57
1998-2011	1879	7.5	0.48	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	Deaths	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index
death	n	raw	raw	WS	WS	ES	ES	BRD-S	BRD-S
1998	69	5.9	0.43	2.5	0.35	3.7	0.38	4.9	0.41
1999	73	6.2	0.43	2.4	0.33	3.8	0.38	5.4	0.43
2000	75	6.2	0.52	2.4	0.41	3.8	0.45	5.0	0.47
2001	89	7.3	0.49	2.9	0.40	4.5	0.43	6.2	0.48
2002	123	6.3	0.45	2.3	0.36	3.6	0.38	5.0	0.42
2003	124	6.3	0.42	2.5	0.33	3.8	0.36	5.0	0.39
2004	142	7.2	0.49	2.7	0.39	4.2	0.42	5.8	0.47
2005	111	5.6	0.41	2.1	0.32	3.2	0.35	4.3	0.38
2006	139	6.9	0.53	2.5	0.40	3.9	0.44	5.3	0.49
2007	158	6.8	0.48	2.4	0.36	3.8	0.40	5.1	0.43
2008	134	5.8	0.46	2.0	0.34	3.1	0.38	4.2	0.42
2009	153	6.6	0.48	2.0	0.32	3.3	0.37	4.7	0.43
2010	129	5.5	0.44	1.9	0.32	3.0	0.36	4.1	0.40
2011	133	5.7	0.58	1.9	0.42	3.0	0.47	4.1	0.53
1998-2011	1652	6.3	0.47	2.3	0.36	3.5	0.39	4.8	0.44

Table 13

Age distribution of age at death (cancer-related) for period 1998-2011 (incl. multiple primaries)

Age at								
death	Cases		Males			Females		
Years	n	% Cum.%	n	96	Cum.%	n	%	Cum.%
0 - 4	1	0.0 0.0	1	0.1	0.1			0.0
5-9	5	0.1 0.2	4	0.2	0.3	1	0.1	0.1
10-14	2	0.1 0.2	_ 2	0.1	0.4			0.1
15-19	4	0.1 0.3	3	0.2	0.5	1	0.1	0.1
20-24	10	0.3 0.6	6	0.3	0.8	4	0.2	0.4
25-29	9	0.3 0.9	4	0.2	1.1	5	0.3	0.7
30-34	17	0.5 / 1.4/	11	0.6	1.6	6	0.4	1.0
35-39	31	0.9 2.2	23	1.2	2.9	8	0.5	1.5
40-44	55	1.5 3.8	39	2.1	4.9	16	1.0	2.5
45-49	77	2.2 5.9	49	2.6	7.5	28	1.7	4.2
50-54	115	3.2 9.2	70	3.7	11/. 2	45	2.7	6.9
55-59	218	6.1 15.3	131	6.9	18.2	87	5.2	12.1
60-64	299	8.4 23.7	189	10.0	28.2	110	6.6	18.7
65-69	432	12.2 35.9	257	13.6	41.8	175	10.5	29.2
70-74	540	15.2 51.1	308	16.3	58.1	232	14.0	43.2
75-79	599	16.9 68.0	329	17.4	75.5	270	16.2	59.4
80-84	606	17.1 85.1	267	14.1	89.7	339	20.4	79.8
85+	530	14.9 100.0	195	10.3	100.0	335	20.2	100.0
All ages	3550	100.0	1888	100.0		1662	100.0	

Included in the statistics are 30.0% multiple primaries in males and 25.5% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2011 (incl. multiple primaries)

			Males		Females		Males	Females
Age at			Age-		Age-		_	Prop.all
death		Females			spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
	_		/	/	\			
0 - 4	1	_	0.1	0.09	0.0	\	3.4	
5- 9	4	1	0.3		0.1	0.14	12.9	2.8
10-14	2	-	0.2		0.0	0 11	6.9	2 /
15-19	3	1	0.2		0.1	0.11	7.9	3.4
20-24	6	4	0.4		0.3		7.5	9.3
25-29	4	5	0.2		0.3		4.6	4.9
30-34	11	6	0.6	0.15	0.3		6.5	3.0
35-39	23	8	1.1	0.23	0.4	0.11	6.3	1.8
40-44	39	16	1.7		0.8	0.17	5.1	1.6
45-49	49	28	2.5	0.24	1.5		3.2	1.6
50-54	70	45	4.2		2.6	0.22	2.5	1.7
55-59	131	87	8.4		5.3		2.5	2.1
60-64	189	110	12.4	0.42	6.9		2.5	2.0
65-69	257	175	18.9		11.8		2.5	2.5
70-74	308	232	29.9	0.56	18.8		2.8	2.9
75-79	329	270	48.7		27.2		3.0	3.0
80-84	267	339	65.7		42.6		3.0	3.5
85+	195	335	70.3	0.87	45.1	0.86	2.7	2.9
All ages	1888	1662					2.8	2.7
Mortality								
Raw			7.5	0.49	6.3			
WS			3.9	0.43	2.3			
ES			5.9		3.6	0.40		
BRD-S			8.1	0.51	4.9	0.44		
PYLL-70			40.0		00.1			
per 100,000			40.9		23.1			
ES			37.1		20.2			
AYLL-70			11.8		10.7			

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

Table 15a

Multiple primaries in deaths in period 1998-2011

MALES

					Syn- chron	Syn- chron		
	Total	Total	Pre	Pre	±30d	±30d	Post	Post
Diagnosis	n /	%↓	n	←%	n	~ %	n	← %
C09-C10 Oropharynx	7	1.0	4	57.1			3	42.9
C16 Stomach	31	4.3	11	35.5	8	25.8	12	38.7
C18 Colon	55	7.7	27	49.1	10	18.2	18	32.7
C19-C20 Rectum	28	3.9	12	42.9	5	17.9	11	39.3
C22 Liver	/ 11	1.5	2	18.2	2	18.2	7	63.6
C25 Pancreas	13 /	1.8			2	15.4	11	84.6
C32 Larynx	8	1.1	5	62.5	1	12.5	2	25.0
C33-C34 Lung	70	9.7	12	17.1	/ 10	14.3	48	68.6
C43 Malign. melanoma	22	3.1	9	40.9	3	13.6	10	45.5
C44 Skin others	76	10.6	19	25.0	8	10.5	49	64.5
C46,C49 Soft tissue	8	1.1	6	75.0	1	12.5	1	12.5
C61 Prostate	123	17.1	73	59.3	23	18.7	27	22.0
C64 Kidney	24	3.3	17	70.8	3	12.5	4	16.7
C67 Bladder	38	5.3	18	47.4	5	13.2	15	39.5
C70-C72 CNS cancer	15	2.1	5	33.3	4	26.7	6	40.0
C76-C79 CUP	18	2.5	3	16.7	_ 2	11.1	/13	72.2
C81 Hodgkin lymphoma	18	2.5	11	61.1	1	5.6	6	33.3
C82-C85 NHL	23	3.2			1	4.3	22	95.7
C90 Mult. myeloma	24	3.3	10	41.7	10	41.7	4	16.7
C91-C96 Leukaemia	43	6.0	15	34.9	5	11.6	23	53.5
Other primaries	63	8.8	26	41.3	10	15.9	27	42.9
All mult. primaries	718	100.0	285	39.7	114	15.9	319	44.4

Multiple primaries with number of cases n<7 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 $\label{eq:multiple primaries in deaths in period 1998-2011 FEMALES }$

					Syn- chron	Syn- chron		
	Total	Total	Pre	Pre	±30d	±30d	Post	Post
Diagnosis	n /	%↓	n	← %	n	~ %	n	← %
C16 Stomach	26	4.6	9	34.6	\ 1	3.8	16	61.5
C18 Colon	34	6.0	13	38.2	5	14.7	16	47.1
C19-C20 Rectum	15	2.7	9	60.0	2	13.3	4	26.7
C21 Anus/canal	9	1.6	4	44.4			5	55.6
C22 Liver	6	1.1			1	16.7	5	83.3
C23-C24 Bile	8	1.4	1	12.5			7	87.5
C25 Pancreas	9 -	1.6			2	22.2	7	77.8
C33-C34 Lung	35	6.2	3	8.6	3	8.6	29	82.9
C43 Malign. melanoma	16	2.8	8	50.0	1	6.3	7	43.8
C44 Skin others	45	8.0	14	31.1	2	4.4	29	64.4
C46,C49 Soft tissue	7	1.2			3	42.9	4	57.1
C50 Breast	134	23.8	88	65.7	13	9.7	33	24.6
C53 Cervix uteri	14	2.5	10	71.4	1	7.1	3	21.4
C54 Corpus uteri	15	2.7	12	80.0	1	6.7	2	13.3
C55,C57 Fem. genitals un	5	0.9	5	100.0				
C56 Ovary	17	3.0	4	23.5	_ 3	17.6	10	58.8
C64 Kidney	13	2.3	6	46.2	2	15.4	5	38.5
C67 Bladder	12	2.1	6	50.0			6	50.0
C70-C72 CNS cancer	14	2.5	6	42.9	1	7.1	7	50.0
C73 Thyroid	7	1.2	5	71.4			2	28.6
C76-C79 CUP	9	1.6	4	44.4			5	55.6
C81 Hodgkin lymphoma	11	2.0	9	81.8			2	18.2
C82-C85 NHL	20	3.6					20	100.0
C90 Mult. myeloma	24	4.3	9	37.5	8	33.3	7	29.2
C91-C96 Leukaemia	32	5.7	3	9.4	2	6.3	27	84.4
Other primaries	26	4.6	11	42.3	2	7.7	13	50.0
			.			/		
All mult. primaries	563	100.0	239	42.5	53	9.4	271	48.1

Multiple primaries with number of cases n<5 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 1998-2011

(Singular primaries only *)

Age at death Years	Males n	Females	_ /	MI-index	Females Age- spec. mortal.	MI-index	cancers	Females Prop.all cancers
0- 4			0.0		0.0			
0- 4 5- 9	4	1	0.0	0.29	0.0	0.14	13.8	3.0
10-14	2	1	0.3		0.0	0.14	6.9	3.0
15-19	3	1	0.2		0.0	0.13	8.6	3.7
20-24	5	4	0.2		0.3		6.7	10.3
25-29	4	5	0.3		0.3		4.9	5.2
30-34	11	5	0.6		0.3		6.7	2.8
35-39	20	7	0.0		0.3	0.10	5.9	1.7
40-44	33	16	1.5		0.8	0.18	4.7	1.8
45-49	44	28	2.3		1.5		3.1	1.9
50-54	62	43	3.7		2.5	0.22	2.5	1.9
55-59	123	80	7.9		4.9		2.7	2.3
60-64	166	99	10.9	0.44	6.2	0.32	2.5	2.2
65-69	223	138	16.4		9.3	0.35	2.6	2.4
70-74	241/	193	23.4		15.6	0.50	2.7	3.0
75-79	256	231	37.9		23.2	0.57	3.1	3.2
80-84	193	277	47.5		34.8	0.77	2.9	3.6
85+	143	275	51.6	0.86	37.0	0.85	2.6	3.0
All ages	1533	1403					2.8	2.8
Mortality								
Raw			6.1		5.3			
WS			3.2		2.0			
ES			4.8		3.0			
BRD-S			6.5	0.50	4.2	0.43		
PYLL-70								
per 100,000			36.6		21.5			
ES ES			33.1		18.9			
AYLL-70			11.9		11.3			

^{*} See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2011

(Single primaries only *)

			Males		Females		Males	Females
Age at			Age-		Age-		Prop.all	Prop.all
death	Males	Females	_ /		spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
0 - 4			0.0		0.0			
5- 9	4	1	0.3		0.1	0.14	14.3	3.1
10-14	2		0,2	0.18	0.0		6.9	
15-19	3	1	0.2	0.16	0.1	0.13	8.6	4.3
20-24	5	4 /	0.3	0.14	0.3		7.1	11.1
25-29	4	4/	0.2	0.12	0.2	0.12	5.3	4.4
30-34	10	4	0.5	0.14	0.2	0.09	6.3	2.5
35-39	19	7	0.9	0.20	0.3	0.10	5.8	1.8
40-44	30	14	1.3	0.21	0.7	0.16	4.5	1.8
45-49	41	24	2.1	0.23	1.3	0.24	3.1	1.8
50-54	50	38	3.0	0.24	2.2	0.21	2.2	1.9
55-59	111	70	7.1		4.3	0.32	2.7	2.3
60-64	142	79	9.3	0.42	4.9	0.28	2.5	2.0
65-69	184	107	13.5	0.45	7.2	0.29	2.5	2.2
70-74	202	170	19.6	0.52	13.8	0.47	2.7	3.1
75-79	212	205	31.4		20.6	0.55	3.1	3.4
80-84	171	236	42.1	0.78	29.7	0.70	3.2	3.7
85+	125	243	45.1	0.77	32.7	0.78	2.8	3.0
All ages	1315	1207					2.8	2.8
5								
Mortality								
Raw			5.2	0.44	4.6	0.43		
WS			2.8		1.7			
ES			4.2		2.6			
BRD-S			5.6		3.6			
PYLL-70								
per 100,000			32.8		18.5			
ES			29.8		16.4			
AYLL-70			12.3		11.8			
					==.0			

^{*} See corresponding tables with multiple primaries.

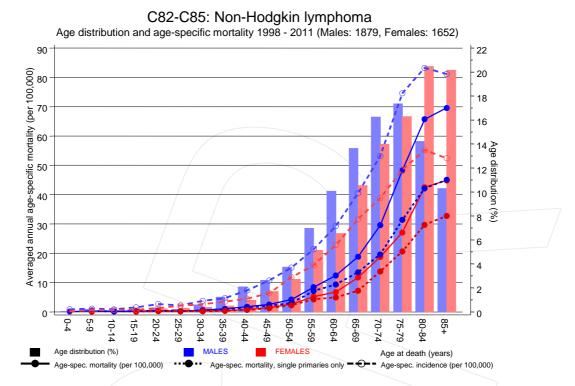
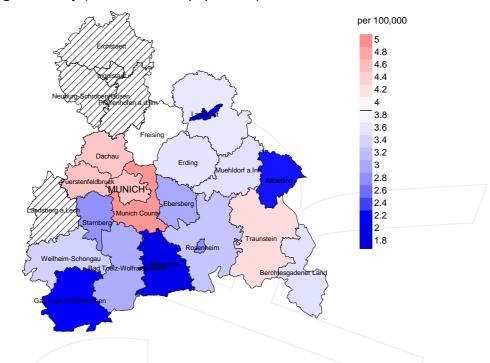


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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) 2003 - 2008: Males



Average mortality (world standard population) 2003 - 2008: Females



Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. 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 3.9/100,000 WS N=888, females 2.3/100,000 WS N=764). Since cancer data are not available in some counties until 2007, the local mortality rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 19 women died from NHL. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.9/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.9 and 3.7/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males

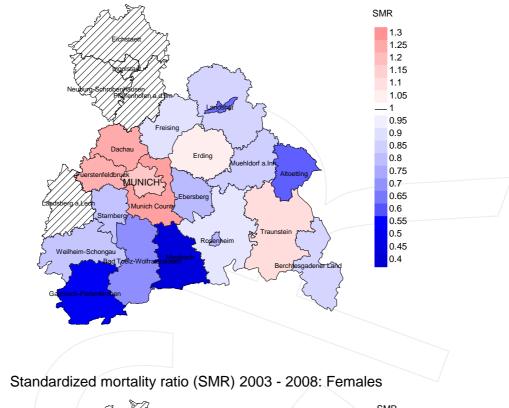




Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=888, females N=764). Since cancer data are not available in some counties until 2007, the local SMR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 19 women died from NHL. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.88. Though, the value of this parameter may vary with an underlying probability of 99% between 0.45 and 1.55, 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. 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 tumor-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

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) FRG Federal Republic of Germany

GEKID Association of Population-based Cancer Registries in Germany

(Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)

LCL Lower confidence limit

MI-index Ratio between mortality and incidence

MCR Munich Cancer Registry (Tumorregister München)

PYLL-70 Potential years of life lost prior to age 70 given a person dies before that age

SEER Surveillance, Epidemiology, and End Results (USA)

SIR Standardized incidence ratio
SMR Standardized mortality ratio
UCL Upper confidence limit
WS World standard population

Recommended Citation

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