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

Sarcoma morph.: Sarcoma (morph.)

Year of diagnosis	1998-2012
Patients	6,117
Diseases	6,145
Creation date	03/20/2014
Export date	02/12/2014
Population	4.5 m



http://www.tumorregister-muenchen.de/en/facts/base/base_hST__E.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, March 2014

- 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 2013 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	%	90	%	%
1998	216	25	11.6	20.4	80.6	98.6
1999	215	12	5.6	25.6	70.2	97.2
2000	233	31	13.3	21.5	66.5	96.6
2001	244	20	8.2	17.2	67.6	97.5
2002	376	29	7.7	22.6	69.7	98.1 #
2003	404	29	7.2	22.5	63.9	96.8 #
2004	421	23	5.5	21.6	61.3	96.9 #
2005	422	15	3.6	22.5	59.5	94.1 #
2006	386	17	4.4	23.3	60.4	95.9 #
2007	480	13	2.7	21.7	56.0	85.8 # ##
2008	526	14	2.7	21.3	56.3	74.9
2009	539	12	2.2	27.5	53.6	76.1
2010	574	14	2.4	27.4	46.9	70.9
2011	606	15	2.5	27.9	38.8	77.7
2012	503	18	3.6	27.2	28.6	96.2 ###
1998-2012	6145	287	4.7	23.9	55.5	87.8

[#] 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	216	111	105	51.4	
1999	215	116	99	54.0	
2000	233	/ 119	114	51.1	
2001	244	109	135	44.7	
2002	376	188	188	50.0	
2003	404	200	204	49.5	
2004	421	214	207	50.8	
2005	422	216	206	51.2	
2006	386	190	196	49.2	
2007	480	239	241	49.8	
2008	526	270	256	51.3	
2009	539	274	265	50.8	
2010	574	298	276	51.9	
2011	606	332	274	54.8	
2012	503	249	254	49.5	
1998-2012	6145	3125	3020	50.9	

Table 2

Incidence measures by year of diagnosis and gender including DCO cases

			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	111	105	10.0	8.9	7.0	5.7	9.2	7.0	10.7	8.1
1999	116	99	10.4	8.3	7.3	4.9	9.5	6.5	11.1	7.5
2000	119	114	10.4	9.5	7.3	5.6	9.5	7.2	11.2	8.5
2001	109	135	9.4	11.1	6.6	6.8	8.7	8.9	10.3	10.0
2002	188	188	10.1	9.6	7.1	5.6	9.0	7.2	10.8	8.6
2003	200	204	10.7	10.4	7.1	6.2	9.4	7.9	11.1	9.0
2004	214	207	11.4	10.5	7.4	6.8	9.7	8.4	11.3	9.3
2005	216	206	11.4	10.4	8.4	6.2	10.1	7.8	11.3	9.1
2006	190	196	9.9	9.8	6.1	5.8	8.2	7.4	10.0	8.5
2007	239	241	10.8	10.4	7.0	6.0	8.9	7.8	10.7	9.0
2008	270	256	12.1	11.0	7.2	6.4	9.6	8.2	11.6	9.5
2009	274	265	12.3	11.4	6.7	6.0	9.4	8.2	11.7	9.7
2010	298	276	13.2	11.8	8.2	6.1	10.8	8.3	12.7	9.9
2011	332	274	14.5	11.6	8.1	6.3	11.0	8.3	13.6	9.6
2012	249	254	10.9	10.8	5.9	5.3	8.1	7.2	10.2	8.8
1998-2012	3125	3020	11.4	10.5	7.2	6.0	9.5	7.8	11.4	9.1



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	216	60.8	20.7	0.1	93.2	33.0	50.8	65.2	75.2	85.0
1999	215	61.8	16.9	3.5	97.9	39.6	52.9	63.3	73.0	81.2
2000	233	60.4	19.9	0,2	97.1	34.2	52.0	62.5	75.8	82.0
2001	244	61.1	17,5	0.1	97.6	39.4	51.5	63.5	72.1	81.4
2002	376	61.6	19.9	0.0	93.1	35.6	52.0	65.6	75.8	82.6
2003	404	61.8	19.4	0.3	92.5	33.2	54.5	66.0	75.4	82.8
2004	421	61.4	19.0	0.0	96.1	38.6	54.0	65.4	73.7	81.4
2005	422	59.6	21.0	0.2	94.2	31.6	49.7	64.3	74.3	82.2
2006	386	62.9	18.5	0.3	103	39.4	54.8	66.3	76.4	82.2
2007	480	62.7	18.8	0.0	96.9	39.2	54.6	66.6	75.2	81.6
2008	526	63.8	18.2	0.0	101	39.7	55.1	68.0	75.6	83.0
2009	539	66.0	15.7	2.2	97.3	44.7	58.1	68.2	77.2	83.8
2010	574	63.9	17.8	0.0	97.3	40.8	56.3	67.8	75.6	82.4
2011	606	65.1	17.5	0.0	96.8	42.5	55.7	69.4	76.6	83.8
2012	503	67.5	15.9	0.3	98.4	47.1	61.1	71.1	77.8	84.0
1998-2012	6145	63.2	18.4	0.0	103	39.0	54.6	67.0	75.6	82.7

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	111	60.0	19.4	0.4	91.1	34.0	52.1	63.8	72.4	82.5
1999	116	60.4	17.7	3.5	97.4	38.4	52.7	62.3	72.1	78.9
2000	119	59.6	21.0	0.2	92.9	29.2	52.5	62.0	76.2	84.3
2001	109	60.4	18.7	0.1	97.6	37.2	51.1	62.8	72.7	79.8
2002	188	59.8	21.3	0.1	92.4	30.4	48.9	64.6	74.8	81.6
2003	200	61.0	19.4	0.3	92.1	31.8	54.7	65.7	73.8	81.4
2004	214	61.9	18.2	0.0	93.4	41.1	55.4	66.0	73.3	80.6
2005	216	56.9	21.8	0.2	90.9	29.4	46.2	63.3	72.1	80.1
2006	190	63.2	17.5	0.3	89.2	42.0	56.2	65.9	76.4	81.3
2007	239	62.1	20.2	0.0	96.4	35.9	55.6	67.7	75.1	79.9
2008	270	64.0	17.3	0.0	95.2	40.7	58.5	68.3	74.0	80.5
2009	274	66.5	15.8	2.4	97.3	44.7	59.2	69.0	77.4	83.7
2010	298	62.3	19.4	0.0	92.7	36.4	53.3	67.5	75.4	82.4
2011	332	65.6	17.1	0.0	95.3	43.9	58.4	70.5	76.4	82.3
2012	249	67.3	15.9	0.3	95.5	48.1	62.2	71.0	76.1	82.8
1998-2012	3125	62.7	18.8	0.0	97.6	37.3	55.0	67.1	74.7	81.7

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	105	61.6	22.1	0.1	93.2	33.0	50.7	66.7	77.5	85.2
1999	99	63.5	15.8	17.4	97.9	42.4	53.6	64.6	74.6	83.9
2000	114	61.2	18.6	0.4	97.1	35.6	51.6	62.6	75.8	81.4
2001	135	61.7	16.5	4.1	95.4	40.4	52.5	64.3	71.6	82.9
2002	188	63.3	18.4	0.0	93.1	39.1	53.0	66.7	77.4	83.4
2003	204	62.7	19.4	0.8	92.5	35.4	54.2	66.5	77.4	83.4
2004	207	60.8	19.8	0.2	96.1	34.6	53.6	64.8	74.4	82.7
2005	206	62.5	19.8	0.3	94.2	36.8	52.5	67.2	77.5	82.9
2006	196	62.7	19.4	0.5	103	36.9	52.9	66.7	76.7	83.9
2007	241	63.3	17.3	0.2	96.9	42.2	53.5	66.1	75.6	82.6
2008	256	63.5	19.1	1.4	101	38.6	53.2	66.7	77.1	84.8
2009	265	65.5	15.7	2.2	94.6	45.8	57.6	67.5	76.7	83.8
2010	276	65.7	15.8	0.9	97.3	43.7	58.7	68.4	76.2	82.4
2011	274	64.4	18.1	0.0	96.8	42.2	53.3	68.2	77.0	84.8
2012	254	67.6	15.9	0.7	98.4	46.4	59.8	71.2	78.4	84.7
1998-2012	3020	63.7	18.1	0.0	103	40.4	54.3	66.8	76.8	83.6

Table 4 Age distribution by 5-year age group and gender for period 1998-2012 (incl. DCO)

Age at									
diagnosis	Cases			Males			Females		
Years	n	용	Cum.%	n	%	Cum.%	n	용	Cum.%
0-4	127	2.1	2.1	84	2.7	2.7	43	1.4	1.4
5-9	30	0.5	2.6	/ 15	0.5	3.2	15	0.5	1.9
10-14	35	0.6	3.1	18	0.6	3.7	17	0.6	2.5
15-19	47	0.8	3.9	23	0.7	4.5	24	0.8	3.3
20-24	41	0.7	4.6	20	0.6	5.1	21	0.7	4.0
25-29	75	1.2	5.8	38	1.2	6.3	37	1.2	5.2
30-34	121	2.0	7.7	67	2.1	8.5	54	1.8	7.0
35-39	184	3.0	10.7	102	3.3	/ 11.7/	82	2.7	9.7
40-44	241	3.9	14.7	110	3.5	15.3	131	4.3	14.0
45-49	272	4.4	19.1	112	3.6	18.8	160	5.3	19.3
50-54	392	6.4	25.5	191	6.1	25.0	201	6.7	26.0
55-59	518	8.4	33.9	248	7.9	32.9	270	8.9	34.9
60-64	643	10.5	44.4	337	10.8	43.7	306	10.1	45.1
65-69	899	14.6	59.0	499	16.0	59.6	400	13.2	58.3
70-74	896	14.6	73.6	504	16.1	75.8	392	13.0	71.3
75-79	702	11.4	85.0	356	11.4	87.2	346	11.5	82.7
80-84	536	8.7	93.7	237	7.6	94.8	299	9.9	92.6
85+	386	6.3	100.0	164	5.2	100.0	222	7.4	100.0
All ages	6145	100.0		3125	100.0		3020	100.0	

Included in the statistics are 28.7% multiple primaries in males and 29.8% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 1998-2012

			ior g	period 19	998-2012			
							Males	Females
			Malag	Females	Malag	Females		Prop.all
Age at				Age-		DCO rate	_	cancers
diagnosis	Maleq	Females	spec.	_	n=171	n=116		n=142297
Years	n	n		incid.	%	%	%	%
icais	11	11	incia.	mera.	•	°	8	0
0- 4	84	43	6.1	3.3	2.4		27.5	19.0
5- 9	15	15	1.1	1.1			9.1	13.3
10-14	18	17	1.3	1.3			12.2	10.5
15-19	23	24	1.6	1.8	4.3	4.2	7.2	9.0
20-24	20	21	1.2	1.3	5.0		3.6	4.3
25-29	38	37	2.1	2.0			4.3	3.6
30-34	67	54	3.2	2.6		1.9	4.7	2.9
35-39	102	82	4.4	3.7	4.9	1.2	4.8	2.3
40-44	109	130	4.5	5.6	0.9	1.5	3.6	2.2
45-49	112	160	5.2	7.6	6.3	1.9	2.3	2.0
50-54	191	200	10.3	10.6	5.2	1.0	2.4	2.0
55-59	248	270	14.6	15.2	4.8	3.0	1.8	2.1
60-64	336	306	20.4	17.6	4.5	2.0	1.6	1.9
65-69	498	400	33.9	24.9	4.4	1.0	1.9	2.3
70-74	503	392	43.4	28.4	5.2	2.6	2.0	2.3
75-79	355	345	47.1	31.5	6.8	5.2	1.9	2.1
80-84	236	299	52.0	34.6	11.4	8.7	1.9	2.0
85+	163	221	52.6	27.0	11.0	15.4	1.8	1.4
All ages	3118	3016			5.5	3.8	2.1	2.1
Incidence			11 4	10 5				
Raw			11.4	10.5				
WS			7.2					
ES BRD-S			9.5	7.8 9.1				
BRD-5			11.4	9.1				

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 1998-2012

MALES

	Observed	Expected		LCL	UCL		DCO
Diagnosis	n	n	SIR	95%	95%	EAR	%
_							
C03-C06 Oral cavity	/ 3 /	0.7	4.3	0.9	12.4	3.8	
C09-C10 Oropharynx	/ 4 /	0.9	4.6	1.2	11.7 #	5.2	
C15 Oesophagus	6/	1.4	4.2	1.5	9.1 #	7.5	16.7
C16 Stomach	9	3.5	2.6	1.2	4.9 #	9.1	
C17 Small intestine	/ /7	0.4	17.9	7.2	36.8 #	10.9	
C18 Colon	12	8.2	1.5	0.8	2.6	6.3	8.3
C19-C20 Rectum	4	4.6	0.9	0.2	2.2	-1.0	
C22 Liver	3	2.3	1.3	0.3	3.9	1.2	33.3
C23-C24 Bile	3	0.8	3.8	0.8	11.1	3.6	
C25 Pancreas	3	2.9	1.0	0.2	3.0	0.2	
C33-C34 Lung	23	9.7	2.4	1.5	3.6 #	21.9	43.5
C43 Malign. melanoma	14	3.2	4.3	2.4	7.3 #	17.8	14.3
C46,C49 Soft tissue	5	0.5	11.0	3.6	25.7 #	7.5	
C61 Prostate	36	24.6	1.5	1.0	2.0 #	18.8	5.6
C64 Kidney	15	2.9	5.2	2.9	8.6 #	20.0	
C67 Bladder	5	3.6	1.4	0.5	3.2	2.3	
C70-C72 CNS cancer	2	1.1	1.8	0.2	6.4	1.4	50.0
C73 Thyroid	2	0.6	3.5	0.4	12.8	2.4	
C76-C79 CUP	3	1.4	2.1	0.4	6.2	2.6	
C82-C85 NHL	11	3.3	3.4	1.7	6.1 #	12.8	
C90 Mult. myeloma	3	1.0	2.9	0.6	8.5	3.2	
C91-C96 Leukaemia	7	1.4	5.2	2.1	10.7 #	9.3	
Other primaries	9	2.8	3.2	1.5	6.1 #	10.2	
Not observed	0	2.0	0.0	0.0	1.9	-3.3	
All mult. primaries	189	83.7	2.3	1.9	2.6 #	173.6	9.5

Patients Mean age at second malignancy (years)	2062 69.1
Person-years	6064
Mean observation time (years)	2.9
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 6b

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

for period 1998-2012 FEMALES

	Observed Ex	pected		LCL	UCL		DCO
Diagnosis	'n	n	SIR	95%	95%	EAR	%
C16 Stomach	6	2.3	2.7	1.0	5.8	5.6	
C18 Colon	/ 12 /	6.2	1.9	1.0	3.4	8.7	8.3
C19-C20 Rectum	/ 7/	2.8	2.5	1.0	5.2 #	6.3	
C25 Pancreas	/ 7	2.6	2.7	1.1	5.5 #	6.6	28.6
C33-C34 Lung	1/7	4.5	3.8	2.2	6.1 #	18.8	23.5
C43 Malign. melanoma	8	2.3	3.4	1.5	6.8 #	8.5	12.5
C46,C49 Soft tissue	7_	0.4	19.4	7.8	39.9 #	10.0	42.9
C50 Breast	44	19.9	2.2	1.6	3.0 #	36.2	9.1
C53 Cervix uteri	4	1.0	4.1	1.1	10.5 #	4.5	
C54 Corpus uteri	11	3.6	3.1	1.5	5.5 #	11.1	
C56 Ovary	8	2.7	3.0	1.3	5.9 #	8.0	50.0
C64 Kidney	14	1.6	8.9	4.9	14.9 #	18.7	7.1
C67 Bladder	2	1.1	1.8	0.2	6.5	1.3	
C70-C72 CNS cancer	6	0.9	6.5	2.4	14.2 #	7.6	16.7
C73 Thyroid	7	1.3	5.3	2.1	11.0 #	8.5	
C82-C85 NHL	9	2.4	3.8	1.7	7.1 #	9.9	
C91-C96 Leukaemia	4	1.0	4.0	1.1	10.3 #	4.5	
Other primaries	8	3.6	2.2	1.0	4.3	6.6	12.5
Not observed	0	4.1	0.0	0.0	0.9 #	-6.1	
All mult. primaries	181	64.2	2.8	2.4	3.3 #	175.4	12.2

Patients	2059
Mean age at second malignancy (years)	70.1
Person-years	6661
Mean observation time (years)	3.2
Median observation time (years)	2.0

The occurrence of second malignancy is statistically significant.

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

Sarcoma morph.: Malignant neoplasm of other connective and soft tissue (morphological classification) Age distribution and age-specific incidence 1998 - 2012 (Males: 3118, Females: 3016)

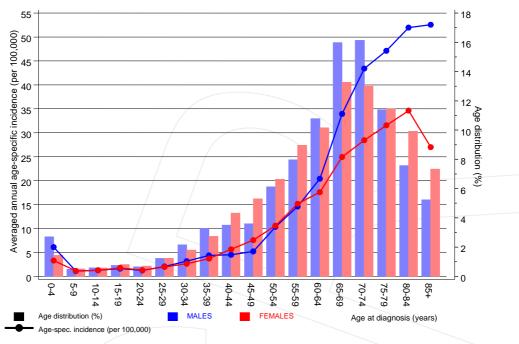


Figure 7. Age distribution and age-specific incidence



Sarcoma morph.: Malignant neoplasm of other connective and soft tissue (morphological classification)

Cumulative follow-up years since diagnosis for period 1998 - 2012 (excl. DCO)

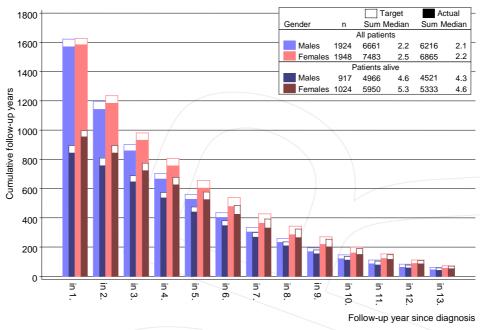
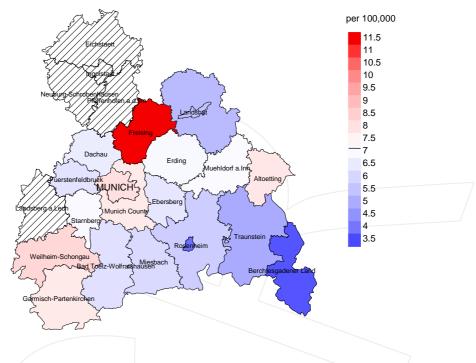


Figure 8. Cumulative follow-up years depending on time since diagnosis

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

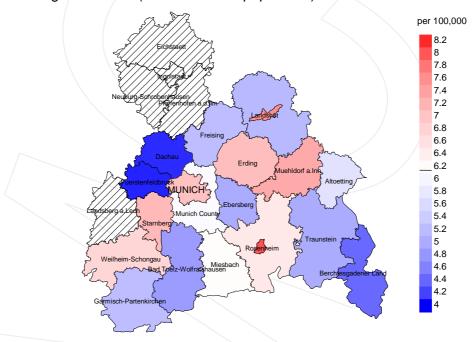


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 7.2/100,000 WS N=1,261, females 6.2/100,000 WS N=1,246). 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 34 women were identified with newly diagnosed sarcoma (morph.). Therefore, the mean incidence rate for this cancer type in this area can be calculated at 5.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.7 and 8.9/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males

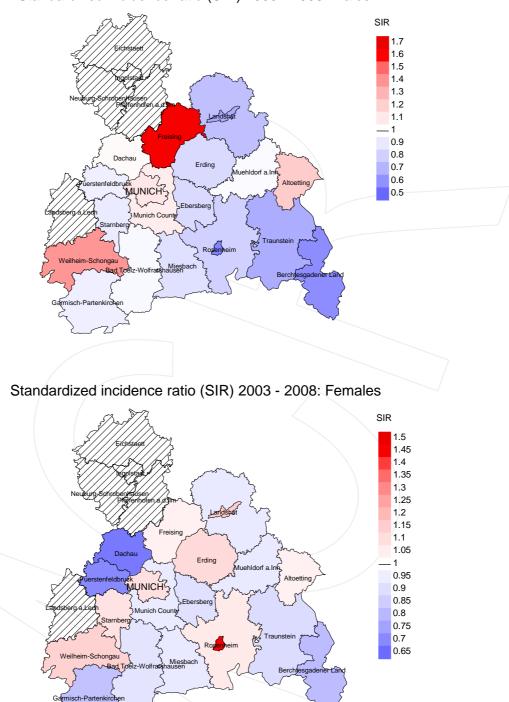


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,261, females N=1,246). 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 34 women were identified with newly diagnosed sarcoma (morph.). Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.91. Though, the value of this parameter may vary with an underlying probability of 99% between 0.56 and 1.39, 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	રુ	%
1998	216	98.6	11.6	174	80.6	92.0
1999	215	97.2	5.6	151	70.2	90.1
2000	233	96.6	13.3	155	66.5	97.4
2001	244	97.5	8.2	165	67.6	93.9
2002	376	98.1	7.7	262	69.7	96.9
2003	404	96.8	7.2	258	63.9	96.5
2004	421	96.9	5.5	258	61.3	97.7
2005	422	94.1	3.6	251	59.5	98.0
2006	386	95.9	4.4	233	60.4	99.1
2007	480	85.8	2.7	269	56.0	98.9
2008	526	74.9	2.7	296	56.3	98.0
2009	539	76.1	2.2	289	53.6	97.6
2010	574	70.9	2.4	269	46.9	98.9
2011	606	77.7	2.5	235	38.8	97.4
2012	503	96.2	3.6	144	28.6	95.8
1998-2012	6145	87.8	4.7	3409	55.5	96.9

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 $2.51\ \mathrm{to}\ 3.96\ \mathrm{m}$ as of 2002, and from 3.96 to 4.52 m as of 2007, respectively)

			Prop. deaths		Prop.
Year of	Incident		with death	Deaths in	deaths in
diagnosis/	cases	Deaths	certific.	same year	same year
death	n	n	%	n	Same year
acacii		/ 11/	Ů		/
1998	216	159	94.3	57	26.4
1999	215	141	89.4	46	21.4
2000	233	147	93.2	52	22.3
2001	244	142	93.0	49	20.1
2002	376	206	97.1	81	21.5
2003	404	223	96.0	83	20.5
2004	421	260	96.9	84	20.0
2005	422	263	96.6	75	17.8
2006	386	246	96.3	65	16.8
2007	480	302	98.0	82	17.1
2008	526	287	99.0	84	16.0
2009	539	340	98.2	99	18.4
2010	574	362	98.6	100	17.4
2011	606	385	99.0	113	18.6
2012	503	372	98.9	101	20.1
1998-2012	6145	3835	97.1	1171	19.1

Table 10c

Annual cohorts of deaths, proportion of cancer-related and not cancerrelated deaths, and cancer recorded on death certificates (incl. DCO)

(with respect to registry area expansion from $2.51\ \mathrm{to}\ 3.96\ \mathrm{m}$ 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	%	%	8	
acacii	11	, °	°		
1998	159	74.8	25.2	93.3	
1999	141	85.8	14.2	96.0	
2000	147	85.0	15.0	94.9	
2001	142	86.6	13.4	93.2	
2002	206	82.0	18.0	92.5	
2003	223	86.1	13.9	90.7	
2004	260	84.6	15.4	93.3	
2005	263	85.2	14.8	90.9	
2006	246	83.7	16.3	88.6	
2007	302	87.4	12.6	92.2	
2008	287	87.8	12.2	91.2	
2009	340	87.6	12.4	91.0	
2010	362	84.5	15.5	89.6	
2011	385	84.4	15.6	90.3	
2012	372	82.5	17.5	89.9	
1998-2012	3835	84.8	15.2	91.3	

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	84	64.8	62.4	72.3	63.7
1999	78	65.9	65.4	69.5	65.9
2000	80	63.7	62.5	71.6	63.7
2001	74	64.8	63.4	72.2	65.3
2002	115	66.8	66.3	69.3	65.9
2003	100	67.4	65.9	74.2	64.8
2004	140	68.1	66.5	77.2	68.3
2005	132	65.7	64.3	74.0	64.7
2006	128	68.7	68.6	69.4	68.9
2007	168	67.3	66.7	72.8	66.6
2008	148	71.3	70.7	77.1	70.2
2009	179	71.4	69.8	80.2	70.4
2010	199	71.5	70.7	75.8	70.8
2011	201	72.4	71.2	78.3	71.7
2012	194	71.9	70.9	77.0	71.3
1998-2012	2020	68.9	67.9	74.8	68.3

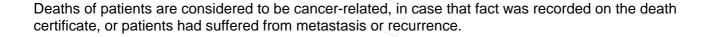


Table 11b Means of age at death according to the grouping in Table 10 FEMALES

					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	75	69.5	66.3	78.1	68.8
1999	63	68.9	68.4	71.7	68.9
2000	67	69.8	70.0	68.5	70.0
2001	68	66.3	65.6	72.8	65.5
2002	91	67.3	64.3	81.5	66.7
2003	123	67.9	65.9	84.4	67.5
2004	120	70.2	68.1	81.5	68.4
2005	131	71.3	69.6	80.8	70.2
2006	118	71.6	69.9	79.3	70.4
2007	134	72.2	70.8	79.9	70.6
2008	139	73.9	72.0	84.7	72.5
2009	161	71.7	70.7	82.1	71.3
2010	163	72.0	70.2	83.2	71.1
2011	184	72.6	71.1	81.0	71.9
2012	178	74.4	72.6	82.0	73.8
1998-2012	1815	71.2	69.6	80.4	70.3



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	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	64	5.8	0.58	3.9	0.56	5.3	0.58	6.5	0.60
1999	67	6.0	0.58	3.9	0.55	5.5	0.58	6.8	0.62
2000	70	6.1	0.59	4.1	0.56	5.5	0.58	6.7	0.59
2001	62	5.3	0.57	3.4	0.52	4.7	0.54	5.7	0.56
2002	94	5.0	0.50	3.1	0.43	4.4	0.48	5.5	0.51
2003	82	4.4	0.41	2.6	0.37	3.7	0.40	4.8	0.44
2004	119	6.3	0.56	3.7	0.50	5.2	0.54	6.7	0.59
2005	113	6.0	0.52	3.6	0.43	4.9	0.49	6.0	0.53
2006	109	5.7	0.57	3.1	0.51	4.5	0.55	5.8	0.58
2007	152	6.9	0.64	3.8	0.54	5.4	0.61	6.8	0.64
2008	134	6.0	0.50	3.0	0.41	4.5	0.47	6.0	0.52
2009	152	6.8	0.55	3.3	0.49	4.9	0.52	6.4	0.55
2010	166	7.4	0.56	3.6	0.44	5.3	0.49	7.1	0.56
2011	169	7.4	0.51	3.5	0.43	5.2	0.48	7.1	0.53
2012	162	7.1	0.66	3.4	0.59	5.1	0.63	6.8	0.68
1998-2012	1715	6.2	0.55	3.5	0.48	5.0	0.52	6.4	0.56

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	55	4.7	0.53	2.5	0.44	3.4	0.49	4.3	0.53
1999	54	4.6	0.55	2.3	0.48	3.2	0.49	4.1	0.55
2000	55	4.6	0.48	2.1	0.37	3.0	0.41	3.9	0.46
2001	61	5.0	0.45	2.7	0.40	3.6	0.41	4.3	0.43
2002	75	3.8	0.40	2.3	0.40	2.9	0.40	3.4	0.39
2003	110	5.6	0.54	3.0	0.49	3.9	0.50	4.7	0.52
2004	101	5.1	0.49	2.5	0.37	3.5	0.42	4.3	0.47
2005	111	5.6	0.54	2.6	0.41	3.7	0.47	4.6	0.50
2006	97	4.8	0.49	2.2	0.38	3.1	0.42	3.9	0.46
2007	113	4.9	0.47	2.1	0.36	3.1	0.40	4.0	0.44
2008	118	5.1	0.46	2.1	0.33	3.1	0.38	4.0	0.42
2009	146	6.3	0.55	2.8	0.47	4.0	0.49	5.0	0.52
2010	140	6.0	0.51	2.6	0.43	3.8	0.46	4.9	0.49
2011	156	6.6	0.57	2.8	0.44	4.0	0.49	5.2	0.55
2012	145	6.1	0.57	2.5	0.47	3.6	0.50	4.6	0.53
1998-2012	1537	5.4	0.51	2.5	0.41	3.5	0.45	4.4	0.48

Table 13

Age distribution of age at death (cancer-related) for period 1998-2012 (incl. multiple primaries)

Age at								
death	Cases		Males			Females		
Years	n	% Cum.%	n	%	Cum.%	n	%	Cum.%
0 - 4	22	0.7 0.7	16	0.9	0.9	6	0.4	0.4
5-9	11	0.3 1.0	4	0.2	1.2	7	0.5	0.8
10-14	9	0.3 1.3	4	0.2	1.4	5	0.3	1.2
15-19	12	0.4 1.6	5	0.3	1.7	7	0.5	1.6
20-24	18	0.5 2.2	/ 7	0.4	2.1	11	0.7	2.3
25-29	25	0.8 / 3.0	15	0.9	3.0	10	0.6	3.0
30-34	24	0.7 / 3.7/	15	0.9	3.8	9	0.6	3.5
35-39	39	1.2 4.9	27	1.6	5.4	12	0.8	4.3
40-44	71	2.2 7.0	32	1.9	7.2	39	2.5	6.8
45-49	105	3.2 10.3	55	3.2	10.4	50	3.2	10.1
50-54	132	4.0 14.3	69	4.0	14.4	63	4.1	14.1
55-59	223	6.8 21.1	111	6.4	20.8	112	7.2	21.4
60-64	356	10.9 31.9	197	11.4	32.2	159	10.3	31.6
65-69	488	14.9 46.8	298	17.2	49.5	190	12.3	43.9
70-74	529	16.1 63.0	309	17.9	67.4	220	14.2	58.1
75-79	474	14.5 77.4	245	14.2	81.5	229	14.8	72.8
80-84	411	12.5 90.0	184	10.6	92.2	227	14.6	87.5
85+	329	10.0 100.0	135	7.8	100.0	194	12.5	100.0
All ages	3278	100.0	1728	100.0		1550	100.0	

Included in the statistics are 28.7% multiple primaries in males and 29.8% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2012 (incl. multiple primaries)

			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	16	6	1.2	0.19	0.5	0.14	51.6	26.1
5- 9	4	7	0.3		0.5		11.4	17.9
10-14	4	5	0.3		0.4		12.1	17.9
15-19	5	7	0.4		0.5		11.9	20.6
20-24	7	11 /	0.4		0.7		8.4	23.4
25-29	15	10	0.8		0.5	0.27	15.6	9.2
30-34	15	9	0.7		0.4		8.5	4.2
35-39	27	12	1.2	0.26	0.5		7.0	2.4
40-44	32	39	1.3		1.7	0.30	4.0	3.6
45-49	55	50	2.6		2.4		3.2	2.7
50-54	69	63	3.7	0.36	3.3	0.31	2.2	2.2
55-59	111	112	6.5	0.45	6.3	0.41	2.0	2.5
60-64	197	159	12.0	0.58	9.1	0.52	2.4	2.6
65-69	298	190	20.3	0.60	11.8	0.48	2.7	2.5
70-74	309	220	26.7	0.61	16.0	0.56	2.5	2.4
75-79	245	229	32.5	0.69	20.9	0.66	2.0	2.3
80-84	184	227	40.5	0.78	26.3	0.76	1.9	2.2
85+	135	194	43.5	0.82	23.7	0.87	1.7	1.5
All ages	1728	1550					2.3	2.3
Mortality								
Raw			6.3	0.55	5.4	0.51		
WS			3.5	0.48	2.5	0.42		
ES			5.0	0.53	3.5	0.45		
BRD-S			6.5	0.57	4.4	0.49		
PYLL-70								
per 100,000			45.1		38.9			
ES			43.9		37.4			
AYLL-70			13.1		14.0			

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

Table 15a

Multiple primaries in deaths in period 1998-2012

MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	5	0.9					5	100.0
C09-C10 Oropharynx	/5	0.9					5	100.0
C12-C13 Hypopharynx	/ 6	/ 1.1			2	33.3	4	66.7
C15 Oesophagus	6	/ 1.1					6	100.0
C16 Stomach	16	2.9			4	25.0	12	75.0
C17 Small intestine	8	1.5			4	50.0	4	50.0
C18 Colon	/ 10	1.8			3	30.0	7	70.0
C19-C20 Rectum	8	1.5			/ 1	12.5	7	87.5
C22 Liver	6	1.1			3	50.0	3	50.0
C25 Pancreas	5	0.9					5	100.0
C33-C34 Lung	35	6.4			4	11.4	31	88.6
C38,C45 Mesothelioma	100	18.3			3	3.0	97	97.0
C40-C41 Bone	5	0.9	2	40.0			3	60.0
C43 Malign. melanoma	37	6.8	25	67.6	1	2.7	1,1	29.7
C44 Skin others	29	5.3					29	100.0
C46,C49 Soft tissue	77	14.1			_ 5	6.5	72	93.5
C48 Peritoneal	9	1.6					9	100.0
C61 Prostate	28	5.1			5	17.9	23	82.1
C64 Kidney	11	2.0			3	27.3	8	72.7
C67 Bladder	16	2.9			2	12.5	14	87.5
C70-C72 CNS cancer	21	3.8			1	4.8	20	95.2
C76-C79 CUP	6	1.1					6	100.0
C81 Hodgkin lymphoma	6	1.1	5	83.3			1	16.7
C82-C85 NHL	32	5.9			9	28.1	23	71.9
C90 Mult. myeloma	19	3.5			2	10.5	17	89.5
C91-C96 Leukaemia	15	2.7			1	6.7	14	93.3
Other primaries	25	4.6	5	20.0	1	4.0	19	76.0
All mult. primaries	546	100.0	37	6.8	54	9.9	455	83.3

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 15b

Multiple primaries in deaths in period 1998-2012
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
210212	/	**						
C16 Stomach	13	2.4			1	7.7	12	92.3
C17 Small intestine	5	0.9					5	100.0
C18 Colon	19	3.5			1	5.3	18	94.7
C19-C20 Rectum	5	0.9					5	100.0
C22 Liver	5	0.9			1	20.0	4	80.0
C25 Pancreas	14	2.6			1	7.1	13	92.9
C33-C34 Lung	32	5.9			3	9.4	29	90.6
C38,C45 Mesothelioma	23	4.3					23	100.0
C43 Malign. melanoma	25	4.6	12	48.0	2	8.0	11	44.0
C44 Skin others	20	3.7			2	10.0	18	90.0
C46,C49 Soft tissue	75	13.9			4	5.3	71	94.7
C48 Peritoneal	10	1.9			2	20.0	8	80.0
C50 Breast	71	13.2			12	16.9	59	83.1
C54 Corpus uteri	45	8.3			3	6.7	42	93.3
C56 Ovary	28	5.2			7	25.0	21	75.0
C64 Kidney	17	3.2			_ 3	17.6	14	82.4
C67 Bladder	13	2.4			2	15.4	11	84.6
C70-C72 CNS cancer	27	5.0			2	7.4	25	92.6
C73 Thyroid	8	1.5			2	25.0	6	75.0
C76-C79 CUP	10	1.9			2	20.0	8	80.0
C82-C85 NHL	20	3.7			7	35.0	13	65.0
C90 Mult. myeloma	11	2.0			1 \	9.1	10	90.9
C91-C96 Leukaemia	12	2.2			2	16.7	10	83.3
Other primaries	31	5.8	4	12.9	2	6.5	25	80.6
All mult. primaries	539	100.0	16	3.0	62	11.5	461	85.5

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 1998-2012

(Singular 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	8	%
0 - 4	14	6	1.0		0.5	0.14	53.8	26.1
5- 9	4	7	0.3		0.5	0.47	12.1	19.4
10-14	4	4	0,3	0.24	0.3	0.25	12.1	15.4
15-19	5	7	0.4	0.22	0.5	0.32	12.8	22.6
20-24	6	8 /	0.4	0.32	0.5	0.44	7.7	18.6
25-29	13	10/	0.7	0.37	0.5	0.27	14.4	9.7
30-34	14	9	0.7	0.22	0.4	0.17	8.1	4.8
35-39	26	9	1.1	0.27	0.4	0.12	7.2	2.0
40-44	28	34	1.2	0.29	1.5	0.29	3.7	3.6
45-49	47	48	2.2	0.46	2.3	0.33	3.1	3.0
50-54	56	50	3.0	0.33	2.6	0.29	2.1	2.1
55-59	96	93	5.6	0.45	5.2	0.42	2.0	2.5
60-64	166	131	10.1	0.58	7.5	0.54	2.4	2.6
65-69	247	146	16.8	0.61	9.1	0.48	2.7	2.3
70-74	243	172	21.0	0.64	12.5	0.57	2.5	2.4
75-79	186	174	24.7	0.71	15.9	0.66	2.0	2.2
80-84	143	179	31.5	0.80	20.7	0.79	1.9	2.2
85+	103	149	33.2	0.82	18.2	0.85	1.7	1.5
All ages	1401	1236					2.4	2.3
5								
Mortality								
Raw			5.1	0.54	4.3	0.50		
WS			2.9		2.1	0.41		
ES			4.1		2.8			
BRD-S			5.2		3.6			
PYLL-70								
per 100,000			39.4		33.7			
ES			38.5		32.8			
AYLL-70			13.5		14.7			
					= - • ·			

^{*} See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2012

(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	13	6	0.9		0.5	0.14	52.0	26.1
5- 9	4	7	0.3		0.5	0.47	12.5	20.0
10-14	4	4	0,3		0.3	0.27	12.1	16.7
15-19	5	6	0.4	0.22	0.4	0.27	12.8	23.1
20-24	6	7 /	0.4	0.32	0.4	0.41	8.2	17.5
25-29	12	10/	0.6	0.34	0.5	0.28	14.3	10.3
30-34	14	9	0.7	0.23	0.4	0.19	8.4	5.3
35-39	24	9	1.0	0.25	0.4	0.13	7.0	2.2
40-44	25	31	1.0	0.28	1.3	0.27	3.5	3.6
45-49	44	45	2.0	0.44	2.1	0.31	3.1	3.1
50-54	52	46	2.8	0.33	2.4	0.29	2.1	2.1
55-59	87	87	5.1	0.45	4.9	0.42	2.0	2.6
60-64	160	117	9.7	0.60	6.7	0.53	2.6	2.7
65-69	229	129	15.6	0.62	8.0	0.47	2.9	2.4
70-74	215	147	18.6	0.62	10.7	0.54	2.6	2.4
75-79	170	159	22.6	0.71	14.5	0.64	2.3	2.4
80-84	124	164	27.3	0.76	19.0	0.75	2.1	2.4
85+	86	133	27.7	0.74	16.2	0.82	1.7	1.5
All ages	1274	1116					2.5	2.4
5								
Mortality								
Raw			4.6	0.53	3.9	0.49		
WS			2.6	0.46	1.9			
ES			3.7		2.6			
BRD-S			4.7	0.55	3.2			
PYLL-70								
per 100,000			37.0		31.5			
ES			36.3		30.8			
AYLL-70			13.5		15.1			
					== • =			

^{*} See corresponding tables with multiple primaries.

Sarcoma morph.: Malignant neoplasm of other connective and soft tissue (morphological classification)

Age distribution and age-specific mortality 1998 - 2012 (Males: 1715, Females: 1537)

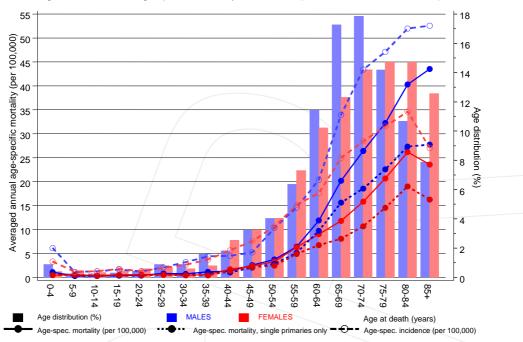
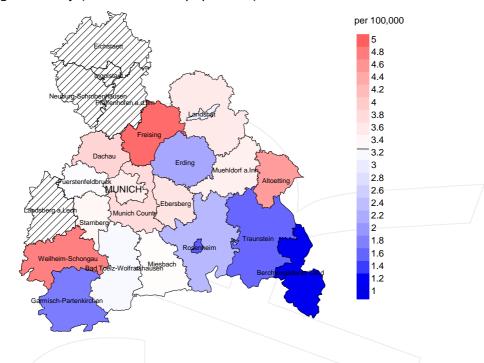


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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



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



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

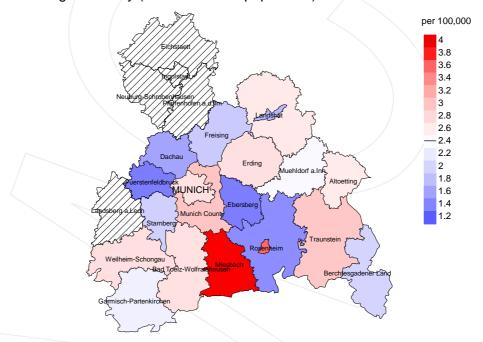
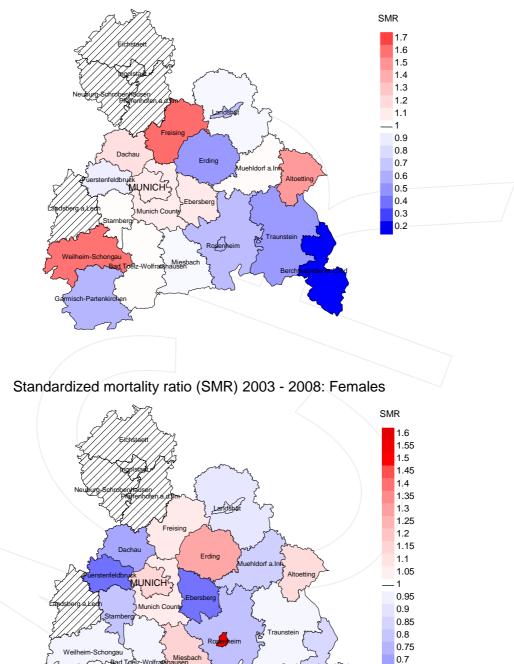


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 3.3/100,000 WS N=676, females 2.4/100,000 WS N=625). 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 11 women died from sarcoma (morph.). Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.4/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.4 and 4.0/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males



0.65

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=676, females N=625). 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 11 women died from sarcoma (morph.). Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.60. Though, the value of this parameter may vary with an underlying probability of 99% between 0.24 and 1.25, 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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