# **Munich Cancer Registry**



- ▶ Survival
- ▶ Selection Matrix
- ▶ Homepage
- ▶ Deutsch

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	1998-2013
Patients	9,973
Diseases	10,021
Creation date	05/19/2015
Export date	12/30/2014
Population	4.64 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<sup>#</sup>, with a total of 4.64 million inhabitants, account for the frequency of cancer diseases<sup>##</sup> 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, May 2015

- 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 2014 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.

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

Code	Description
868-871 880 881-883 884 885-888 889-892 893-899 900-903 904	Paragangliomas and glomus tumors Soft tissue tumors and sarcomas, NOS Fibromatous neoplasms Myxomatous neoplasms Lipomatous neoplasms Myomatous neoplasms Complex mixed and stromal neoplasms Fibroepithelial neoplasms Synovial-like neoplasms Mesothelial neoplasms
912-916 917	Blood vessel tumors
917	Lymphatic vessel tumors Extraskeletal osteosarcoma
9231/3	Myxoid chondrosarcoma
9240/3	Mesenchymal chondrosarcoma
925	Giant cell tumors
9260/3	Extraskeletal Ewing sarcoma
9364/3	Peripheral neuroectodermal tumor
938-948	Gliomas
949-952	Neuroepitheliomatous neoplasms
953	Meningiomas
954-957 958	Nerve sheath tumors
930	Granular cell tumors and alveolar soft part sarcoma
5th digi	t behaviour code = /3 (malignant, primary site)

... if not existing any of ...

### Topography codes (ICD-O-3 2000) used for specifying cancer site

Code	Description
C40	Bones, joints and articular cartilage of limbs
C41	Bones, joints and articular cartilage of other and unspecified sites

#### **INCIDENCE**

Table 1

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

		Prop.		Prop.
		mult.	Prop.	actively
Year of	Cases	primaries	deaths	followed
diagnosis	n	%	8	%
1998	344	14.8	79.7	98.3
1999	313	21.4	75.4	97.1
2000	353	17.0	70.0	96.6
2001	379	12.4	72.6	96.3
2002	600	17.2	74.3	97.5 #
2003	641	16.2	71.0	97.3
2004	655	17.9	66.6	96.9
2005	696	19.4	68.5	95.5
2006	602	19.1	68.8	95.8
2007	732	18.6	60.8	86.6 # ##
2008	786	18.2	63.4	79.0
2009	851	21.2	64.0	79.9
2010	823	23.6	60.4	77.9
2011	871	24.0	52.2	77.6
2012	868	21.2	43.9	73.6
2013	507	26.2	33.9	99.6 ###
1998-2013	10021	19.7	62.4	88.1

Due to the pathohistological classification of the tumor and the lack of information on morphology on the death certificates, the proportion of DCO cases can not be determined.

- # 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	344	176	168	51.2
1999	313	167	146	53.4
2000	353	185	168	52.4
2001	379	178	201	47.0
2002	600	303	297	50.5
2003	641	323	318	50.4
2004	655	348	307	53.1
2005	696	355	341	51.0
2006	602	323	279	53.7
2007	732	386	346	52.7
2008	786	425	361	54.1
2009	851	459	392	53.9
2010	823	438	385	53.2
2011	871	464	407	53.3
2012	868	451	417	52.0
2013	507	268	239	52.9
1998-2013	10021	5249	4772	52.4

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 4.64 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	176	168	15.9	14.3	11.8	10.3	14.7	12.0	16.4	13.3
1999	167	146	14.9	12.3	10.9	8.2	13.9	10.1	15.7	11.2
2000	185	168 /	16.2	14.0	12.0	8.8	14.9	11.2	17.0	12.7
2001	178	201	15.4	16.5	11.4	10.6	14.3	13.5	16.3	14.9
2002	303	297	16.3	15.2	11.9	9.6	14.6	12.2	16.9	13.9
2003	323	318	17.2	16.1	12.5	10.4	15.4	12.8	17.6	14.4
2004	348	307	18.5	15.5	12.9	11.0	16.1	13.0	18.2	14.0
2005	355	341	18.7	17.1	13.7	11.3	16.4	13.6	18.2	15.2
2006	323	279	16.9	13.9	11.3	8.9	14.3	10.8	16.6	12.3
2007	386	346	17.4	15.0	12.4	9.6	15.0	11.8	16.7	13.3
2008	425	361	19.1	15.6	12.4	10.3	15.8	12.4	18.4	13.7
2009	459	392	20.6	16.9	12.9	10.1	16.7	13.0	19.7	14.8
2010	438	385	19.4	16.4	13.0	9.7	16.3	12.2	18.6	14.1
2011	464	407	20.3	17.2	12.7	10.9	16.3	13.2	19.1	14.7
2012	451	417	19.7	17.7	12.3	10.4	15.6	13.1	18.5	14.9
2013	268	239	11.7	10.1	6.9	5.9	9.2	7.4	11.1	8.7
1998-2013	5249	4772	17.7	15.4	12.0	9.7	15.1	12.0	17.4	13.5

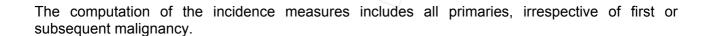


Table 3

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%
aragnosis	11	rican	acv.	111111.	nax.	100	250	50%	750	208
1998	244	ГС С	21 0	0/1	02.0	28.1	45.9	59.9	71.3	01 0
	344	56.6	21.0	0.1	93.2		- 1			81.9
1999	313	58.8	18.5	1.1	97.9	33.4	50.2	61.7	71.4	78.9
2000	353	57.7	19.7	0.2	97.1	31.1	47.4	60.0	71.1	80.5
2001	379	58.7	18.3	0.1	97.6	35.1	50.2	61.8	70.6	79.3
2002	600	58.8	19.9	0.0	93.1	30.5	48.5	62.7	72.4	81.2
2003	641	58.3	20.2	0.2	92.5	28.8	46.8	62.9	72.8	80.5
2004	655	58.0	19.8	0.0	96.1	31.8	48.3	63.1	71.2	78.8
2005	696	58.0	20.9	0.2	94.2	30.2	47.0	62.9	72.6	81.2
2006	602	60.0	19.5	0.2	103	34.3	50.5	64.1	73.8	80.7
2007	732	58.9	20.2	0.0	96.9	31.9	48.4	64.1	72.7	79.8
2008	786	60.2	19.5	0.0	101	32.4	50.4	65.4	73.4	79.9
2009	851	61.8	18.0	0.5	97.3	38.7	53.1	65.6	74.5	81.5
2010	823	61.2	19.5	0.0	97.3	36.2	52.1	66.7	74.4	81.0
2011	871	61.0	19.8	0.0	96.8	36.3	49.9	66.2	75.2	81.9
2012	868	62.8	19.3	0.0	98.4	38.8	53.8	67.7	75.2	82.6
2013	507	64.1	18.4	0.0	96.7	39.5	54.9	68.6	76.3	82.6
1998-2013	10021	60.0	19.6	0.0	103	33.7	50.4	64.4	73.6	81.0

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	176	55.2	19.5	0.4	91.1	28.6	43.6	58.6	68.5	75.9
1999	167	58.5	18.1	1.6	97.4	36.5	50.8	61.5	70.7	77.4
2000	185	56.2	20.9	0.2	92.9	28.6	46.0	59.4	68.9	82.0
2001	178	57.3	19.1	0.1	97.6	31.6	50.1	60.2	70.1	77.9
2002	303	57.2	20.9	0.1	92.4	29.0	45.4	62.2	71.9	79.2
2003	323	56.6	20.4	0.3	92.1	26.0	44.2	61.9	70.6	78.5
2004	348	58.3	19.0	0.0	93.4	34.7	48.7	63.2	70.5	77.9
2005	355	56.7	21.0	0.2	92.8	30.7	45.6	62.4	70.7	78.4
2006	323	59.2	18.5	0.3	89.2	34.8	50.5	63.4	71.0	78.8
2007	386	58.1	20.7	0.0	96.4	29.3	48.4	64.0	72.0	78.1
2008	425	60.7	18.3	0.0	95.2	33.7	52.3	66.1	73.0	78.7
2009	459	61.4	18.8	0.5	97.3	35.5	52.1	65.8	74.5	81.5
2010	438	59.8	20.4	0.0	92.7	31.8	51.0	65.2	74.2	81.0
2011	464	61.3	19.2	0.0	95.3	37.2	50.7	66.5	75.1	81.0
2012	451	62.5	19.7	0.3	95.5	36.6	53.6	68.2	74.9	81.3
2013	268	64.4	17.1	0.0	93.9	40.7	57.2	68.7	75.5	80.9
1998-2013	5249	59.4	19.6	0.0	97.6	32.7	50.1	64.2	72.9	79.8

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	168	58.0	22,5	0.1	93.2	24.1	46.5	61.6	75.8	84.0
1999	146	59.2	19.1	1.1	97.9	33.0	48.4	62.4	72.6	81.4
2000	168	59.4	18.3	0.4	97.1	34.9	47.4	61.5	72.7	80.5
2001	201	60.0	17.4	0.6	95.4	38.5	50.8	62.7	70.9	80.4
2002	297	60.5	18.7	0.0	93.1	33.1	51.2	63.6	73.4	81.7
2003	318	60.1	19.8	0.2	92.5	32,6	50.0	63.9	74.7	82.3
2004	307	57.6	20.7	0.2	96.1	29.6	47.7	63.0	71.9	80.1
2005	341	59.3	20.7	0.3	94.2	30.2	47.7	63.3	74.4	82.4
2006	279	61.0	20.7	0.2	103	32.5	50.4	66.5	75.9	83.5
2007	346	59.8	19.8	0.2	96.9	34.5	47.9	64.5	74.2	81.7
2008	361	59.6	20.7	0.1	101	29.4	48.9	64.3	73.8	81.7
2009	392	62.4	17.0	1.0	94.3	42.0	54.1	65.0	74.5	81.2
2010	385	62.8	18.3	0.2	97.3	41.2	55.4	67.6	74.9	81.1
2011	407	60.8	20.5	0.0	96.8	35.4	49.6	65.5	75.2	82.4
2012	417	63.0	18.8	0.0	98.4	40.6	53.9	65.7	75.9	83.1
2013	239	63.8	19.8	0.3	96.7	38.4	53.0	68.6	77.1	84.8
1998-2013	4772	60.7	19.6	0.0	103	34.8	50.7	64.7	74.5	82.0

Table 4 Age distribution by 5-year age group and gender for period 1998-2013 (incl. DCO)

Age at									
diagnosis	Cases			Males			Females		
Years	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0 - 4	283	2.8	2.8	164	3.1	3.1	119	2.5	2.5
5-9	97	1.0	3.8	51	1.0	4.1	46	1.0	3.5
10-14	74	0.7	4.5	35	0.7	4.8	39	0.8	4.3
15-19	89	0.9	5.4	48	0.9	5.7	41	0.9	5.1
20-24	100	1.0	6.4	60	1.1	6.8	40	0.8	6.0
25-29	175	1.7	8.2	92	1.8	8.6	83	1.7	7.7
30-34	273	2.7	10.9	147	2.8	11.4	126	2.6	10.4
35-39	347	3.5	14.3	192	3.7	15.0	155	3.2	13.6
40 - 44	472	4.7	19.1	254	4.8	19.9	218	4.6	18.2
45-49	560	5.6	24.6	265	5.0	24.9	295	6.2	24.4
50-54	701	7.0	31.6	363	6.9	31.8	338	7.1	31.4
55-59	881	8.8	40.4	468	8.9	40.8	413	8.7	40.1
60-64	1092	10.9	51.3	583	11.1	51.9	509	10.7	50.8
65-69	1414	14.1	65.4	795	15.1	67.0	619	13.0	63.7
70-74	1305	13.0	78.5	717	13.7	80.7	588	12.3	76.0
75-79	1004	10.0	88.5	512	9.8	90.4	492	10.3	86.4
80-84	699	7.0	95.5	315	6.0	96.4	384	8.0	94.4
85+	455	4.5	100.0	188	3.6	100.0	267	5.6	100.0
All ages	10021	100.0		5249	100.0		4772	100.0	

Included in the statistics are 23.4% multiple primaries in males and 24.5% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 1998-2013

							Males	Females
			Males	Females	Males	Females	Prop.all	Prop.all
Age at			Age-	Age-	DCO rate	DCO rate	cancers	cancers
diagnosis	Males	Females	spec.	spec.	n=180	n=118	n=158258	n=153136
Years	n	n	incid.	incid.	%	%	%	%
0- 4	161	118	10.8	8.4	1.2		49.7	48.4
5- 9	51	45	3.4	3.2			29.0	36.0
10-14	35	39	2.3	2.7			21.1	22.9
15-19	48	41	3.1	2.8	2.1	2.4	13.6	14.0
20-24	60	40	3.4	2.2	1.7		9.8	7.6
25-29	92	83	4.6	4.1			9.5	7.5
30-34	147	126	6.5	5.7		0.8	9.8	6.1
35-39	192	154	7.7	6.5	2.6	0.6	8.5	4.1
40 - 44	253	216	9.7	8.7	0.4	0.9	7.9	3.5
45-49	265	295	11.2	12.8	2.6	0.7	5.0	3.4
50-54	363	337	18.0	16.4	2.5	0.6	4.2	3.0
55-59	468	412	25.5	21.4	2.6	1.9	3.2	3.0
60-64	581	509	32.8	27.1	2.8	1.0	2.7	3.0
65-69	794	619	50.3	35.9	2.8	0.6	2.9	3.3
70-74	714	587	55.7	38.7	3.6	1.7	2.7	3.2
75-79	511	490	61.8	41.3	5.3	3.7	2.5	2.8
80-84	315	384	63.0	41.2	9.2	6.8	2.3	2.4
85+	187	266	54.8	29.8	11.8	14.3	1.9	1.5
All ages	5237	4761			3.4	2.5	3.3	3.1
Incidence								
Raw			17.6	15.3				
WS			11.9	9.7				
ES			15.0	12.0				
BRD-S			17.3	13.5				

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 1998-2013

MALES

	Observed	Expected		LCL	UCL		DCO
Diagnosis	/ n /	n	SIR	95%	95%	EAR	%
C03-C06 Oral cavity	3	1.0	3.0	0.6	8.8	2.2	
C09-C10 Oropharynx	/4	1.2	3.3	0.9	8.3	3.0	
C15 Oesophagus	/ 5	1.9	2.6	0.9	6.2	3.4	20.0
C16 Stomach	10	4.2	2.4	1.2	4.4 #	6.3	
C17 Small intestine	7	0.5	13.6	5.5	28.0 #	7.0	
C18 Colon	14	9.8	1.4	0.8	2.4	4.5	7.1
C19-C20 Rectum	3	5.8	0.5	0.1	1.5	-3.0	
C22 Liver	4	2.8	1.4	0.4	3.7	1.3	25.0
C23-C24 Bile	4	1.0	4.1	1.1	10.6 #	3.3	25.0
C25 Pancreas	3	3.6	0.8	0.2	2.5	-0.6	
C30-C31 Sinuses	3	0.2	16.4	3.4	47.9 #	3.0	
C33-C34 Lung	29	12.0	2.4	1.6	3.5 #	18.3	34.5
C40-C41 Bone	2	0.1	19.5	2.4	70.6 #	2.0	
C43 Malign. melanoma	a 15	4.3	3.5	1.9	5.7 #	11.5	13.3
C46,C49 Soft tissue	4	0.6	6.8	1.9	17.5 #	3.7	
C61 Prostate	42	30.1	1.4	1.0	1.9 #	12.8	9.5
C62 Testis	2	0.7	2.9	0.3	10.4	1.4	
C64 Kidney	20	3.7	5.4	3.3	8.4 #	17.6	
C67 Bladder	7	4.3	1.6	0.7	3.3	2.9	14.3
C70-C72 CNS cancer	6	1.5	4.1	1.5	8.8 #	4.9	16.7
C73 Thyroid	2	0.8	2.5	0.3	8.9	1.3	
C76-C79 CUP	4	1.7	2.3	0.6	6.0	2.5	
C82-C85 NHL	11	4.1	2.7	1,3	4.8 #	7.5	
C90 Mult. myeloma	3	1.3	2.4	0.5	6.9	1.9	
C91-C96 Leukaemia	6	1.7	3.6	1.3	7.8 #	4.7	16.7
Other primaries	8	3.3	2.4	1.0	4.7 #	5.0	
Not observed	0	2.1	0.0	0.0	1.8	-2.2	
All mult. primaries	221	104.3	2.1	1.8	2.4 #	126.1	10.4
-							

Patients	3448
Median age at second malignancy (years)	70.4
Person-years	9262
Mean observation time (years)	2.7
Median observation time (years)	1.4

# 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 1998-2013

FEMALES

	Observed	Expected		LCL	UCL		DCO
Diagnosis	/ n /	n	SIR	95%	95%	EAR	%
C16 Stomach	5	2.7	1.9	0.6	4.3	2.4	
C18 Colon	16	7.4	2.2	1.2	3.5 #	9.0	6.3
C19-C20 Rectum	10	3.4	3.0	1.4	5.5 #	6.9	
C25 Pancreas	7	3.2	2.2	0.9	4.5	4.0	28.6
C33-C34 Lung	19	5.6	3.4	2.0	5.3 #	13.9	26.3
C40-C41 Bone	2	0.1	27.3	3.3	98.7 #	2.0	50.0
C43 Malign. melanoma	9	3.1	2.9	1.3	5.4 #	6.1	11.1
C46,C49 Soft tissue	7	0.5	15.0	6.0	31.0 #	6.8	42.9
C50 Breast	51	25.7	2.0	1.5	2.6 #	26.4	7.8
C53 Cervix uteri	3	1.3	2.2	0.5	6.6	1.7	
C54 Corpus uteri	11	4.5	2.5	1.2	4.4 #	6.8	
C56 Ovary	10	3.3	3.0	1.4	5.5 #	7.0	40.0
C64 Kidney	18	1.9	9.3	5.5	14.7 #	16.7	5.6
C67 Bladder	3	1.3	2.2	0.5	6.5	1.7	
C70-C72 CNS cancer	5	1.2	4.3	1.4	10.1 #	4.0	20.0
C73 Thyroid	7	1.8	3.9	1.6	8.0 #	5.4	
C82-C85 NHL	9	3.0	3.0	1.4	5.8 #	6.3	
C90 Mult. myeloma	3	0.9	3.2	0.7	9.5	2.2	
C91-C96 Leukaemia	6	1.2	4.9	1.8	10.6 #	5.0	
Other primaries	6	3.4	1.8	0.6	3.8	2.7	
Not observed	0	5.1	0.0	0.0	0.7 #	-5.4	
All mult. primaries	207	80.7	2.6	2.2	2.9 #	131.7	11.1

Patients	3197
Median age at second malignancy (years)	70.8
Person-years	9588
Mean observation time (years)	3.0
Median observation time (years)	1.5

# The occurrence of second malignancy is statistically significant.

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

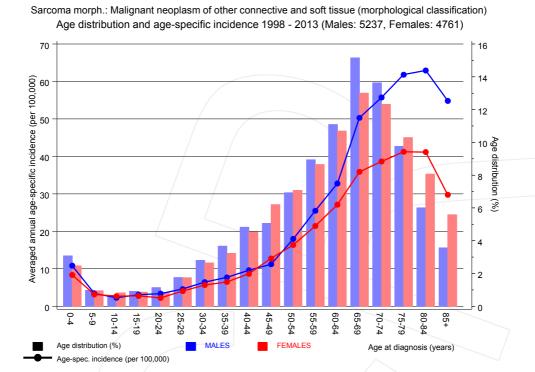


Figure 7. Age distribution and age-specific incidence

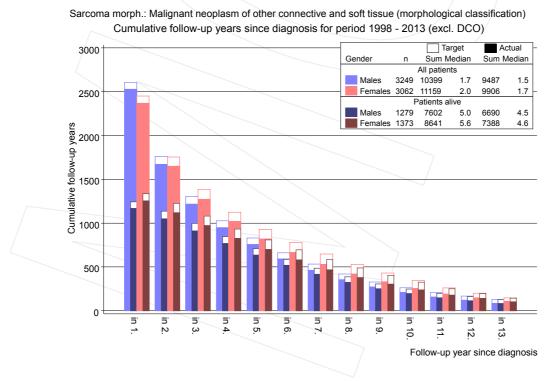
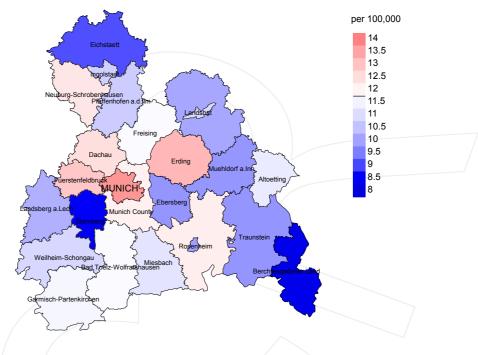


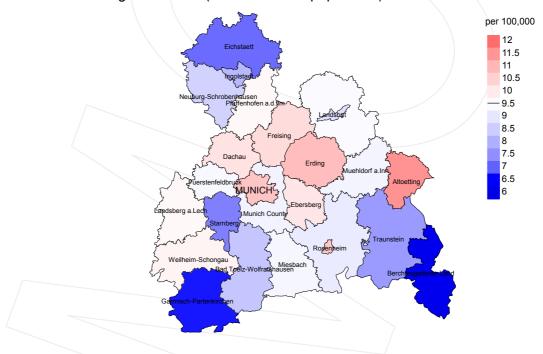
Figure 8. Cumulative follow-up years depending on time since diagnosis

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) 2007 - 2013: Males



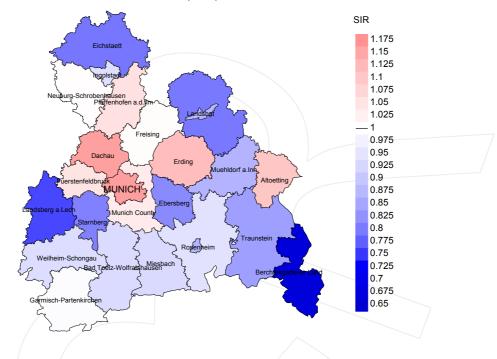
#### Average incidence (world standard population) 2007 - 2013: Females



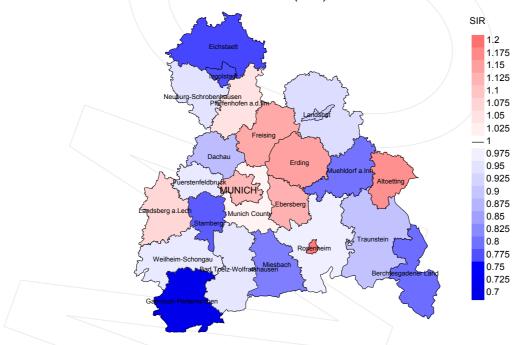
**Figure 9a.** Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2013. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 11.8/100,000 WS N=2,882, females 9.6/100,000 WS N=2,541).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,928 female residents (averaged) in the period from 2007 to 2013 a total of 78 women were identified with newly diagnosed sarcoma (morph.). Therefore, the mean incidence rate for this cancer type in this area can be calculated at 10.1/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 6.9 and 15.0/100,000.

#### Standardized incidence ratio (SIR) 2007 - 2013: Males



#### Standardized incidence ratio (SIR) 2007 - 2013: Females



**Figure 9b.** Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2013. 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=2,882, females N=2,541).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,642 female residents (averaged) in the period from 2007 to 2013 a total of 78 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 1.13. Though, the value of this parameter may vary with an underlying probability of 99% between 0.83 and 1.50, 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)

		Drop			Prop. deaths
	Incident	Prop. actively		Prop.	with death
V F		_	Daabha	/ -	
Year of	cases	followed	Deaths	deaths	certific.
diagnosis	n	%	n	%	%
1000	0.4.4		0.54		22.1
1998	344	98.3	274	79.7	93.1
1999	313	97.1	236	75.4	91.5
2000	353	96.6	247	70.0	95.5
2001	379	96.3	275	72.6	91.6
2002	600	97.5	446	74.3	97.5
2003	641	97.3	455	71.0	95.2
2004	655	96.9	436	66.6	97.0
2005	696	95.5	477	68.5	97.3
2006	602	95.8	414	68.8	98.1
2007	732	86.6	445	60.8	98.0
2008	786	79.0	498	63.4	98.0
2009	851	79.9	545	64.0	96.9
2010	823	77.9	497	60.4	97.6
2011	871	77.6	455	52.2	96.9
2012	868	73.6	381	43.9	94.2
2013	507	99.6	172	33.9	91.3
1998-2013	10021	88.1	6253	62.4	96.2

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)

			Prop. deaths		Dwon
V	Incident			Deaths in	Prop.
Year of		/ /	with death	Deaths in	deaths in
diagnosis/	cases	Deaths	certific.	same year	same year
death	n	n	8	n	%
1998	344	224	93.3	85	24.7
1999	313	240	91.7	83	26.5
2000	353	228	93.4	76	21.5
2001	379	243	91.8	92	24.3
2002	600	355	96.9	140	23.3
2003	641	407	95.8	146	22.8
2004	655	446	96.6	135	20.6
2005	696	435	96.6	149	21.4
2006	602	450	96.0	130	21.6
2007	732	494	98.2	143	19.5
2008	786	499	98.4	154	19.6
2009	851	573	98.3	177	20.8
2010	823	609	98.4	182	22.1
2011	871	610	98.2	176	20.2
2012	868	598	98.2	189	21.8
2013	507	515	98.4	120	23.7
1998-2013	10021	6926	96.9	2177	21.7

#### Table 10c

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

				Prop.
				cancer
		Prop.	Prop.	recorded
		cancer-	non-cancer-	on death
Year of	Deaths	related	related	certificate
death	n/	્રું	8	%
1998	224	75.4	24.6	95.2
1999	240	83.8	16.3	95.5
2000	228	83.3	16.7	96.2
2001	243	86.4	13.6	95.5
2002	355	86.2	13.8	95.6
2003	407	90.9	9.1	94.9
2004	446	87.9	12.1	94.7
2005	435	88.3	11.7	93.8
2006	450	88.4	11.6	93.3
2007	494	90.7	9.3	94.8
2008	499	91.8	8.2	95.3
2009	573	89.0	11.0	93.6
2010	609	90.1	9.9	93.5
2011	610	89.7	10.3	93.8
2012	598	87.8	12.2	94.2
2013	515	89.9	10.1	94.7
1998-2013	6926	88.4	11.6	94.5

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	115	63.7	62.9	66.9	63.6
1999	133	66.0	66.3	65.4	64.8
2000	116	63.4	63.4	61.2	63.4
2001	136	63.5	63.4	66.9	63.5
2002	199	65.3	65.4	63.0	65.3
2003	184	66.7	66.1	72.7	65.6
2004	240	67.1	66.4	76.5	66.9
2005	243	66.2	65.5	70.3	65.7
2006	238	67.0	67.0	67.5	67.1
2007	273	67.4	67.1	72.5	67.1
2008	268	68.3	68.1	76.0	68.2
2009	329	70.1	69.2	75.7	69.3
2010	360	69.6	69.1	74.6	69.3
2011	327	71.1	69.9	80.0	70.2
2012	315	70.2	69.6	78.5	69.8
2013	276	71.5	70.4	80.2	70.8
1998-2013	3752	68.1	67.6	73.8	67.8

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.

Year of death	Deaths n	Age at death (all causes)	Age at death (cancer-related)	Age at death (non-cancer-related) Years	Age at death (according to death certificate)
1998	109	71.4	69.5	79.0	70.6
1999	107	67.7	67.2	74.9	67.7
2000	112	68.4	67.9	73.4	68.2
2001	107	66.6	65.9	71.5	66.0
2002	156	67.9	66.1	80.2	67.8
2003	223	68.7	68.1	82.6	68.4
2004	206	67.1	65.8	80.9	65.9
2005	192	68.8	67.6	80.4	67.6
2006	212	69.3	68.5	79.8	69.1
2007	221	70.9	70.0	81.8	70.0
2008	231	71.2	69.8	83.4	70.8
2009	244	70.5	69.9	86.6	70.4
2010	249	70.8	69.9	81.8	70.4
2011	283	71.8	71.3	83.8	71.6
2012	283	71.2	70.3	83.3	70.6
2013	239	71.1	69.2	87.9	70.4
1998-2013	3174	70.1	69.0	81.1	69.6

By 2010, life expectancy for a newborn male in Germany is 77.5 years compared with 82.6 years for his female counterpart.

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	87	7.9	0.49	5.4	0.46	7.2	0.49	8.3	0.51
1999	111	9.9	0.67	6.5	0.60	9.0	0.65	11.0	0.71
2000	96	8.4	0.52	5.7	0.47	7.6	0.51	8.8	0.51
2001	114	9.8	0.64	6.2	0.55	8.6	0.60	10.4	0.64
2002	170	9.1	0.56	5.6	0.47	7.8	0.54	9.4	0.56
2003	164	8.7	0.51	5.3	0.42	7.3	0.48	9.1	0.52
2004	211	11.2	0.61	7.0	0.54	9.4	0.59	11.6	0.64
2005	215	11.4	0.61	7.0	0.51	9.4	0.57	11.1	0.61
2006	214	11.2	0.66	6.9	0.61	9.2	0.64	11.0	0.66
2007	254	11.5	0.66	6.6	0.54	9.1	0.61	11.1	0.67
2008	249	11.2	0.59	6.3	0.52	8.8	0.56	10.9	0.59
2009	284	12.7	0.62	6.9	0.54	9.7	0.58	12.1	0.61
2010	326	14.5	0.75	8.0	0.62	11.1	0.68	13.7	0.74
2011	295	12.9	0.64	6.9	0.55	9.8	0.60	12.3	0.65
2012	280	12.3	0.63	6.7	0.55	9.2	0.59	11.6	0.63
2013	248	10.9	0.93	6.0	0.88	8.1	0.89	10.1	0.92
1998-2013	3318	11.2	0.63	6.6	0.55	9.0	0.60	11.1	0.64

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	82	7.0	0.49	3.8	0.37	5.1	0.43	6.4	0.48
1999	90	7.6	0.62	4.7	0.58	5.9	0.59	6.9	0.62
2000	94	7.8	0.56	4.2	0.48	5.7	0.51	6.9	0.54
2001	96	7.9	0.48	4.7	0.44	6.0	0.44	7.0	0.47
2002	136	6.9	0.46	4.1	0.43	5.3	0.43	6.2	0.45
2003	206	10.5	0.65	5.8	0.56	7.8	0.61	9.2	0.64
2004	181	9.2	0.59	5.2	0.47	6.9	0.53	8.1	0.58
2005	169	8.5	0.50	4.6	0.41	6.1	0.45	7.2	0.47
2006	184	9.2	0.66	4.9	0.56	6.5	0.60	7.7	0.63
2007	195	8.4	0.56	4.0	0.41	5.6	0.48	7.0	0.53
2008	209	9.0	0.58	4.6	0.45	6.2	0.50	7.6	0.55
2009	226	9.7	0.58	4.7	0.47	6.4	0.50	7.9	0.53
2010	223	9.5	0.58	4.6	0.48	6.5	0.53	8.1	0.57
2011	252	10.7	0.62	5.1	0.47	7.0	0.54	8.7	0.59
2012	245	10.4	0.59	5.2	0.50	7.0	0.53	8.4	0.57
2013	215	9.1	0.90	4.5	0.76	6.2	0.84	7.4	0.86
1998-2013	2803	9.0	0.59	4.7	0.48	6.3	0.53	7.6	0.57

Table 13 Age distribution of age at death (cancer-related) for period 1998-2013 (incl. multiple primaries)

Age at								
death	Cases		Males			Females		
Years	n	% Cum.%	'n	%	Cum.%	n	%	Cum.%
0 - 4	31	0.5 0.5	23	0.7	0.7	8	0.3	0.3
5-9	50	0.8 /1.3	20	0.6	1.3	30	1.1	1.3
10-14	29	0.5 / 1.8 /	14	0.4	1.7	15	0.5	1.9
15-19	32	0.5 2.3	15	0.4	2.2	17	0.6	2.5
20-24	41	0.7 3.0	24	0.7	2.9/	17	0.6	3.1
25-29	56	0.9 3.9	33	1.0	3.9	23	0.8	3.9
30-34	72	1.2 5.0	44	1.3	5,2	28	1.0	4.9
35-39	114	1.9 6.9	73	2.2	7.4	41	1.5	6.3
40-44	197	3.2 10.1	109	3.3	10.6	88	3.1	9.5
45-49	293	4.8 14.9	167	5.0	15.6	126	4.5	13.9
50-54	346	5.6 20.5	187	5.6	21.3	159	5.6	19.5
55-59	518	8.4 28.9	286	8.6	29.8	232	8.2	27.8
60-64	736	11.9 40.8	413	12.4	42.2	323	11.4	39.2
65-69	957	15.5 56.4	564	16.9	59.1	393	13.9	53.1
70-74	958	15.6 71.9	550	16.5	75.6	408	14.4	67.6
75-79	757	12.3 84.2	388	11.6	87.2	369	13.1	80.6
80-84	589	9.6 93.8	274	8.2	95.4	315	11.2	91.8
85+	384	6.2 100.0	152	4.6	100.0	232	8.2	100.0
All ages	6160	100.0	3336	100.0		2824	100.0	

Included in the statistics are 23.4% multiple primaries in males and 24.5% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2013

(incl. multiple primaries)

			Males		Females		Males	Females
Age at			Age-		Age-		Prop.all	Prop.all
death	Males	Females	spec.		spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
0 - 4	23	8	/ 1/.5	0.14	0.6	0.07	69.7	30.8
5- 9	20	30	1.3		2.1	0.65	52.6	75.0
10-14	14	15	0.9	0.40	1.0	0.38	40.0	48.4
15-19	15	17	1.0	0.31	1.2	0.41	33.3	45.9
20-24	24	17	1.4	0.40	1.0	0.43	26.7	33.3
25-29	33	23	1.6		1./1	0.28	30.6	20.0
30-34	44	28	1.9	0.30	1.3		23.7	12.3
35-39	73	41	2.9	0.38	1.7	0.26	18.3	7.9
40-44	109	88	4.2	0.43	3.5	0.40	12.7	7.7
45-49	167	126	7.1	0.63	5.5	0.43	9.2	6.3
50-54	187	159	9.3	0.52	7.7	0.47	5.7	5.1
55-59	286	232	15.6	0.61	12.1	0.56	4.8	4.9
60-64	413	323	23.3	0.71	17.2	0.63	4.6	5.0
65-69	564	393	35.7	0.71	22.8	0.63	4.7	4.7
70-74	550	408	42.9	0.77	26.9	0.69	4.0	4.1
75-79	388	369	46.9	0.76	31.1	0.75	2.9	3.4
80-84	274	315	54.8	0.87	33.8	0.82	2.5	2.8
85+	152	232	44.6	0.81	26.0	0.87	1.7	1.7
All ages	3336	2824					4.2	3.9
Mortality								
Raw			11.2	0.64	9.1	0.59		
WS			6.6	0.55	4.8	0.49		
ES			9.1	0.60	6.4	0.53		
BRD-S			11.2	0.64	7.7	0.57		
PYLL-70								
per 100,000			108.5		85.5			
ES			104.4		83.0			
AYLL-70			14.7		15.1			

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

Table 15a

Multiple primaries in deaths in period 1998-2013

MALES

					Syn- chron	Syn- chron		
	Total	Total	Pre	Pre	±30d	±30d	Post	Post
Diagnosis	n	%↓	n	<b>←</b> %	n	<b>~</b> %	n	<b>←</b> %
C16 Stomach	/19	2.4			5	26.3	14	73.7
C17 Small intestine	8	1.0			4	50.0	4	50.0
C18 Colon	9 /	1.2			3	33.3	6	66.7
C19-C20 Rectum	13	1.7			2	15.4	11	84.6
C22 Liver	8	1.0			3	37.5	5	62.5
C33-C34 Lung	42	5.4			4	9.5	38	90.5
C38,C45 Mesothelioma	106	13.6			3	2.8	103	97.2
C43 Malign. melanoma	51	6.5	34	66.7	1	2.0	16	31.4
C44 Skin others	33	4.2			2	6.1	31	93.9
C46,C49 Soft tissue	73	9.4			4	5.5	69	94.5
C48 Peritoneal	9	1.2					9	100.0
C61 Prostate	35	4.5			4	11.4	31	88.6
C64 Kidney	18	2.3			_ 3	16.7	/15	83.3
C67 Bladder	23	3.0			3	13.0	20	87.0
C70-C72 CNS cancer	178	22.8			13	7.3	165	92.7
C76-C79 CUP	8	1.0					8	100.0
C82-C85 NHL	45	5.8	27	60.0	5	11.1	13	28.9
C90 Mult. myeloma	12	1.5	4	33.3	2	16.7	6	50.0
C91-C96 Leukaemia	22	2.8	8	36.4	2	9.1	12	54.5
Other primaries	67	8.6	10	14.9	3	4.5	54	80.6
All mult. primaries	779	100.0	83	10.7	66	8.5	630	80.9

Multiple primaries with number of cases 1 to 6 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 1998-2013
FEMALES

					Syn-	Syn-		
					chron	chron		
	Total	Total	Pre	Pre	±30d	±30d	Post	Post
Diagnosis	n	%↓	n	% →	n	% ←	n	⊷%
C16 Stomach	/ 16	2.2			1	6.3	15	93.8
C18 Colon	21	2.9			1	4.8	20	95.2
C25 Pancreas	16	2.2			1	6.3	15	93.8
C33-C34 Lung	37	5.2			3	8.1	34	91.9
C38,C45 Mesothelioma	23	3.2			/ 1	4.3	22	95.7
C43 Malign. melanoma	37	5.2	23	62.2	2	5.4	12	32.4
C44 Skin others	20	2.8			2	10.0	18	90.0
C46,C49 Soft tissue	79	11.0			5	6.3	74	93.7
C48 Peritoneal	11	1.5			2	18.2	9	81.8
C50 Breast	84	11.7			15	17.9	69	82.1
C54 Corpus uteri	52	7.3			4	7.7	48	92.3
C56 Ovary	32	4.5			8	25.0	24	75.0
C64 Kidney	20	2.8			5	25.0	/15	75.0
C67 Bladder	16	2.2			2	12.5	14	87.5
C70-C72 CNS cancer	118	16.5			9	7.6	109	92.4
C73 Thyroid	10	1.4			3	30.0	7	70.0
C76-C79 CUP	10	1.4			2	20.0	8	80.0
C82-C85 NHL	24	3.4	13	54.2	4	16.7	7	29.2
C91-C96 Leukaemia	22	3.1	7	31.8	2	9.1	13	59.1
Other primaries	67	9.4	12	17.9	4	6.0	51	76.1
					/			
All mult. primaries	715	100.0	55	7.7	76	10.6	584	81.7

Multiple primaries with number of cases 1 to 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 16

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2013

(Singular primaries only \*)

			Males		Females		Males	Females
Age at			Age-		Age-		Prop.all	Prop.all
death	Males	Females	spec.		spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
0 - 4	21	8	1.4		0.6	0.07	75.0	33.3
5- 9	19	27 /	1.3	0.37	1.9		52.8	73.0
10-14	14	13	0.9	0.42	0.9	0.35	40.0	44.8
15-19	14	15	0.9	0.30	1.0	0.42	33.3	45.5
20-24	23	15	1.3	0.40	0.8	0.39	27.4	31.9
25-29	31	22	1.5	0.35	1.1	0.28	31.3	20.2
30-34	42	27	1.8	0.29	1.2	0.22	23.2	13.4
35-39	72	36	2.9	0.39	1.5	0.25	19.3	7.7
40-44	103	78	3.9	0.44	3.1	0.40	13.1	7.8
45-49	153	122	6.5	0.62	5.3	0.45	9.3	7.0
50-54	170	143	8.4	0.51	7.0	0.48	5.9	5.5
55-59	261	204	14.2	0.61	10.6	0.57	5.1	5.1
60-64	367	284	20.7	0.72	15.1	0.66	4.9	5.3
65-69	486	325	30.8	0.74	18.8	0.66	5.0	4.8
70-74	436	331	34.0	0.80	21.8	0.72	4.1	4.2
75-79	299	294	36.2	0.81	24.8	0.79	3.0	3.4
80-84	215	254	43.0	0.88	27.2	0.84	2.7	2.9
85+	110	180	32.3	0.81	20.1	0.85	1.6	1.6
All ages	2836	2378					4.4	4.1
Mortality								
Raw			9.5	0.64	7.7	0.59		
WS			5.8	0.55	4.1	0.48		
ES			7.8	0.60	5.5	0.53		
BRD-S			9.4	0.64	6.5	0.57		
PYLL-70								
per 100,000			100.6		77.2			
ES			96.9		75.1			
AYLL-70			15.2		15.5			

<sup>\*</sup> See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2013

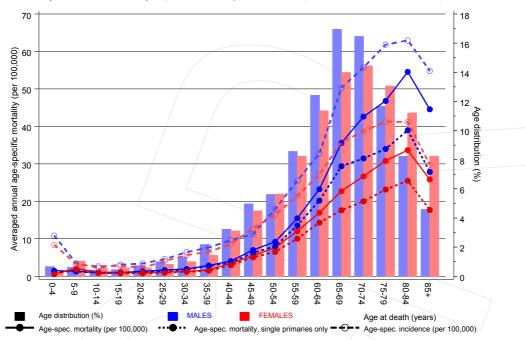
(Single primaries only \*)

			Males		Females		Males	Females
Age at	N/- 7	n1	Age-		Age-			Prop.all
death		Females	/ - /	MT indox	spec.	MT inder	cancers %	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-Index	6	6
0- 4	20	0	1.3	0.13	0.6	0.07	74.1	33.3
5- 9	19	8 27 /	1.3		1.9		54.3	75.0
10-14	14	13	0.9		0.9		40.0	48.1
15-19	14	12	0.9		0.9		33.3	42.9
20-24	22	14	1.2		0.8	0.33	27.8	31.8
25-29	29	19	1.4		0.8	0.39	31.5	18.4
30-34	42	26	1.4		1.2		24.0	14.3
35-39	68	35	2.7		1.5	0.26	19.0	8.2
40-44	96	74	3.7		3.0		12.9	8.1
45-49	148	117	6.3	0.43	5.1		9.6	7.5
50-54	161	134	8.0		6.5	0.44	6.2	7.3 5.7
55-59	249	193	13.6	0.51	10.0	0.47	5.4	5.4
60-64	358	269	20.2	0.01	14.3	0.56	5.4	5.8
65-69	464	304	29.4	0.75	17.6	0.66	5.4	5.3
70-74	403	304	31.5	0.80	20.0		4.5	4.6
75-7 <del>9</del>	281	275	34.0	0.80	23.2	0.72	3.5	3.8
80-84	195	273	39.0	0.85	25.5	0.77	3.3	3.2
85+	95	158	27.9	0.75	17.7		1.8	1.7
0.5+	93	136	21.9	0.75	17.7	0.79	1.0	1.7
All ages	2678	2220					5.0	4.4
AII ages	2070	2220					3.0	7.7
Mortality								
Raw			9.0	0.63	7.1	0.58		
WS			5.5	0.54	3.9			
ES			7.4		5.1	0.52		
BRD-S			8.9	0.64	6.1	0.56		
BKD 5			0.5	0.04	0.1	0.50		
PYLL-70								
per 100,000			96.6		73.1			
ES			93.2		71.2			
AYLL-70			15.2		15.6			

<sup>\*</sup> 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 - 2013 (Males: 3318, Females: 2803)

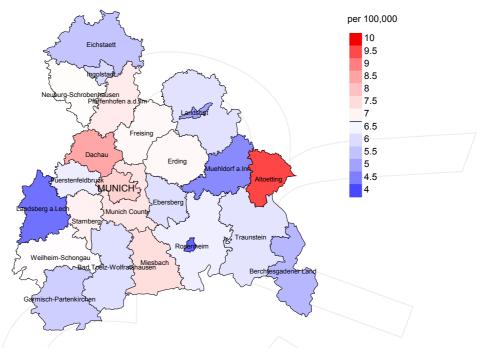


**Figure 18.** Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

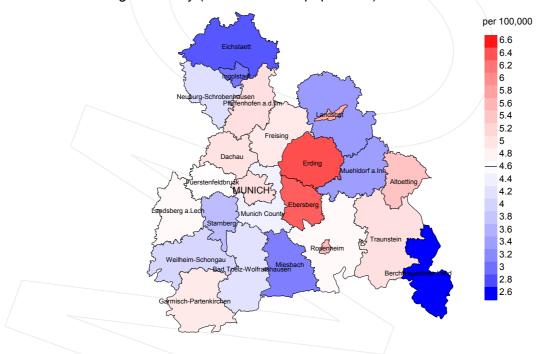
The difference between age at diagnosis (Table 3) and age at sarcoma (morph.)-related death (see Table 10) should be considered.



#### Average mortality (world standard population) 2007 - 2013: Males



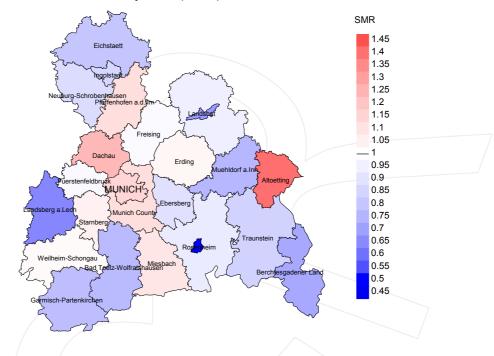
#### Average mortality (world standard population) 2007 - 2013: Females



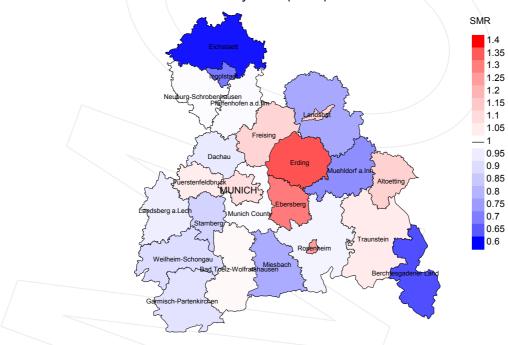
**Figure 19a.** Map of cancer mortality (world standard population) by county averaged for period 2007 to 2013. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 6.8/100,000 WS N=1,922, females 4.6/100,000 WS N=1,543).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,928 female residents (averaged) in the period from 2007 to 2013 a total of 54 women died from sarcoma (morph.). Therefore, the mean mortality rate for this cancer type in this area can be calculated at 6.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.9 and 10.2/100,000.

#### Standardized mortality ratio (SMR) 2007 - 2013: Males



#### Standardized mortality ratio (SMR) 2007 - 2013: Females



**Figure 19b.** Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2013. 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=1,922, females N=1,543).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,642 female residents (averaged) in the period from 2007 to 2013 a total of 54 women died from sarcoma (morph.). Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.30. Though, the value of this parameter may vary with an underlying probability of 99% between 0.89 and 1.83, 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 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

#### **Recommended Citation**

Munich Cancer Registry. Baseline statistics Sarcoma morph.: Sarcoma (morph.) [Internet]. 2015 [updated 2015 May 19; cited 2015 Jul 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/base hST E.pdf

#### Copyright

The content of the public web site provided by the Munich Cancer Registry is available worldwide and free of charge. All documents are free to download, utilize, copy, print-out and distribute, providing that the MCR is referenced.

#### Disclaimer

The Munich Cancer Registry reserves the right to not be responsible for the topicality, correctness, completeness or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected.

## Index of figures and tables

Fig./Tbl	l.	Page
1	Pts cohorts, DCO, mult. prim., follow-up / yr	4
1a	Gender distribution by year of diagnosis	5
2	Incidence by year of diagnosis	6
3	Age distribution parameters by year of diagnosis	7
4	Age distribution by 5-year age group and gender	9
5	Age-specific incidence and DCO rate	10
6	Standardized incidence ratio of second primaries	11
7	Age distribution and age-specific incidence (chart)	13
8	Cumulative follow-up years (chart)	13
9a	Map of cancer incidence (WS) by county (chart)	14
9b	Standardized incidence ratio (SIR) by county (chart)	15
10a	Pts incident cohorts and mortality / yr	16
10b	Incidence and mortality by year of diagnosis	17
10c	Cancer-related deaths, death certification available / yr	18
11	Medians of age at death / yr	19
12	Mortality by year of death	21
13	Distribution of age at death	22
14	Age-specific mortality	23
15	Multiple primaries in deaths	24
16	Age-specific mortality (first primaries)	26
17	Age-specific mortality (single primaries)	27
18	Age distribution and age-specific mortality (chart)	28
19a	Map of cancer mortality (WS) by county (chart)	29
19b	Standardized mortality ratio (SMR) by county (chart)	30