Munich Cancer Registry

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ICD-10 C49: Soft tissue cancer

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	2,051
Diseases	2,061
Creation date	04/13/2016
Export date	12/23/2015
Population	4.64 m

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

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

http://www.tumorregister-muenchen.de/en/facts/base/bC49__E-ICD-10-C49-Soft-tissue-cancer-incidence-and-mortality.pdf

Global Statements about the statistics on the Internet −
Baseline Statistics (grey button), **Survival** (red button)

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.64 million inhabitants, account for the frequency of cancer diseases[##] and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases[###] are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, April 2016

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.51 million to 3.96 in 2002, and to 4.52 million in 2007).

[##] Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

[###] DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C49.-	Malignant neoplasm of other connective and soft tissue
C49.0	Connective and soft tissue of head, face and neck
C49.1	Connective and soft tissue of upper limb, including shoulder
C49.2	Connective and soft tissue of lower limb, including hip
C49.3	Connective and soft tissue of thorax
C49.4	Connective and soft tissue of abdomen
C49.5	Connective and soft tissue of pelvis
C49.6	Connective and soft tissue of trunk, unspecified
C49.8	Overlapping lesion of connective and soft tissue
C49.9	Connective and soft tissue, unspecified

INCIDENCE

Table 1

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

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	83	7	8.4	25.3	77.1	100.0
1999	85	5	5.9	34.1	57.6	97.6
2000	89	9	10.1	28.1	56.2	97.8
2001	70	9	12.9	12.9	55.7	95.7
2002	111	8	7.2	20.7	64.0	97.3 #
2003	137	15	10.9	24.1	62.0	92.7
2004	119	12	10.1	21.8	54.6	96.6
2005	150	7	4.7	22.7	55.3	90.7
2006	106	9	8.5	30.2	57.5	92.5
2007	152	5	3.3	23.0	44.7	72.4 #
2008	156	6	3.8	25.0	51.9	78.2
2009	158	7	4.4	31.6	50.6	73.4
2010	142	5	3.5	23.2	45.1	73.2
2011	159	8	5.0	35.8	43.4	77.4
2012	132	11	8.3	20.5	36.4	78.8
2013	158	8	5.1	32.9	33.5	99.4
2014	54	4	7.4	40.7	29.6	96.3 ##
1998-2014	2061	135	6.6	26.5	50.8	86.9

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

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be found in the respective headings.

Table 1a

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

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	83	40	43	48.2
1999	85	49	36	57.6
2000	89	43	46	48.3
2001	70	33	37	47.1
2002	111	67	44	60.4
2003	137	60	77	43.8
2004	119	67	52	56.3
2005	150	76	74	50.7
2006	106	60	46	56.6
2007	152	73	79	48.0
2008	156	80	76	51.3
2009	158	83	75	52.5
2010	142	72	70	50.7
2011	159	83	76	52.2
2012	132	68	64	51.5
2013	158	89	69	56.3
2014	54	26	28	48.1
1998-2014	2061	1069	992	51.9

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	40	43	3.6	3.7	2.7	2.2	3.4	2.7	4.2	3.1
1999	49	36	4.4	3.0	3.2	2.0	4.0	2.5	4.7	2.8
2000	43	46	3.8	3.8	2.8	2.7	3.5	3.2	4.1	3.6
2001	33	37	2.8	3.0	2.2	1.9	2.8	2.5	3.3	2.8
2002	67	44	3.6	2.2	2.7	1.4	3.3	1.7	3.7	1.9
2003	60	77	3.2	3.9	2.4	2.1	2.9	2.8	3.4	3.4
2004	67	52	3.6	2.6	2.5	1.8	3.1	2.1	3.5	2.4
2005	76	74	4.0	3.7	3.3	2.3	3.7	2.8	3.8	3.4
2006	60	46	3.1	2.3	1.8	1.6	2.6	1.9	3.2	2.0
2007	73	79	3.3	3.4	2.1	2.1	2.7	2.6	3.3	2.9
2008	80	76	3.6	3.3	2.4	1.8	3.1	2.3	3.5	2.8
2009	83	75	3.7	3.2	2.1	1.8	2.9	2.5	3.7	2.9
2010	72	70	3.2	3.0	2.1	1.5	2.7	2.1	3.1	2.5
2011	83	76	3.6	3.2	2.1	1.7	2.8	2.2	3.5	2.6
2012	68	64	3.0	2.7	1.8	1.5	2.4	1.9	2.8	2.2
2013	89	69	3.9	2.9	2.6	1.5	3.2	1.9	3.8	2.3
2014	26	28	1.1	1.2	0.6	0.7	0.9	0.8	1.1	1.0
1998-2014	1069	992	3.3	3.0	2.2	1.8	2.8	2.2	3.3	2.6

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	83	60.3	23.3	0.4	93.2	28.3	45.4	66.8	77.2	85.7
1999	85	59.3	18.1	3.5	97.4	37.2	49.5	62.0	72.0	78.6
2000	89	56.2	22.9	0.2	97.1	28.1	40.2	60.3	75.1	82.6
2001	70	59.1	18.4	11.8	95.4	37.8	47.1	60.0	73.0	82.1
2002	111	58.3	23.1	0.0	93.0	30.3	43.2	63.3	76.7	83.9
2003	137	61.5	21.0	5.3	92.5	26.6	52.2	66.1	77.7	84.0
2004	119	58.2	21.3	1.3	96.1	25.6	44.2	64.3	74.0	81.9
2005	150	57.2	22.1	0.2	92.0	27.6	44.8	62.2	73.3	82.1
2006	106	61.1	21.0	1.6	103	33.8	51.5	63.2	78.2	83.9
2007	152	61.8	19.8	0.2	96.4	35.9	52.8	66.4	75.1	81.8
2008	156	61.9	19.9	0.3	101	33.7	50.0	65.1	76.5	85.5
2009	158	65.0	17.8	5.2	94.3	39.7	57.4	68.2	77.9	85.0
2010	142	61.7	19.5	3.4	97.3	33.9	50.1	65.3	75.5	82.1
2011	159	64.2	18.9	11.7	96.8	39.2	51.0	67.8	78.5	86.8
2012	132	63.6	19.4	0.7	98.4	38.9	52.3	66.1	78.2	84.7
2013	158	63.4	21.6	0.0	96.7	31.9	51.2	68.8	78.9	87.2
2014	54	65.8	19.6	2.3	89.8	40.8	55.3	67.7	80.9	85.7
1998-2014	2061	61.3	20.5	0.0	103	33.0	49.8	65.3	76.6	84.2

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	40	57.2	23.0	0.4	90.8	27.3	40.3	64.0	74.5	83.5
1999	49	59.4	19.1	3.5	97.4	33.0	52.4	61.9	72.0	78.6
2000	43	56.6	22.8	0.2	88.5	28.9	40.2	59.7	71.6	84.3
2001	33	58.8	22.2	11.8	95.4	32.2	47.0	58.1	76.1	87.1
2002	67	55.5	23.6	0.1	92.4	24.5	37.7	60.8	73.6	81.3
2003	60	56.2	22.8	8.1	89.5	20.5	39.6	59.2	73.1	85.1
2004	67	57.6	20.1	1.3	85.8	32.1	44.6	64.3	71.7	78.7
2005	76	52.4	22.7	0.2	90.9	9.2	39.6	59.1	67.1	74.1
2006	60	63.0	17.0	15.9	86.9	37.9	54.4	63.8	77.7	82.6
2007	73	62.4	20.5	0.2	96.4	35.9	54.2	68.1	75.3	80.5
2008	80	59.1	19.6	0.3	95.2	33.6	46.5	61.8	73.3	80.9
2009	83	66.8	19.4	5.2	93.0	36.2	61.6	70.6	79.3	86.9
2010	72	59.4	21.1	3.4	92.7	31.9	47.7	60.4	74.6	82.8
2011	83	63.7	18.0	16.7	95.0	37.2	51.7	67.8	76.5	83.5
2012	68	63.0	18.4	1.3	95.5	32.9	51.2	66.1	75.2	84.4
2013	89	60.7	22.0	0.0	95.9	27.4	48.3	66.0	77.3	84.9
2014	26	68.7	18.1	2.3	87.5	53.6	61.2	69.6	82.5	85.4
1998-2014	1069	60.0	20.9	0.0	97.4	31.7	47.8	64.5	74.9	83.2

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	43	63.2	23.4	3.4	93.2	33.0	50.8	72.3	77.9	86.2
1999	36	59.2	16.8	17.4	87.7	38.5	45.4	63.2	71.3	83.0
2000	46	55.7	23.2	0.4	97.1	22.7	34.9	60.8	75.8	80.7
2001	37	59.4	14.6	26.1	85.9	39.8	48.6	61.1	70.1	81.0
2002	44	62.5	21.9	0.0	93.0	33.1	49.3	67.8	79.1	85.7
2003	77	65.6	18.6	5.3	92.5	38.2	58.3	67.8	78.9	84.0
2004	52	59.0	22.9	2.4	96.1	21.5	42.0	64.2	74.7	84.4
2005	74	62.2	20.5	2.8	92.0	28.7	52.5	67.6	78.8	82.6
2006	46	58.5	25.2	1.6	103	17.1	40.8	61.7	79.1	86.5
2007	79	61.3	19.2	0.3	88.2	35.5	51.6	66.1	74.2	82.7
2008	76	64.8	19.9	6.1	101	35.3	52.6	67.3	80.0	86.7
2009	75	63.0	15.6	24.9	94.3	41.1	55.8	63.8	74.8	80.3
2010	70	64.1	17.5	21.8	97.3	40.5	51.9	67.1	77.4	81.9
2011	76	64.7	19.9	11.7	96.8	39.7	49.1	67.8	80.5	87.8
2012	64	64.3	20.5	0.7	98.4	40.1	53.9	65.7	81.5	85.6
2013	69	67.0	20.7	0.0	96.7	42.9	56.3	71.4	81.5	89.7
2014	28	63.2	20.9	20.5	89.8	23.7	50.8	66.3	80.9	88.5
1998-2014	992	62.7	20.1	0.0	103	34.6	51.5	66.3	77.9	85.1

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	13	1.2	1.2	9	1.6	1.6	4	0.7	0.7
5-9	7	0.6	1.8	4	0.7	2.3	3	0.6	1.3
10-14	8	0.7	2.5	5	0.9	3.1	3	0.6	1.9
15-19	13	1.2	3.7	7	1.2	4.4	6	1.1	3.0
20-24	16	1.4	5.1	8	1.4	5.7	8	1.5	4.5
25-29	13	1.2	6.3	5	0.9	6.6	8	1.5	6.0
30-34	36	3.2	9.5	24	4.2	10.8	12	2.2	8.2
35-39	38	3.4	13.0	26	4.5	15.3	12	2.2	10.4
40-44	55	5.0	17.9	22	3.8	19.2	33	6.1	16.6
45-49	51	4.6	22.5	22	3.8	23.0	29	5.4	22.0
50-54	68	6.1	28.6	38	6.6	29.6	30	5.6	27.6
55-59	86	7.7	36.4	39	6.8	36.4	47	8.8	36.3
60-64	96	8.6	45.0	50	8.7	45.1	46	8.6	44.9
65-69	135	12.2	57.2	73	12.7	57.8	62	11.5	56.4
70-74	139	12.5	69.7	76	13.2	71.1	63	11.7	68.2
75-79	120	10.8	80.5	66	11.5	82.6	54	10.1	78.2
80-84	105	9.5	89.9	51	8.9	91.5	54	10.1	88.3
85+	112	10.1	100.0	49	8.5	100.0	63	11.7	100.0
All ages	1111	100.0		574	100.0		537	100.0	

Included in the statistics are 38.8% multiple primaries in males and 34.5% in females.

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=20 %	Females DCO rate n=34 %	Males Prop.all cancers n=91183 %	Females Prop.all cancers n=89596 %
0- 4	9	4	1.0	0.5			5.1	2.9
5- 9	4	3	0.5	0.4			4.2	3.8
10-14	5	3	0.5	0.3			5.0	3.4
15-19	7	6	0.7	0.7			3.2	3.6
20-24	8	8	0.7	0.7		12.5	2.1	2.6
25-29	5	8	0.4	0.6			0.9	1.2
30-34	24	12	1.9	1.0			3.1	1.0
35-39	26	12	2.0	1.0		8.3	2.3	0.6
40-44	22	33	1.4	2.2			1.2	0.9
45-49	22	29	1.4	1.9		3.4	0.7	0.5
50-54	38	30	2.9	2.3	5.3		0.8	0.4
55-59	38	47	3.6	4.2	2.6	2.1	0.5	0.6
60-64	49	46	5.0	4.3	4.1	2.2	0.5	0.5
65-69	73	62	7.6	5.9	1.4		0.5	0.5
70-74	76	63	8.4	6.0	3.9	4.8	0.4	0.5
75-79	66	53	12.0	7.4	4.5	5.7	0.5	0.5
80-84	51	54	14.6	9.6	5.9	9.3	0.6	0.6
85+	48	63	20.7	10.9	10.4	28.6	0.8	0.6
All ages	571	536			3.5	6.3	0.6	0.6
Incidence								
Raw			3.2	2.9				
WS			2.0	1.6				
ES			2.6	2.1				
BRD-S			3.1	2.4				

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

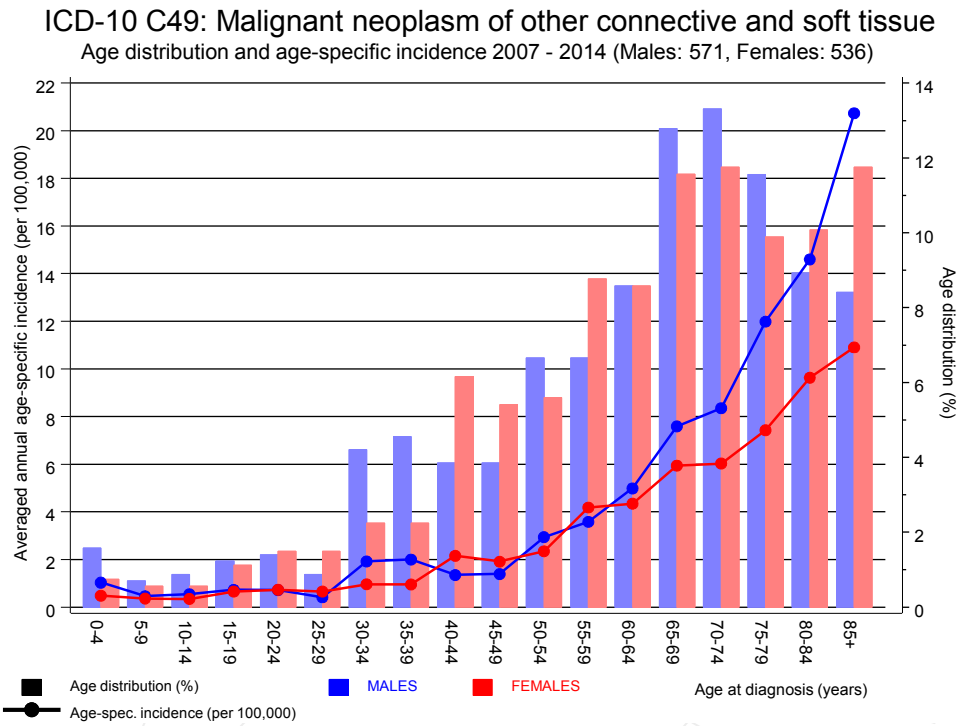


Figure 6. Age distribution and age-specific incidence

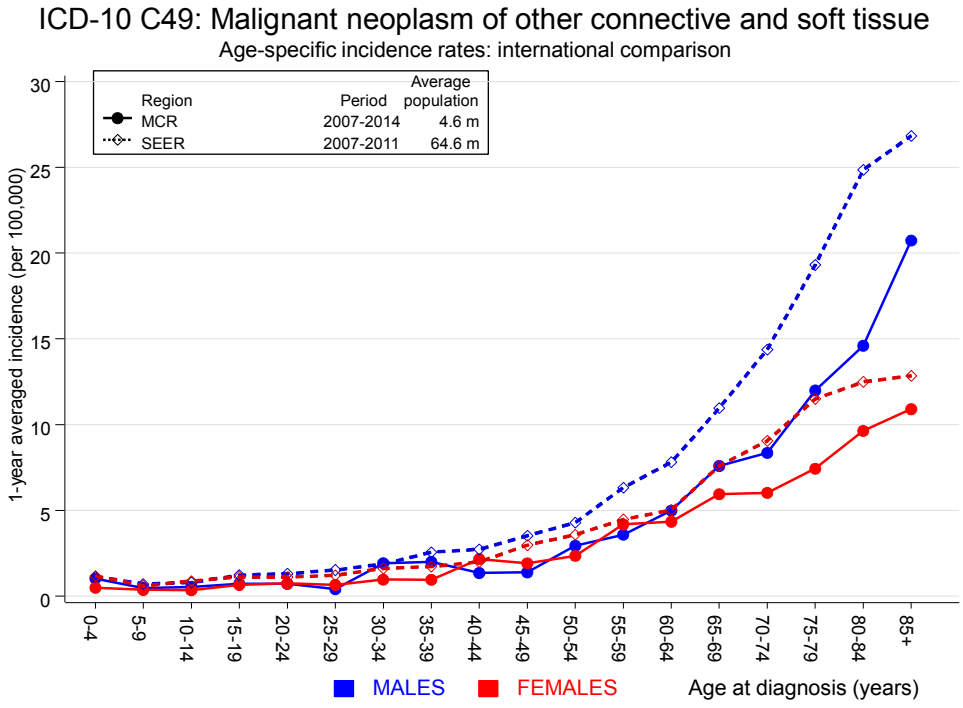


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

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

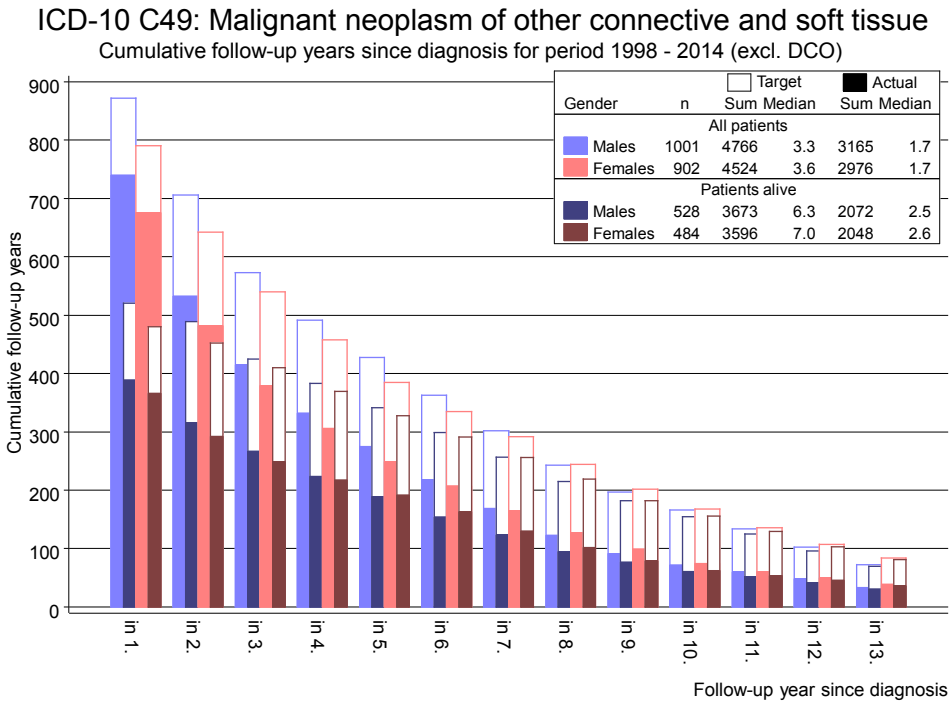


Figure 7. Cumulative follow-up years depending on time since diagnosis

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

Table 8a

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

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C09-C10	Oropharynx	2	0.4	4.8	0.6	17.4		5.0	
C15	Oesophagus	3	0.7	4.1	0.9	12.1		7.2	33.3
C16	Stomach	5	1.8	2.8	0.9	6.5		10.2	
C17	Small intestine	2	0.2	9.6	1.2	34.8	#	5.7	
C18	Colon	6	4.2	1.4	0.5	3.1		5.8	
C23-C24	Bile	2	0.4	4.8	0.6	17.5		5.0	
C30-C31	Sinuses	2	0.1	28.0	3.4	101.1	#	6.1	
C33-C34	Lung	10	4.8	2.1	1.0	3.8		16.5	10.0
C43	Malign. melanoma	6	1.8	3.4	1.3	7.5	#	13.5	
C46,C49	Soft tissue	5	0.2	20.4	6.6	47.6	#	15.1	
C61	Prostate	27	12.1	2.2	1.5	3.2	#	47.3	
C64	Kidney	9	1.4	6.3	2.9	12.0	#	24.1	
C67	Bladder	8	2.0	4.1	1.8	8.0	#	19.2	12.5
C82-C85	NHL	10	1.7	5.9	2.8	10.8	#	26.4	10.0
C91-C96	Leukaemia	4	0.7	5.5	1.5	14.0	#	10.4	
Other primaries		10	6.1	1.7	0.8	3.0		12.6	10.0
Not observed		0	3.7	0.0	0.0	1.0	#	-11.8	
All mult. primaries		111	42.3	2.6	2.2	3.2	#	218.3	4.5

Patients	1001
Median age at second malignancy (years)	72.0
Person-years	3146
Mean observation time (years)	3.1
Median observation time (years)	1.7

The occurrence of second malignancy is statistically significant.

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

Table 8b

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

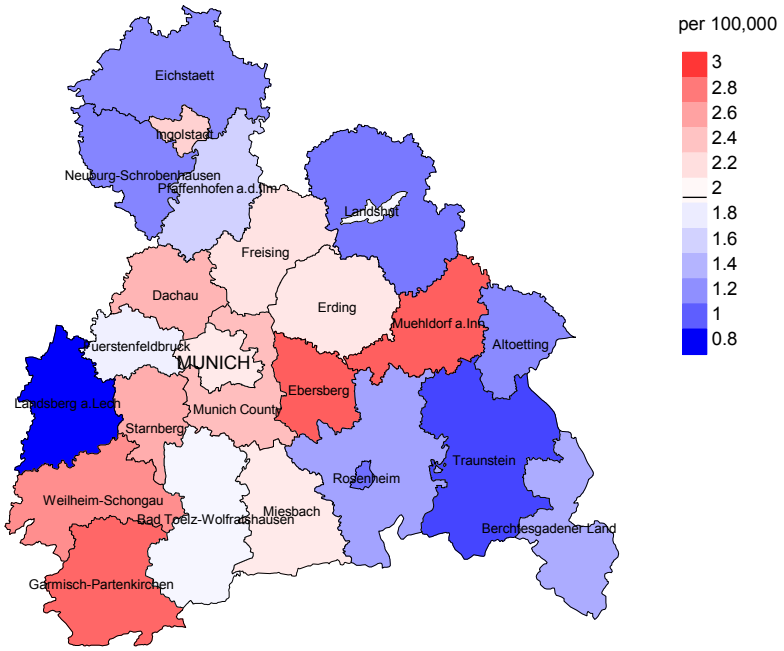
Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C18	Colon	4	2.8	1.4	0.4	3.6		3.9	
C19–C20	Rectum	6	1.2	5.0	1.8	10.8	#	16.2	
C25	Pancreas	2	1.2	1.6	0.2	5.8		2.6	50.0
C33–C34	Lung	4	2.0	2.0	0.5	5.1		6.8	
C43	Malign. melanoma	4	1.1	3.7	1.0	9.6	#	9.9	25.0
C46,C49	Soft tissue	4	0.2	23.9	6.5	61.1	#	13.0	
C50	Breast	18	8.6	2.1	1.2	3.3	#	31.9	
C53	Cervix uteri	2	0.4	4.8	0.6	17.3		5.4	
C54	Corpus uteri	3	1.5	2.0	0.4	5.7		5.0	
C64	Kidney	5	0.7	7.2	2.4	16.9	#	14.6	20.0
C70–C72	CNS cancer	2	0.4	5.0	0.6	18.2		5.4	
C73	Thyroid	4	0.5	7.6	2.1	19.4	#	11.7	
C82–C85	NHL	5	1.1	4.6	1.5	10.7	#	13.2	
C91–C96	Leukaemia	3	0.5	6.5	1.3	18.9	#	8.6	
Other primaries		8	3.4	2.4	1.0	4.7	#	15.7	37.5
Not observed		0	2.9	0.0	0.0	1.3		-9.9	
All mult. primaries		74	28.5	2.6	2.0	3.3	#	154.0	8.1

Patients	911
Median age at second malignancy (years)	74.0
Person-years	2955
Mean observation time (years)	3.2
Median observation time (years)	1.6

The occurrence of second malignancy is statistically significant.

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

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



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

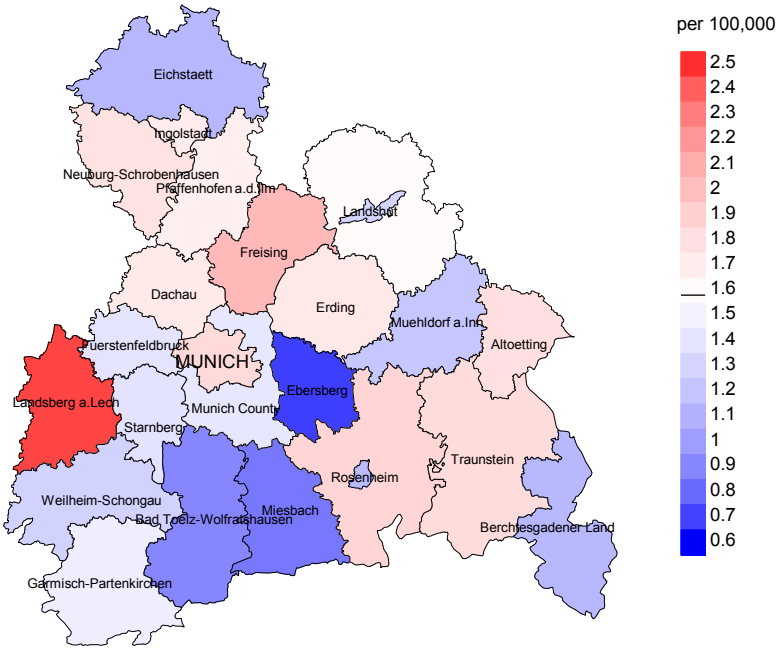
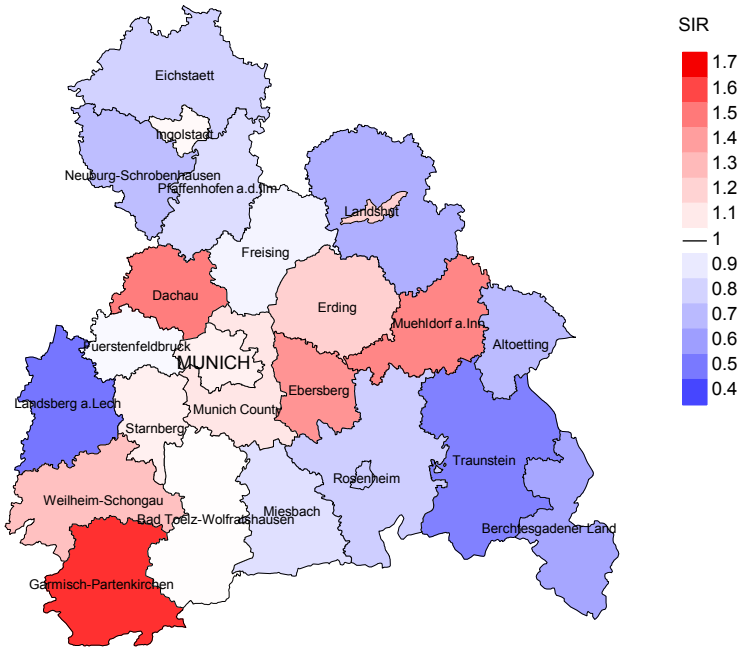


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 1.9/100,000 WS N=571, females 1.6/100,000 WS N=536).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 8 women were identified with newly diagnosed soft tissue cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.2 and 2.1/100,000.

Standardized incidence ratio (SIR) 2007 - 2014: Males



Standardized incidence ratio (SIR) 2007 - 2014: Females

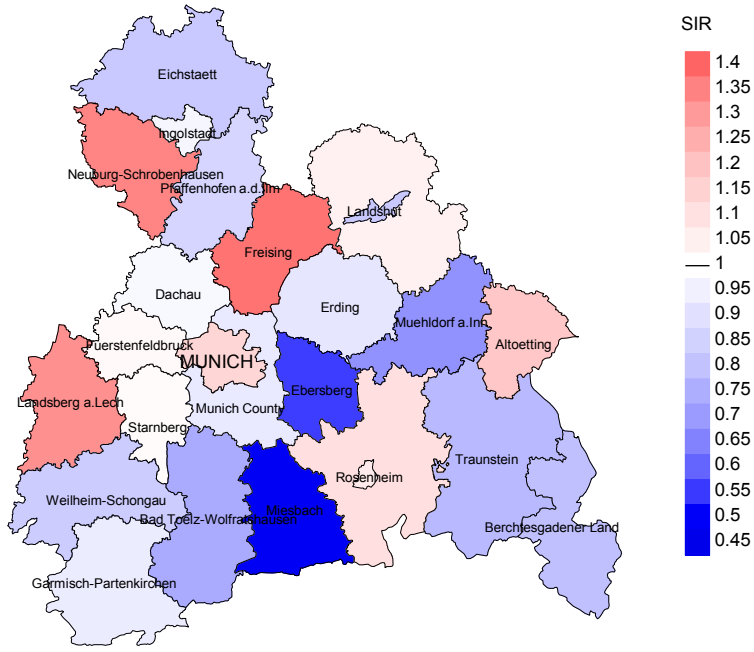


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=571, females N=536).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 8 women were identified with newly diagnosed soft tissue cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.55. Though, the value of this parameter may vary with an underlying probability of 99% between 0.18 and 1.29, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	83	100.0	8.4	64	77.1	95.3
1999	85	97.6	5.9	49	57.6	95.9
2000	89	97.8	10.1	50	56.2	100.0
2001	70	95.7	12.9	39	55.7	97.4
2002	111	97.3	7.2	71	64.0	94.4
2003	137	92.7	10.9	85	62.0	96.5
2004	119	96.6	10.1	65	54.6	100.0
2005	150	90.7	4.7	83	55.3	97.6
2006	106	92.5	8.5	61	57.5	100.0
2007	152	72.4	3.3	68	44.7	98.5
2008	156	78.2	3.8	81	51.9	96.3
2009	158	73.4	4.4	80	50.6	96.3
2010	142	73.2	3.5	64	45.1	98.4
2011	159	77.4	5.0	69	43.4	98.6
2012	132	78.8	8.3	48	36.4	93.8
2013	158	99.4	5.1	53	33.5	100.0
2014	54	96.3	7.4	16	29.6	93.8
1998-2014	2061	86.9	6.6	1046	50.8	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)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	83	57	94.7	13	15.7
1999	85	49	93.9	11	12.9
2000	89	46	93.5	15	16.9
2001	70	40	97.5	12	17.1
2002	111	68	95.6	21	18.9
2003	137	71	95.8	31	22.6
2004	119	79	97.5	25	21.0
2005	150	82	98.8	21	14.0
2006	106	82	95.1	20	18.9
2007	152	88	98.9	20	13.2
2008	156	74	97.3	22	14.1
2009	158	106	98.1	30	19.0
2010	142	97	99.0	22	15.5
2011	159	93	98.9	31	19.5
2012	132	93	98.9	21	15.9
2013	158	98	98.0	30	19.0
2014	54	76	98.7	13	24.1
1998-2014	2061	1299	97.4	358	17.4

Table 10c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates (incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	57	71.9	28.1	90.7
1999	49	79.6	20.4	91.3
2000	46	78.3	21.7	90.7
2001	40	90.0	10.0	94.9
2002	68	76.5	23.5	86.2
2003	71	85.9	14.1	88.2
2004	79	79.7	20.3	87.0
2005	82	82.9	17.1	88.9
2006	82	78.0	22.0	82.1
2007	88	84.1	15.9	90.8
2008	74	79.7	20.3	81.9
2009	106	80.2	19.8	83.7
2010	97	81.4	18.6	84.4
2011	93	77.4	22.6	83.7
2012	93	75.3	24.7	88.0
2013	98	81.6	18.4	87.5
2014	76	67.1	32.9	66.7
1998-2014	1299	79.3	20.7	85.7

Table 11a

Medians of age at death according to the grouping in Table 10
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	30	71.4	69.3	82.2	72.4
1999	29	64.8	56.7	74.1	61.4
2000	24	65.3	62.8	79.9	62.8
2001	22	61.8	50.2	80.4	61.3
2002	36	73.3	67.1	88.3	70.9
2003	29	72.5	67.6	90.7	66.1
2004	43	71.3	69.9	83.0	71.2
2005	47	67.7	67.3	69.6	67.7
2006	40	70.5	69.1	71.4	69.3
2007	53	71.8	68.9	82.4	69.2
2008	35	77.1	74.8	89.9	73.9
2009	59	74.5	74.0	87.1	74.2
2010	53	73.3	73.0	78.0	73.0
2011	45	75.9	75.0	84.8	75.0
2012	45	76.8	72.6	82.9	75.5
2013	54	74.6	72.6	86.1	72.9
2014	37	81.9	80.4	89.1	80.6
1998-2014	681	72.8	70.6	82.9	71.4

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 11b

Medians of age at death according to the grouping in Table 10
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	27	72.0	65.2	85.4	69.0
1999	20	71.7	70.3	72.5	73.2
2000	22	76.3	75.5	77.2	76.3
2001	18	68.8	68.8		68.8
2002	32	71.9	63.2	81.3	71.9
2003	42	75.6	72.5	85.1	74.0
2004	36	75.0	69.9	87.6	72.4
2005	35	76.0	73.3	77.5	73.5
2006	42	78.0	74.8	83.4	75.1
2007	35	73.7	69.7	88.4	71.1
2008	39	82.9	76.7	89.3	77.1
2009	47	74.4	73.3	86.2	73.3
2010	44	73.1	69.7	87.7	69.7
2011	48	80.0	76.3	84.8	77.6
2012	48	79.5	74.0	85.0	78.1
2013	44	79.1	73.4	93.7	76.8
2014	39	85.1	81.5	87.0	77.9
1998-2014	618	76.0	73.0	85.4	74.4

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 years for girls.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 12a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	21	1.9	0.53	1.3	0.48	1.7	0.51	2.2	0.53
1999	23	2.1	0.47	1.6	0.49	2.0	0.49	2.2	0.48
2000	19	1.7	0.44	1.2	0.43	1.5	0.45	1.8	0.44
2001	18	1.6	0.55	1.2	0.55	1.4	0.51	1.5	0.47
2002	25	1.3	0.37	0.8	0.30	1.2	0.35	1.5	0.39
2003	24	1.3	0.40	0.8	0.34	1.1	0.38	1.4	0.42
2004	35	1.9	0.52	1.2	0.47	1.6	0.50	2.1	0.60
2005	38	2.0	0.50	1.3	0.40	1.7	0.45	2.0	0.52
2006	31	1.6	0.52	1.1	0.57	1.4	0.54	1.6	0.50
2007	46	2.1	0.63	1.2	0.59	1.7	0.63	2.1	0.64
2008	28	1.3	0.35	0.6	0.26	1.0	0.32	1.3	0.38
2009	45	2.0	0.54	1.0	0.48	1.5	0.51	2.0	0.54
2010	40	1.8	0.56	0.8	0.39	1.3	0.46	1.7	0.54
2011	36	1.6	0.44	0.8	0.38	1.2	0.41	1.6	0.46
2012	36	1.6	0.53	0.8	0.44	1.2	0.49	1.5	0.55
2013	44	1.9	0.51	1.2	0.47	1.5	0.48	1.9	0.50
2014	26	1.1	1.00	0.5	0.75	0.8	0.86	1.1	1.03
1998-2014	535	1.7	0.50	1.0	0.44	1.4	0.48	1.7	0.52

Table 12b

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	20	1.7	0.47	1.1	0.49	1.3	0.49	1.5	0.48
1999	16	1.3	0.44	0.8	0.41	1.0	0.40	1.2	0.43
2000	17	1.4	0.37	0.6	0.21	0.9	0.27	1.2	0.33
2001	18	1.5	0.49	1.0	0.51	1.1	0.46	1.3	0.48
2002	27	1.4	0.61	0.9	0.64	1.1	0.63	1.2	0.62
2003	37	1.9	0.48	0.9	0.46	1.2	0.43	1.5	0.43
2004	28	1.4	0.54	0.7	0.38	1.0	0.45	1.2	0.51
2005	30	1.5	0.41	0.7	0.29	0.9	0.34	1.2	0.35
2006	33	1.6	0.72	0.7	0.44	1.0	0.56	1.3	0.66
2007	28	1.2	0.35	0.6	0.28	0.8	0.31	1.0	0.35
2008	31	1.3	0.41	0.6	0.31	0.8	0.34	1.0	0.36
2009	40	1.7	0.53	0.7	0.41	1.1	0.43	1.4	0.47
2010	39	1.7	0.56	0.9	0.57	1.2	0.57	1.5	0.57
2011	36	1.5	0.47	0.5	0.32	0.8	0.37	1.1	0.43
2012	34	1.4	0.53	0.6	0.41	0.9	0.45	1.1	0.48
2013	36	1.5	0.52	0.6	0.41	0.9	0.47	1.1	0.50
2014	25	1.1	0.89	0.4	0.56	0.5	0.64	0.7	0.71
1998-2014	495	1.5	0.50	0.7	0.40	1.0	0.43	1.2	0.47

Table 13

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	2	0.3	0.3	2	0.7	0.7			0.0
5-9	2	0.3	0.7			0.7	2	0.7	0.7
10-14	1	0.2	0.9			0.7	1	0.4	1.1
15-19	3	0.5	1.4	2	0.7	1.3	1	0.4	1.5
20-24	7	1.2	2.6	4	1.3	2.6	3	1.1	2.6
25-29	5	0.9	3.5	4	1.3	3.9	1	0.4	3.0
30-34	9	1.6	5.0	6	2.0	5.9	3	1.1	4.1
35-39	6	1.0	6.1	5	1.6	7.6	1	0.4	4.4
40-44	15	2.6	8.7	9	3.0	10.5	6	2.2	6.6
45-49	17	3.0	11.7	7	2.3	12.8	10	3.7	10.3
50-54	21	3.7	15.3	13	4.3	17.1	8	3.0	13.3
55-59	30	5.2	20.5	13	4.3	21.4	17	6.3	19.6
60-64	52	9.0	29.6	28	9.2	30.6	24	8.9	28.4
65-69	63	11.0	40.5	32	10.5	41.1	31	11.4	39.9
70-74	80	13.9	54.4	49	16.1	57.2	31	11.4	51.3
75-79	78	13.6	68.0	37	12.2	69.4	41	15.1	66.4
80-84	81	14.1	82.1	48	15.8	85.2	33	12.2	78.6
85+	103	17.9	100.0	45	14.8	100.0	58	21.4	100.0
All ages	575	100.0		304	100.0		271	100.0	

Included in the statistics are 38.8% multiple primaries in males and 34.5% in females.

Table 14

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	2		0.2	0.22	0.0		16.7	
5- 9		2	0.0		0.2	0.67		11.1
10-14		1	0.0		0.1	0.33		5.0
15-19	2	1	0.2	0.29	0.1	0.17	5.6	4.5
20-24	4	3	0.4	0.50	0.3	0.38	8.3	10.7
25-29	4	1	0.3	0.80	0.1	0.13	6.5	1.6
30-34	6	3	0.5	0.25	0.2	0.25	6.8	2.7
35-39	5	1	0.4	0.19	0.1	0.08	2.8	0.4
40-44	9	6	0.6	0.41	0.4	0.18	2.0	0.9
45-49	7	10	0.4	0.32	0.7	0.34	0.7	0.8
50-54	13	8	1.0	0.34	0.6	0.27	0.7	0.4
55-59	13	17	1.2	0.33	1.5	0.36	0.4	0.7
60-64	28	24	2.9	0.56	2.3	0.52	0.6	0.7
65-69	32	31	3.3	0.44	3.0	0.50	0.4	0.6
70-74	49	31	5.4	0.64	3.0	0.49	0.5	0.5
75-79	37	41	6.7	0.56	5.7	0.76	0.4	0.7
80-84	48	33	13.7	0.94	5.9	0.61	0.7	0.5
85+	45	58	19.4	0.92	10.0	0.92	0.7	0.7
All ages	304	271					0.6	0.6
Mortality								
Raw			1.7	0.53	1.4	0.50		
WS			0.9	0.44	0.6	0.39		
ES			1.3	0.49	0.9	0.43		
BRD-S			1.7	0.54	1.1	0.47		
PYLL-70								
per 100,000			12.9		9.9			
ES			12.5		9.4			
AYLL-70			16.6		14.5			

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

Table 15a

Multiple primaries in deaths in period 1998–2014
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C09–C10	Oropharynx	6	2.7	2	33.3	1	16.7	3	50.0
C15	Oesophagus	6	2.7	1	16.7			5	83.3
C16	Stomach	3	1.3	1	33.3	1	33.3	1	33.3
C18	Colon	13	5.8	10	76.9	1	7.7	2	15.4
C19–C20	Rectum	7	3.1	5	71.4			2	28.6
C30–C31	Sinuses	3	1.3	2	66.7			1	33.3
C33–C34	Lung	16	7.1	4	25.0	3	18.8	9	56.3
C40–C41	Bone	4	1.8	1	25.0			3	75.0
C43	Malign. melanoma	14	6.2	9	64.3	2	14.3	3	21.4
C44	Skin others	29	12.9	15	51.7			14	48.3
C46,C49	Soft tissue	3	1.3			1	33.3	2	66.7
C61	Prostate	34	15.1	21	61.8	1	2.9	12	35.3
C62	Testis	5	2.2	3	60.0			2	40.0
C64	Kidney	11	4.9	6	54.5	1	9.1	4	36.4
C67	Bladder	16	7.1	6	37.5	1	6.3	9	56.3
C70–C72	CNS cancer	7	3.1	5	71.4			2	28.6
C73	Thyroid	3	1.3	2	66.7			1	33.3
C76–C79	CUP	4	1.8			2	50.0	2	50.0
C82–C85	NHL	16	7.1	8	50.0	1	6.3	7	43.8
C90	Mult. myeloma	4	1.8	2	50.0	1	25.0	1	25.0
C91–C96	Leukaemia	6	2.7	3	50.0			3	50.0
Other primaries		15	6.7	6	40.0	2	13.3	7	46.7
All mult. primaries		225	100.0	112	49.8	18	8.0	95	42.2

Multiple primaries with number of cases 1 to 2 are pooled in category “Other primaries”

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a multiple malignancy.

Table 15b

Multiple primaries in deaths in period 1998–2014
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	2	1.0	1	50.0			1	50.0
C18	Colon	9	4.7	4	44.4			5	55.6
C19–C20	Rectum	5	2.6	2	40.0	1	20.0	2	40.0
C23–C24	Bile	2	1.0					2	100.0
C25	Pancreas	3	1.6					3	100.0
C33–C34	Lung	7	3.7	1	14.3	1	14.3	5	71.4
C40–C41	Bone	2	1.0	1	50.0			1	50.0
C43	Malign. melanoma	14	7.3	9	64.3	2	14.3	3	21.4
C44	Skin others	7	3.7	3	42.9	1	14.3	3	42.9
C46,C49	Soft tissue	3	1.6					3	100.0
C50	Breast	74	38.7	60	81.1			14	18.9
C51	Vulva	4	2.1	2	50.0	1	25.0	1	25.0
C53	Cervix uteri	6	3.1	6	100.0				
C54	Corpus uteri	8	4.2	5	62.5			3	37.5
C56	Ovary	6	3.1	4	66.7	1	16.7	1	16.7
C64	Kidney	6	3.1	2	33.3	1	16.7	3	50.0
C67	Bladder	3	1.6	2	66.7			1	33.3
C70–C72	CNS cancer	8	4.2	4	50.0	1	12.5	3	37.5
C73	Thyroid	2	1.0	2	100.0				
C82–C85	NHL	7	3.7	4	57.1	2	28.6	1	14.3
C91–C96	Leukaemia	5	2.6	2	40.0			3	60.0
Other primaries		8	4.2	4	50.0	2	25.0	2	25.0
All mult. primaries		191	100.0	118	61.8	13	6.8	60	31.4

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

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a multiple malignancy.

Table 16

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	2		0.2	0.22	0.0		20.0	
5- 9		2	0.0		0.2	0.67		11.1
10-14			0.0		0.0			
15-19	2	1	0.2	0.29	0.1	0.17	6.1	5.0
20-24	3	3	0.3	0.43	0.3	0.38	7.0	11.5
25-29	4	1	0.3	0.80	0.1	0.13	7.3	1.7
30-34	5	3	0.4	0.22	0.2	0.25	5.8	3.2
35-39	4	1	0.3	0.17	0.1	0.10	2.4	0.4
40-44	9	5	0.6	0.50	0.3	0.17	2.1	0.9
45-49	6	10	0.4	0.30	0.7	0.40	0.7	1.0
50-54	10	8	0.8	0.29	0.6	0.36	0.6	0.5
55-59	11	10	1.0	0.33	0.9	0.27	0.4	0.5
60-64	21	19	2.1	0.54	1.8	0.54	0.5	0.7
65-69	27	21	2.8	0.49	2.0	0.45	0.5	0.5
70-74	36	24	4.0	0.68	2.3	0.52	0.5	0.5
75-79	24	29	4.4	0.63	4.1	0.97	0.4	0.6
80-84	34	21	9.7	1.00	3.7	0.57	0.6	0.4
85+	34	45	14.7	0.97	7.8	0.88	0.8	0.7
All ages	232	203					0.6	0.6
Mortality								
Raw			1.3	0.52	1.1	0.49		
WS			0.7	0.42	0.5	0.37		
ES			1.0	0.47	0.7	0.41		
BRD-S			1.3	0.53	0.8	0.46		
PYLL-70								
per 100,000			11.2		8.4			
ES			10.9		8.0			
AYLL-70			17.2		15.8			

* See corresponding tables with multiple primaries.

Table 17

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	2		0.2	0.22	0.0		20.0	
5- 9		2	0.0		0.2	1.00		11.1
10-14			0.0		0.0			
15-19	2	1	0.2	0.29	0.1	0.17	6.1	5.6
20-24	2	2	0.2	0.29	0.2	0.25	5.1	8.3
25-29	4	1	0.3	0.80	0.1	0.13	7.8	1.8
30-34	5	3	0.4	0.23	0.2	0.25	5.9	3.6
35-39	4	1	0.3	0.17	0.1	0.10	2.5	0.5
40-44	9	5	0.6	0.53	0.3	0.19	2.3	1.0
45-49	5	9	0.3	0.25	0.6	0.36	0.6	1.0
50-54	9	8	0.7	0.28	0.6	0.38	0.6	0.6
55-59	8	9	0.8	0.28	0.8	0.27	0.3	0.5
60-64	20	17	2.0	0.56	1.6	0.52	0.6	0.7
65-69	23	18	2.4	0.47	1.7	0.41	0.5	0.5
70-74	27	17	3.0	0.59	1.6	0.40	0.5	0.4
75-79	19	26	3.5	0.56	3.6	1.00	0.4	0.7
80-84	28	19	8.0	0.88	3.4	0.54	0.7	0.5
85+	27	40	11.7	0.87	6.9	0.80	0.8	0.7
All ages	194	178					0.6	0.6
Mortality								
Raw			1.1	0.47	1.0	0.46		
WS			0.6	0.39	0.4	0.35		
ES			0.8	0.43	0.6	0.39		
BRD-S			1.0	0.48	0.7	0.43		
PYLL-70								
per 100,000			10.3		7.7			
ES			10.0		7.3			
AYLL-70			17.7		16.1			

* See corresponding tables with multiple primaries.

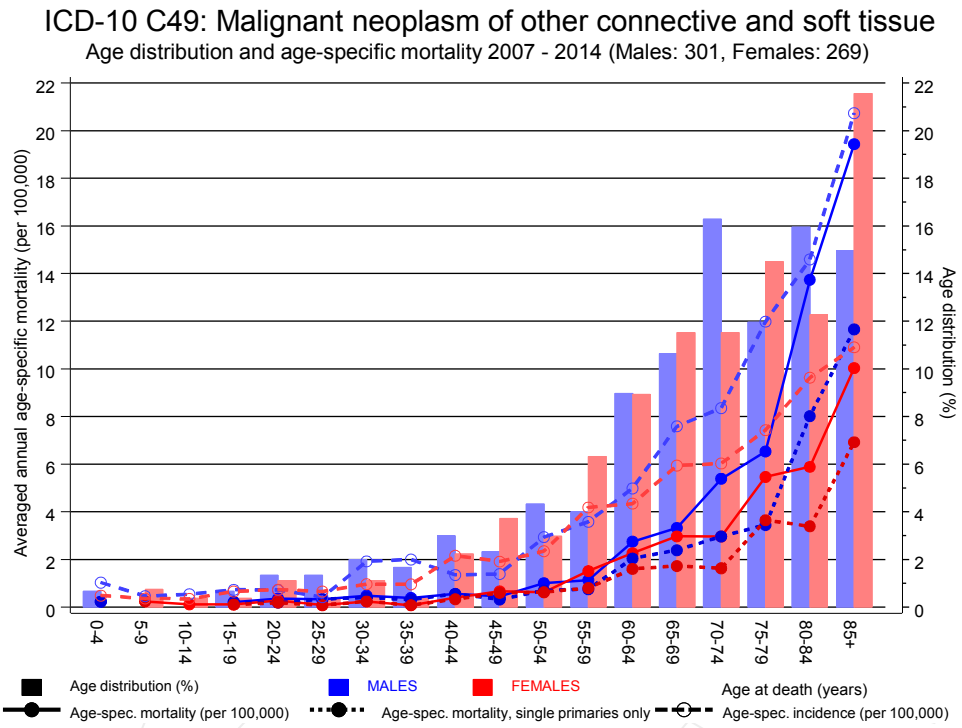
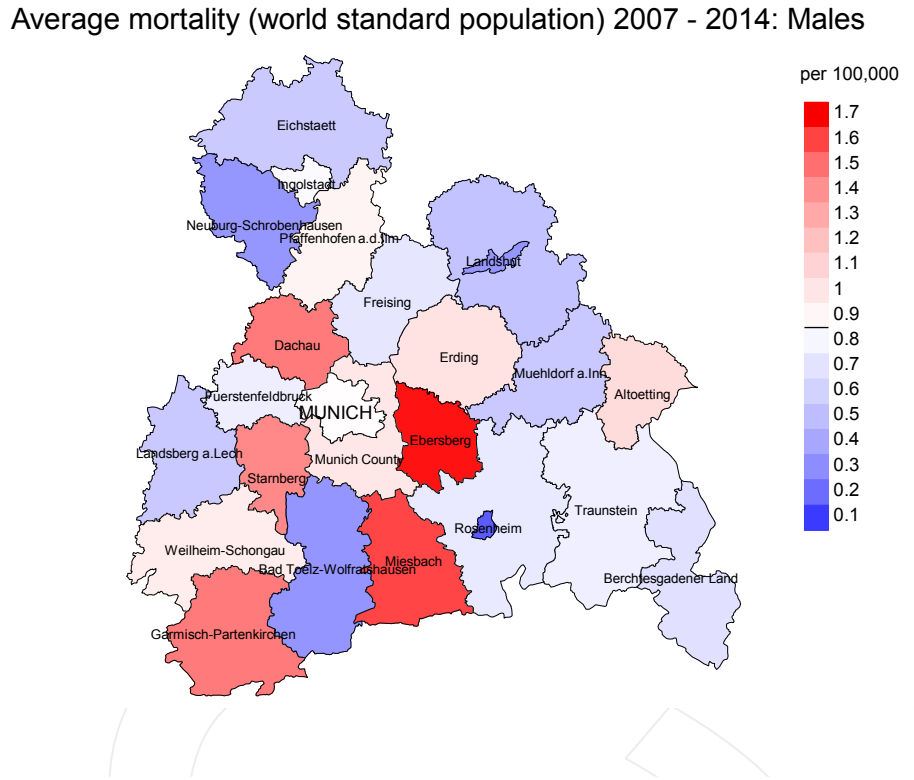


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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



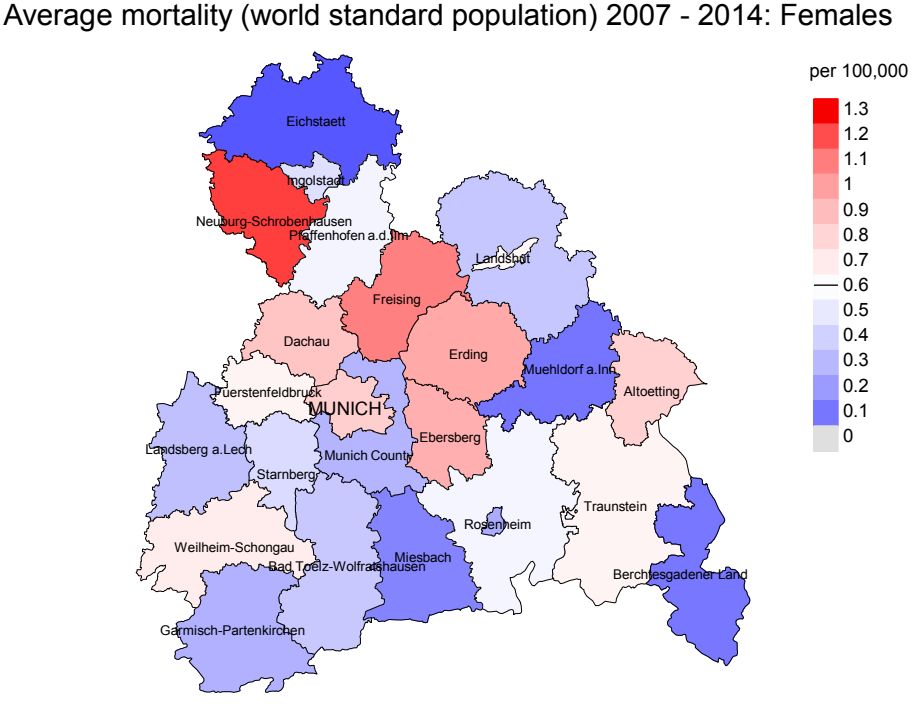
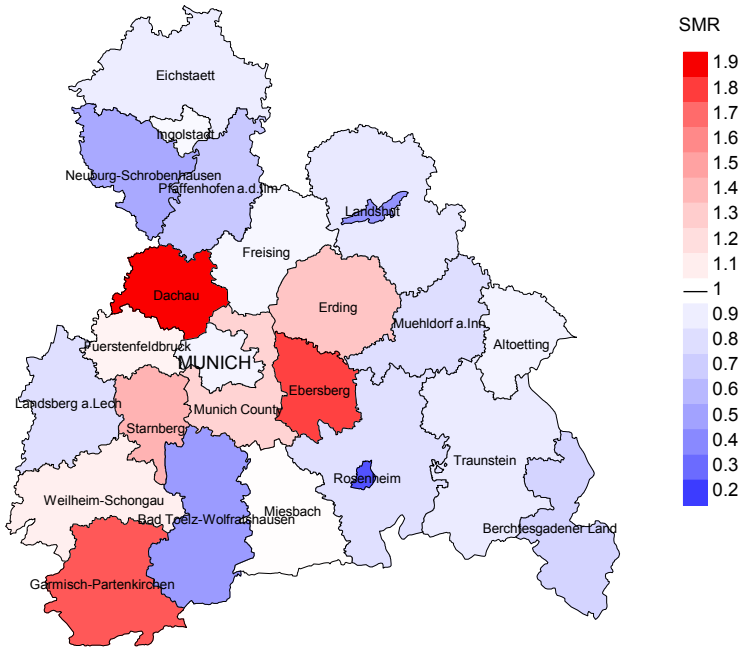


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 0.9/100,000 WS N=299, females 0.6/100,000 WS N=266).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 10 women died from soft tissue cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.9/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.2 and 2.9/100,000.

Standardized mortality ratio (SMR) 2007 - 2014: Males



Standardized mortality ratio (SMR) 2007 - 2014: Females

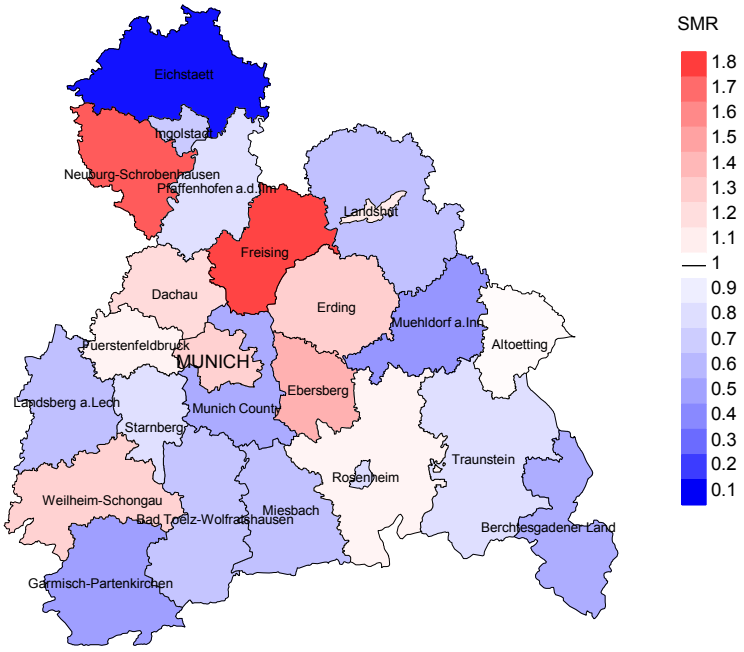


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=299, females N=266).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 10 women died from soft tissue cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.43. Though, the value of this parameter may vary with an underlying probability of 99% between 0.53 and 3.07, and is therefore not statistically striking.

Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. **All multiple primaries included**

   The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. **First singular primary** (no information about other prior or synchronous malignancy)

   The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. **Single primary** (no information about other prior, syn- or metachronous malignancy)

   The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head/neck and lung).

The index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MI- index. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

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

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