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

C81-C96: Systemic neoplasms

Year of diagnosis	1998-2012
Patients	20,805
Diseases	21,094
Creation date	03/20/2014
Export date	02/12/2014
Population	4.5 m



http://www.tumorregister-muenchen.de/en/facts/base/base_C8196E.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.



ICD-10 codes used for specifying cancer site

ICD-10	Description
C81	Hodgkin lymphoma
C82	Follicular lymphoma
C83	Non-follicular lymphoma
C84	Mature T/NK-cell lymphomas
C85	Other and unspecified types of non-Hodgkin lymphoma
C86	Other specified types of T/NK-cell Lymphoma
C88	Other B-cell lymphoma[malignant immunoproliferative diseases]
C90	Multiple myeloma and malignant plasma cell neoplasms
C91	Lymphoid leukaemia
C92	Myeloid leukaemia
C93	Monocytic leukaemia
C94	Other leukaemias of specified cell type
C95	Leukaemia of unspecified cell type
C96	Other and unspecified malignant neoplasms of lymphoid, haematopoietic and related tissue



INCIDENCE

Table 1

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

				Prop.		Prop.
		DCO	Prop.	mult.	Prop.	actively
Year of	Cases	cases	DCO	primaries	deaths	followed
diagnosis	n	'n	%	%	%	%
1998	851	159	18.7	19.4	73.0	98.1
1999	860	168	19.5	20.3	72.2	98.3
2000	827	179	21.6	21.5	71.2	98.2
2001	889	206	23.2	23.6	70.1	98.0
2002	1481	377	25.5	23.6	69.3	96.8 #
2003	1509	328	21.7	22.9	64.1	97.1 #
2004	1589	322	20.3	24.8	60.7	96.5 #
2005	1505	286	19.0	26.4	59.9	95.4 #
2006	1565	265	16.9	27.4	59.7	95.3 #
2007	1786	297	16.6	24.4	56.7	85.6 # ##
2008	1752	272	15.5	25.2	52.5	71.9
2009	1747	248	14.2	25.1	48.7	73.0
2010	1746	257	14.7	26.4	46.6	73.4
2011	1692	267	15.8	25.5	43.6	76.7
2012	1295	269	20.8	28.8	39.8	98.2 ###
1998-2012	21094	3900	18.5	24.8	57.4	88.4

[#] 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	851	465	386	54.6
1999	860	449	411	52.2
2000	827	448	379	54.2
2001	889	451	438	50.7
2002	1481	789	692	53.3
2003	1509	810	699	53.7
2004	1589	835	754	52.5
2005	1505	814	691	54.1
2006	1565	895	670	57.2
2007	1786	976	810	54.6
2008	1752	969	783	55.3
2009	1747	934	813	53.5
2010	1746	952	794	54.5
2011	1692	937	755	55.4
2012	1295	696	599	53.7
1998-2012	21094	11420	9674	54.1

Table 2

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

			Males	Fem.	Males	Fem.	Males	Fem.	Males	Fem.
Year of	Males	Females	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.	Inc.
diagnosis	n	n	raw	raw	WS	WS	ES	ES	BRD-S	BRD-S
1998	465	386	42.0	32.8	28.9	18.8	38.8	24.3	47.8	29.1
1999	449	411	40.1	34.6	27.0	19.6	36.7	25.3	46.0	30.6
2000	448	379	39.3	31.6	26.3	17.8	36.0	23.4	45.3	28.2
2001	451	438	38.9	36.0	25.8	18.9	35.1	25.5	43.3	31.1
2002	789	692	42.3	35.3	26.9	17.3	36.7	23.8	45.5	29.5
2003	810	699 /	43.2	35.5	27.2	19.6	37.1	25.5	46.2	30.6
2004	835	754	44.4	38.1	28.5	20.1	38.1	26.4	46.2	32.2
2005	814	691	43.0	34.7	27.4	18.3	36.1	24.0	45.3	29.5
2006	895	670	46.7	33.4	28.4	/16.8	38.5	22.3	47.7	27.7
2007	976	810	44.1	35.1	26.3	17.9	35.8	23.8	45.2	29.1
2008	969	783	43.5	33.7	26.2	16.8	34.6	22.5	43.0	27.9
2009	934	813	41.8	35.0	23.8	17.1	32.5	22.9	40.3	28.1
2010	952	794	42.2	33.9	24.2	17.1	32.9	22.5	41.2	27.6
2011	937	755	41.0	32.0	23.7	16.0	31.7	21.0	39.0	25.4
2012	696	599	30.5	25.4	16.5	12.5	22.8	16.5	29.3	20.3
1998-2012	11420	9674	41.6	33.7	25.5	17.4	34.4	23.0	42.7	28.2



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	851	62.4	19.6	0.9	100	33.6	53.4	65.0	76.9	84.9
1999	860	63.3	19.4	0.3	104	36.7	55.0	66.1	77.3	84.3
2000	827	63.4	19.0	0.4	97.6	35.7	54.7	67.1	77.0	84.5
2001	889	63.9	18,1	1.4	98.7	38.0	56.1	66.7	77.0	84.3
2002	1481	65.5	18.0	1.0	99.3	40.0	57.8	68.5	78.5	85.1
2003	1509	64.1	18.7	0.3	99.0	37.8	55.4	67.2	77.6	83.7
2004	1589	64.4	18.5	0.4	98.6	38.3	56.2	67.3	77.8	84.0
2005	1505	64.5	19.6	0.0	102	36.4	56.5	68.8	78.2	84.2
2006	1565	65.8	18.5	0.6	98.5	40.4	58.9	69.6	78.3	84.8
2007	1786	65.6	18.4	0.1	101	40.0	57.2	69.5	78.8	84.5
2008	1752	65.8	18.9	0.4	98.1	40.0	58.8	69.8	78.7	84.7
2009	1747	66.3	17.6	1.3	100	42.5	58.4	69.8	78.6	85.5
2010	1746	66.4	18.7	0.1	101	41.1	58.5	70.7	79.4	86.1
2011	1692	65.9	19.0	0.3	101	41.2	56.3	70.7	78.8	85.5
2012	1295	67.3	18.6	0.0	102	42.7	58.3	72.0	80.4	86.5
1998-2012	21094	65.2	18.7	0.0	104	39.2	56.8	69.2	78.4	84.9

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	465	60.7	19.4	0.9	95.8	33.9	50.2	63.2	74.9	83.8
1999	449	61.6	18.9	0.3	94.1	33.3	54.3	64.0	74.9	82.8
2000	448	62.7	18.6	0.4	97.6	36.1	55.1	66.0	75.4	83.0
2001	451	61.4	17.5	1.4	96.4	37.7	53.5	64.0	74.4	79.9
2002	789	63.0	17.9	1.0	98.3	37.0	55.5	66.3	75.0	81.9
2003	810	63.0	18.0	1.6	99.0	36.7	55.2	66.4	75.8	82.3
2004	835	62.4	18.5	0.4	97.8	36.9	53.9	65.2	74.9	82.5
2005	814	63.0	19.9	0.0	102	34.8	54.9	67.3	77.1	83.0
2006	895	64.3	18.3	1.0	98.5	39.7	56.9	68.2	76.6	82.2
2007	976	64.1	18.3	0.1	97.8	38.1	54.4	68.7	77.3	82.7
2008	969	64.2	19.2	0.4	98.1	37.5	57.1	68.9	76.7	83.0
2009	934	64.7	17.0	2.2	97.0	42.2	55.8	68.9	76.2	83.2
2010	952	65.6	18.6	0.1	101	41.5	56.5	70.3	78.2	85.1
2011	937	64.6	18.5	2.5	101	40.3	55.3	69.5	77.2	83.6
2012	696	66.6	18.2	2.4	96.0	42.6	58.5	71.4	79.0	84.4
1998-2012	11420	63.7	18.5	0.0	102	38.0	55.2	67.9	76.6	83.0

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	386	64.4	19.7	1.3	100	33.4	55.6	67.9	78.7	85.8
1999	411	65.2	19.8	1.5	104	40.8	56.1	70.3	78.8	86.9
2000	379	64.2	19.3	2,1	95.1	35.1	54.6	68.7	77.8	85.4
2001	438	66.5	18.4	2.8	98.7	39.4	58.0	70.4	79.7	86.8
2002	692	68.3	17.7	2.9	99.3	43.2	59.9	71.8	80.9	87.9
2003	699	65.4	19.3	0.3	98.9	38.5	55.6	68.5	80.1	85.6
2004	754	66.6	18.4	0.7	98.6	41.0	59.5	69.8	79.9	85.1
2005	691	66.4	19.1	0.6	98.4	39.1	59.0	70.1	79.7	85.2
2006	670	67.9	18.5	0.6	95.8	41,3	61.2	71.7	80.6	86.0
2007	810	67.4	18.2	1.0	101	44.0	60.0	71.1	80.4	86.0
2008	783	67.9	18.3	1.4	97.4	42.5	60.5	71.0	80.9	86.4
2009	813	68.2	18.1	1.3	100	43.2	60.6	71.4	81.3	87.1
2010	794	67.4	18.8	0.8	98.7	40.5	59.7	71.5	80.6	86.9
2011	755	67.6	19.4	0.3	99.2	42.0	57.9	72.4	81.0	87.8
2012	599	68.1	19.1	0.0	102	42.8	58.3	72.7	82.0	87.6
1998-2012	9674	67.0	18.8	0.0	104	41.0	58.8	71.0	80.3	86.5

Age at									
diagnosis	Cases			Males			Females		
Years	n	%	Cum.%	n	90	Cum.%	n	%	Cum.%
0-4	235	1.1	1./1	137	1.2	1.2	98	1.0	1.0
5-9	149	0.7	1.8	97	0.8	2.0	52	0.5	1.6
10-14	132	0.6	2.4	74	0.6	2.7	58	0.6	2.2
15-19	220	1.0	3.5	124	1.1	3.8	96	1.0	3.1
20-24	270	1.3	4.8	141	1.2	5.0	129	1.3	4.5
25-29	309	1.5	6.2	159	1.4	6.4	150	1.6	6.0
30-34	380	1.8	8.0	235	2.1	8.5	145	1.5	7.5
35-39	500	2.4	10.4	303	2.7	/ 11.1/	197	2.0	9.6
40-44	670	3.2	13.6	405	3.5	14.7	265	2.7	12.3
45-49	823	3.9	17.5	512	4.5	19.2	311	3.2	15.5
50-54	1089	5.2	22.6	643	5.6	24.8	446	4.6	20.1
55-59	1501	7.1	29.8	834	7.3	32.1	667	6.9	27.0
60-64	2027	9.6	39.4	1165	10.2	42.3	862	8.9	35.9
65-69	2716	12.9	52.2	1576	13.8	56.1	1140	11.8	47.7
70-74	2889	13.7	65.9	1648	14.4	70.5	1241	12.8	60.5
75-79	2818	13.4	79.3	1504	13.2	83.7	1314	13.6	74.1
80-84	2297	10.9	90.2	1062	9.3	93.0	1235	12.8	86.9
85+	2069	9.8	100.0	801	7.0	100.0	1268	13.1	100.0
All ages	21094	100.0		11420	100.0		9674	100.0	

Included in the statistics are 32.2% multiple primaries in males and 27.2% in females.

Table 5

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

			ior i	period 1	998-2012			
							Males	Females
			Malag	Females	Males	Females		Prop.all
Age at				Age-		DCO rate		cancers
diagnosis	Malec	Females	spec.	_	n=1906	n=1969		n=142297
Years	nares	n	_ /	incid.	%	%	%	%
icars	11	11	mera.	mera.	•	°	0	0
0- 4	137	98	10.0	7.5	0.7		44.8	43.4
5- 9	97	52	$\frac{1}{7.0}$	4.0	1.0	1.9	59.1	46.0
10-14	74	58	5.2	4.3	1.0	1.	50.3	35.8
15-19	124	96	8.7	7.0	2.4	1.0	38.8	36.0
20-24	140	129	8.6	7.9	1.4	4.7	25.3	26.5
25-29	158	150	8.5	8.0	0.6	0.7	17.8	14.7
30-34	234	144	11.1	7.0	4.3	0.7	16.6	7.6
35-39	303	197	13.0	8.9	3.0	5.1	14.3	5.6
40-44	405	264	16.7	11.5	3.5	4.2	13.5	4.5
45-49	510	310	23.7	14.7		5.8	10.4	3.9
50-54	642	445	34.7	23.6	6.4	7.4	8.0	4.4
55-59	833	667	49.0	37.4	7.0	6.6	6.2	5.2
60-64	1158	860	70.3	49.4	9.5	7.9	5.7	5.3
65-69	1565	1137	106.7	70.9	12.3	12.4	6.1	6.4
70-74	1638	1234	141.4	89.5	16.8	15.7	6.7	7.3
75-79	1493	1306	198.2	119.4	23.1	22.5	7.9	8.0
80-84	1056	1222	232.5	141.5	36.6	36.0	8.4	8.3
85+	796	1263	256.7	154.2	54.4	55.9	8.7	7.9
All ages	11363	9632			16.8	20.4	7.7	6.8
Incidence								
Raw			41.4					
WS			25.3					
ES			34.2	23.0				
BRD-S			42.5	28.0				

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
Diagnos	is	'n	n	SIR	95%	95%	EAR	%
C03-C06	Oral cavity	8	3.1	2.6	1.1	5.1 #	1.9	
	Salivary gland	7 /	0.8	9.0		18.6 #		
	Oropharynx	6	3.8	1.6	0.6	3.4	0.8	
	Hypopharynx	2	2.2	0.9	0.1	3.3	-0.1	
C15	0esophagus	$1\overline{4}$	6.2	2.3	1.2	3.8 #		7.1
C16	Stomach	32	14.6	2.2	1.5	3.1 #		3.1
C17	Small intestine	2	1.7	1.2	0.1	4.3	0.1	3.1
C18	Colon	54	34.4	1.6	1.2	2.0 #		3.7
C19-C20		39	19.7	2.0	1.4	2.7 #		2.6
C21	Anus/canal	4	0.7	5.5		14.0 #		2.0
C22	Liver	16	9.6	1.7	1.0	2.7	2.5	25.0
C23-C24		2	3.3	0.6	0.1	2.2	-0.5	23.0
C25	Pancreas	18	12.2	1.5	0.9	2.3	2.3	11.1
C32	Larynx	5	3.7	1.3	0.4	3.1	0.5	
C33-C34		97	41.4	2.3	1.9	2.9 #		4.1
C37	Thymus	2	0.2	12.0		43.2 #		
	Mesothelioma	6	2.3	2.6	1.0	5.7	1.5	16.7
C40-C41		3	0.3	9.9		29.0 #		10.7
C43	Malign. melanoma	5 <i>7</i>	13.9	4.1	3.1	5.3 #		
-	Soft tissue	9	1.9	4.8	2.2	9.0 #		
C50	Breast	3	0.9	3.4		10.0	0.8	
C60	Penis	3	0.8	3.8		11.1	0.9	
C61	Prostate	190	103.6	1.8	1.6	2.1 #		4.2
C62	Testis	2	1.6	1.2	0.1	4.4	0.1	1.2
C64	Kidney	33	12.4	2.7	1.8			
C65	Renal pelvis	3	1.4	2.2	0.4	6.3	0.6	
C66	Ureter	3	0.8	3.9		11.3	0.9	
C67	Bladder	31	15.0	2.1	1.4	2.9 #		3.2
C68	Urethra	3	0.2	16.2		47.3 #		5.2
	CNS cancer	9	4.8	1.9	0.8	3.5	1.6	11.1
C73	Thyroid	7	2.5	2.8	1.1	5.9 #		
C76-C79	_	17	5.9	2.9	1.7	4.6 #		
C81	Hodgkin lymphoma	11	0.8	13.1		23.5 #		9.1
C82-C85		59	13.9	4.3	3.2	5.5 #		8.5
C90	Mult. myeloma	10	4.4	2.3	1.1	4.2 #		10.0
	Leukaemia	52	5.6	9.3		12.2 #		21.2
C)1 C90	TCWYGCIIITG	32	3.0	7.5	J.9	14.4 H	10.2	21.2
Other p	rimaries	5	1.8	2.7	0.9	6.4	1.2	20.0
Not obs	erved	0	2.0	0.0	0.0	1.9	-0.8	
/	t. primaries	824	354.4	2.3	2.2	2 5 #	184.2	5.5

Patients	6989
Mean age at second malignancy (years)	69.6
Person-years	25486
Mean observation time (years)	3.6
Median observation time (years)	2.6

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

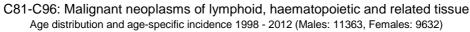
FEMALES

Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%	EAR	DCO %
C00 Lip	3	0.1	21.3	4.4	62.3 #	1.3	
C03-C06 Oral cavity	2	1.3	1.5	0.2	5.6	0.3	
C09-C10 Oropharynx	4	0.9	4.5	1.2	11.5 #	$\frac{0.3}{1.4}$	
C15 Oesophagus	2	1.2	1.7	0.2	6.0	0.4	
C16 Stomach	17	8.0	2.1	1.2	3.4 #	4.2	5.9
C17 Small intestine	2	1.0	2.0	0.2	7.3	0.5	3.9
C17 Small intestine C18 Colon	36	22.1	1.6	1.1	2.3 #	6.4	8.3
C19-C20 Rectum	12	9.7	1.2	0.6	2.3 #	1.1	8.3
C21 Anus/canal	5	1.1	4.4	1.4	10.3 #	1.1	0.3
C21 Anus/Canai C22 Liver	8	2.4	3.3	1.4	6.4 #	2.6	25.0
C22 Liver C23-C24 Bile	o 7	3.2					25.0
			2.2	0.9	4.5	1.8	20 0
C25 Pancreas	15	9.4	1.6	0.9	2.6	2.6	20.0
C33-C34 Lung	46	15.2	3.0	2.2	4.0 #	14.2	4.3
C38,C45 Mesothelioma	2	0.4	4.9	0.6	17.7	0.7	
C43 Malign. melanoma		7.8	2.7	1.7	4.1 #	6.1	
C46,C49 Soft tissue	4	1.2	3.3	0.9	8.4	1.3	
C50 Breast	122	66.0	1.8	1.5	2.2 #	25.9	2.5
C51 Vulva	3	2.1	1.4	0.3	4.2	0.4	
C53 Cervix uteri	9	3.1	2.9	1.3	5.6 #	2.7	33.3
C54 Corpus uteri	21	12.2	1.7	1.1	2.6 #	4.1	
C56 Ovary	15	9.2	1.6	0.9	2.7	2.7	13.3
C64 Kidney	7	5.5	1.3	0.5	2.6	0.7	14.3
C65 Renal pelvis	2	0.7	3.1	0.4	11.0	0.6	
C67 Bladder	3	4.0	0.7	0.2	2.2	-0.5	
C69 Eye lymphoma	3	0.1	37.3		109.0 #	1.3	
C70-C72 CNS cancer	2	3.1	0.6	0.1	2.3	-0.5	50.0
C73 Thyroid	14	4.1	3.4	1.9	5.7 #	4.6	7.1
C76-C79 CUP	7	3.8	1.8	0.7	3.8	1.5	
C82-C85 NHL	44	8.4	5.2	3.8	7.0 #	16.5	11.4
C90 Mult. myeloma	6	2.7	2.2	0.8	4.8	1.5	16.7
C91-C96 Leukaemia	27	3.5	7.8	5.1	11.3 #	10.9	14.8
Other primaries	10	4.5	2.2	1.1	4.1 #	2.5	20.0
Not observed	0	1.5	0.0	0.0	2.5	-0.7	
All mult. primaries	481	219.5	2.2	2.0	2.4 #	120.9	7.3

Patients	5787
Mean age at second malignancy (years)	71.1
Person-years	21637
Mean observation time (years)	3.7
Median observation time (years)	2.7

The occurrence of second malignancy is statistically significant.

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



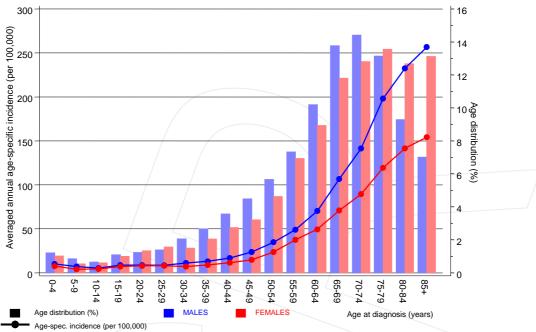


Figure 7. Age distribution and age-specific incidence



C81-C96: Malignant neoplasms of lymphoid, haematopoietic and related tissue Age-specific incidence in international comparison

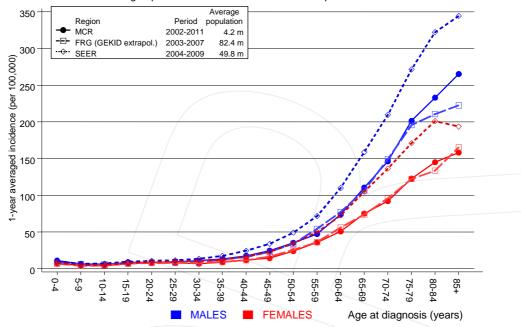


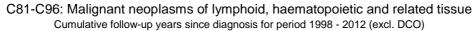
Figure 7a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).



Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2011. http://www.gekid.de. Last access: 05/12/2011

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



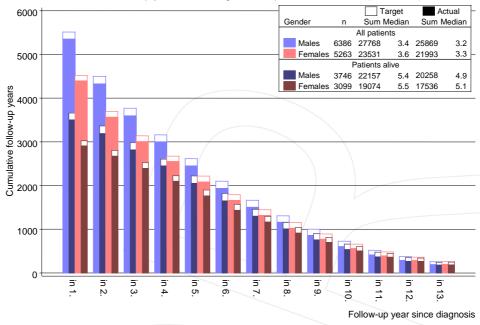
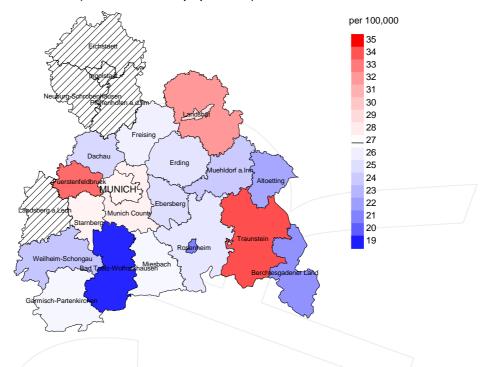


Figure 8. Cumulative follow-up years depending on time since diagnosis

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



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



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

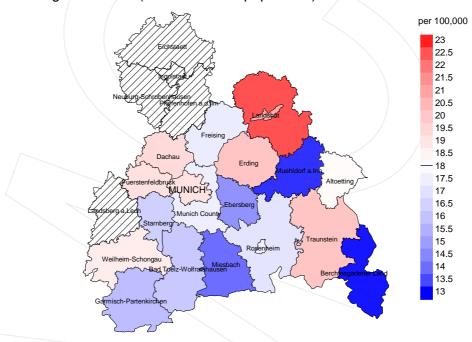


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 26.9/100,000 WS N=4,998, females 18.1/100,000 WS N=4,197). 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 97 women were identified with newly diagnosed systemic neoplasms. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 14.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 10.3 and 21.1/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males

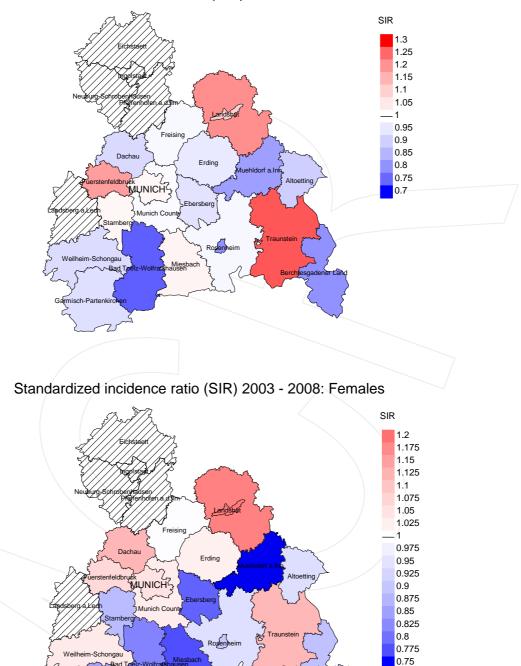


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=4,998, females N=4,197). 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 97 women were identified with newly diagnosed systemic neoplasms. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.79. Though, the value of this parameter may vary with an underlying probability of 99% between 0.60 and 1.02, and is therefore not statistically striking.

0.725 0.7

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts, and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.52 m as of 2007, respectively)

		Prop.				Prop. deaths
	Incident	actively	Prop.		Prop.	with death
Year of	cases	followed	DCO	Deaths	deaths	certific.
diagnosis	n	%	%	/ n /	%	%
1998	851	98.1	18.7	621	73.0	95.5
1999	860	98.3	19.5	621	72.2	95.8
2000	827	98.2	21.6	589	71.2	96.8
2001	889	98.0	23.2	623	70.1	96.8
2002	1481	96.8	25.5	1027	69.3	97.3
2003	1509	97.1	21.7	968	64.1	98.3
2004	1589	96.5	20.3	964	60.7	98.3
2005	1505	95.4	19.0	902	59.9	98.9
2006	1565	95.3	16.9	934	59.7	98.1
2007	1786	85.6	16.6	1013	56.7	98.2
2008	1752	71.9	15.5	919	52.5	98.8
2009	1747	73.0	14.2	851	48.7	97.9
2010	1746	73.4	14.7	814	46.6	98.8
2011	1692	76.7	15.8	738	43.6	98.6
2012	1295	98.2	20.8	515	39.8	97.7
1998-2012	21094	88.4	18.5	12099	57.4	97.9

Table 10b

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

			Prop. deaths		Prop.
Year of	Incident		with death	Deaths in	deaths in
diagnosis/	cases	Deaths	certific.	same year	same year
death	n	n	%	n	%
1998	851	520	95.8	228	26.8
1999	860	556	94.8	234	27.2
2000	827	541	95.7	232	28.1
2001	889	600	96.3	250	28.1
2002	1481	832	97.5	472	31.9
2003	1509	844	98.2	452	30.0
2004	1589	891	98.1	446	28.1
2005	1505	903	98.4	421	28.0
2006	1565	923	98.4	439	28.1
2007	1786	1028	97.8	483	27.0
2008	1752	1036	98.3	448	25.6
2009	1747	1065	97.9	464	26.6
2010	1746	1112	98.3	474	27.1
2011	1692	1149	98.9	454	26.8
2012	1295	1118	99.4	432	33.4
1998-2012	21094	13118	97.9	5929	28.1

Table 10c

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

(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.52 m as of 2007, respectively)

				Prop.	
				cancer	
		Prop.	Prop.	recorded	
		cancer-	not cancer-	on death	
Year of	Deaths	related	related	certificate	
death	n	%	96	96	
1998	520	64.0	36.0	94.2	
1999	556	72.3	27.7	94.1	
2000	541	74.7	25.3	95.4	
2001	600	72.7	27.3	94.8	
2002	832	81.0	19.0	94.8	
2003	844	80.6	19.4	94.3	
2004	891	85.2	14.8	94.5	
2005	903	83.1	16.9	94.9	
2006	923	82.8	17.2	93.2	
2007	1028	82.7	17.3	92.8	
2008	1036	80.8	19.2	90.2	
2009	1065	81.5	18.5	91.3	
2010	1112	79.8	20.2	89.6	
2011	1149	79.7	20.3	89.3	
2012	1118	80.0	20.0	89.1	
1998-2012	13118	79.7	20.3	92.4	

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	261	68.0	65.4	73.4	68.6
1999	309	68.6	65.9	75.7	68.6
2000	301	68.6	66.8	73.8	68.7
2001	283	69.7	68.9	72.2	69.7
2002	428	70.3	70.2	70.9	70.4
2003	448	70.6	69.7	75.1	70.4
2004	467	71.6	70.8	76.0	71.9
2005	486	72.5	71.9	75.3	72.3
2006	512	71.7	70.8	75.7	71.4
2007	549	70.5	69.9	73.7	70.2
2008	572	72.0	71.5	74.5	71.9
2009	577	73.0	71.9	77.6	72.7
2010	613	73.2	72.4	76.1	72.8
2011	634	72.9	72.0	76.6	72.6
2012	615	73.5	73.0	75.3	73.1
1998-2012	7055	71.5	70.7	75.0	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 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	259	72.3	68.8	77.7	72.7
1999	247	75.0	72.9	80.4	75.1
2000	240	74.0	71.6	81.4	73.4
2001	317	74.5	72.2	79.8	74.2
2002	404	74.5	72.8	81.2	74.5
2003	396	74.2	72.6	80.3	73.9
2004	424	74.2	73.6	78.0	74.2
2005	417	75.0	73.3	83.5	74.6
2006	411	75.0	74.2	79.3	74.4
2007	479	75.2	74.2	79.3	74.9
2008	464	75.4	73.7	81.3	74.8
2009	488	76.0	74.9	81.4	75.5
2010	499	76.3	75.1	81.1	75.7
2011	515	75.5	73.9	81.2	75.0
2012	503	76.2	75.2	81.1	75.6
1998-2012	6063	75.1	73.6	80.5	74.7



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

Table 12a $\begin{tabular}{ll} Mortality measures (cancer-related death) and mortality-incidence-index \\ by year of death \\ \hline MALES \\ \end{tabular}$

Year of	Deaths	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index
death	n	raw	raw	WS	WS	ES	ES	BRD-S	BRD-S
1998	174	15.7	0.38	10.4	0.36	14.6	0.38	18.7	0.39
1999	224	20.0	0.50	12.7	0.47	18.3	0.50	23.4	0.51
2000	224	19.7	0.50	12.1	0.46	17.8	0.50	23.9	0.53
2001	214	18.5	0.47	10.8	0.42	16.3	0.47	22.2	0.51
2002	351	18.8	0.45	10.4	0.39	16.1	0.44	21.9	0.48
2003	370	19.7	0.46	10.9	0.40	16.4	0.44	22.0	0.48
2004	396	21.0	0.48	11.0	0.39	17.0	0.45	23.6	0.51
2005	404	21.3	0.50	10.7	0.39	16.7	0.47	23.4	0.52
2006	419	21.9	0.47	10.9	0.39	16.8	0.44	22.9	0.48
2007	460	20.8	0.47	10.7	0.41	16.0	0.45	21.9	0.49
2008	475	21.3	0.50	10.4	0.40	15.9	0.46	21.5	0.51
2009	465	20.8	0.50	9.7	0.41	15.0	0.46	20.8	0.52
2010	487	21.6	0.51	9.7	0.40	15.1	0.46	21.1	0.51
2011	513	22.5	0.55	10.2	0.43	15.6	0.50	21.7	0.56
2012	475	20.8	0.68	9.2	0.56	14.3	0.63	20.0	0.68
1998-2012	5651	20.6	0.50	10.5	0.41	16.0	0.47	21.9	0.52

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	159	13.5	0.41	6.9	0.36	9.3	0.38	11.6	0.40
1999	178	15.0	0.43	6.2	0.32	9.4	0.37	12.8	0.42
2000	181	15.1	0.48	6.4	0.36	9.5	0.41	12.4	0.44
2001	222	18.2	0.51	7.6	0.40	11.5	0.45	15.6	0.50
2002	324	16.5	0.47	6.8	0.39	10.0	0.42	13.4	0.46
2003	310	15.7	0.44	6.4	0.33	9.6	0.38	12.8	0.42
2004	364	18.4	0.48	7.2	0.36	10.9	0.41	14.9	0.46
2005	347	17.4	0.50	6.8	0.37	10.2	0.43	13.6	0.46
2006	345	17.2	0.52	6.5	0.39	9.8	0.44	13.6	0.49
2007	390	16.9	0.49	6.4	0.36	9.7	0.41	13.0	0.45
2008	364	15.7	0.47	5.9	0.35	8.9	0.40	12.0	0.43
2009	403	17.3	0.50	6.3	0.37	9.5	0.42	13.0	0.47
2010	402	17.2	0.51	6.0	0.36	9.2	0.41	12.7	0.46
2011	405	17.2	0.54	6.3	0.40	9.5	0.46	12.8	0.51
2012	419	17.8	0.70	6.2	0.50	9.5	0.58	12.9	0.64
1998-2012	4813	16.8	0.50	6.5	0.37	9.7	0.42	13.1	0.47

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	11	0.1 0.1	5	0.1	0.1	6	0.1	0.1
5-9	22	0.2 0.3	14	0.2	0.3	8	0.2	0.3
10-14	26	0.2 0.6	14	0.2	0.6	12	0.2	0.5
15-19	30	0.3 0.8	16	0.3	0.8	14	0.3	0.8
20-24	42	0.4 1.2	25	0.4	1.3	17	0.3	1.2
25-29	46	0.4 1.7	29	0.5	1.8	17	0.3	1.5
30-34	65	0.6 2.3	42	0.7	2.5	23	0.5	2.0
35-39	114	1.1 3.3	67	1.2	3.6/	47	1.0	2.9
40-44	160	1.5 4.8	106	1.8	5.5	54	1.1	4.0
45-49	240	2.2 7.1	143	2.5	7,9	97	2.0	6.0
50-54	323	3.0 10.1	190	3.3	11.2	133	2.7	8.7
55-59	577	5.4 15.5	335	5.8	17.0	242	4.9	13.7
60-64	864	8.1 23.5	534	9.2	26.2	330	6.7	20.4
65-69	1367	12.8 36.3	823	14.2	40.3	544	11.1	31.5
70-74	1737	16.2 52.5	994	17.1	57.4	743	15.1	46.6
75-79	1871	17.5 69.9	1038	17.9	75.3	833	17.0	63.6
80-84	1713	16.0 85.9	813	14.0	89.3	900	18.3	81.9
85+	1510	14.1 100.0	624	10.7	100.0	886	18.1	100.0
All ages	10718	100.0	5812	100.0		4906	100.0	

Included in the statistics are 32.2% multiple primaries in males and 27.2% 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
death		Females	_ /		spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
	_	_	/	/	\	\		
0 - 4	5	6	0.4		0.5		16.1	26.1
5- 9	14	8	1.0		0.6		40.0	20.5
10-14	14	12	1.0		0.9		42.4	42.9
15-19	16	14	/ 1/.1		1.0		38.1	41.2
20-24	25	17 /	1.5		/1.0		30.1	36.2
25-29	29	17	1.6	0.18	0.9	0.11	30.2	15.6
30-34	42	23	2.0	0.18	/ 1.1		23.9	10.8
35-39	67	47	2.9		2.1		17.4	9.5
40-44	106	54	4.4		2.3		13.1	5.0
45-49	143	97	6.6	0.28	4.6		8.4	5.2
50-54	190	133	10.3		7.0		6.2	4.6
55-59	335	242	19.7	0.40	13.6	0.36	6.0	5.4
60-64	534	330	32.4	0.46	19.0	0.38	6.4	5.5
65-69	823	544	56.1	0.52	33.9	0.48	7.3	7.1
70-74	994	743	85.8	0.60	53.9	0.60	8.0	8.3
75-79	1038	833	137.8	0.69	76.1	0.63	8.6	8.4
80-84	813	900	179.0	0.77	104.2	0.73	8.2	8.6
85+	624	886	201.2	0.78	108.2	0.70	7.8	7.0
	\	.\					\	
All ages	5812	4906					7.9	7.3
M								
Mortality			21 2	0 51	1 7 1	0 51		
Raw			21.2		17.1			
WS			10.8	0.42	6.6			
ES			16.5		9.9			
BRD-S			22.5	0.53	13.4	0.48		
PYLL-70								
per 100,000			116.0		77.8			
ES			107.5		72.6			
AYLL-70			12.3		12.4			

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

Table 15a $\begin{tabular}{ll} Multiple primaries in deaths in period 1998-2012 \\ \hline MALES \end{tabular}$

	Total	Total	Pre	Pre	Syn- chron ±30d	Syn- chron ±30d	Post	Post
Diagnosis	n /	%↓	n	+10 ←%	n	±30a ←%	n	%→
Diagnosis	11	•↑	11	← •	11	← ⁵	11	~~
C03-C06 Oral cavit	y 21	0.9	7	33.3	4	19.0	10	47.6
C15 Oesophagus	24	1.0	3	12.5	3	12.5	18	75.0
C16 Stomach	73	3.2	27	37.0	11	15.1	35	47.9
C18 Colon	160	7.0	79	49.4	25	15.6	56	35.0
C19-C20 Rectum	95	4.1	40	42.1	13	13.7	42	44.2
C22 Liver	27/	1.2	4	14.8	4	14.8	19	70.4
C25 Pancreas	40	1.7	1	2.5	7	17.5	32	80.0
C33-C34 Lung	209	9.1	31	14.8	34	16.3	144	68.9
C43 Malign. me	lanoma 95	4.1	46	48.4	9	9.5	40	42.1
C44 Skin other	s 309	13.5	61	19.7	15	4.9	233	75.4
C46,C49 Soft tissu	.e 26	1.1	15	57.7	1	3.8	10	38.5
C61 Prostate	415	18.1	263	63.4	49	11.8	103	24.8
C64 Kidney	81	3.5	52	64.2	10	12.3	19	23.5
C67 Bladder	109	4.7	59	54.1	8	7.3	42	38.5
C70-C72 CNS cancer	44	1.9	12	27.3	11	25.0	21	47.7
C76-C79 CUP	39	1.7	5	12.8	_ 5	12.8	29	74.4
C82-C85 NHL	104	4.5			24	23.1	80	76.9
C90 Mult. myel	oma 32	1.4			5	15.6	27	84.4
C91-C96 Leukaemia	210	9.2			58	27.6	152	72.4
Other primaries	182	7.9	76	41.8	19	10.4	87	47.8
All mult. primarie	s 2295	100.0	781	34.0	315	13.7	1199	52.2

Multiple primaries with number of cases n<20 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

	Total	Total	Pre	Pre	Syn- chron ±30d	Syn- chron ±30d	Post	Post
Diagnosis	n	%↓	n	-%	n	-8	n	-%
C16 Stomach	48	2.9	15	31.3	8	16.7	25	52.1
C18 Colon	105	6.4	49	46.7	14	13.3	42	40.0
C19-C20 Rectum	47	2.9	30	63.8	5	10.6	12	25.5
C21 Anus/canal	15	0.9	8	53.3			7	46.7
C22 Liver	/ 11	0.7			1	9.1	10	90.9
C23-C24 Bile	15/	0.9	3	20.0	2	13.3	10	66.7
C25 Pancreas	32	2.0	1	3.1	6	18.8	25	78.1
C33-C34 Lung	87	5.3	14	16.1	10	11.5	63	72.4
C43 Malign. melanoma	53	3.2	37	69.8	1	1.9	15	28.3
C44 Skin others	145	8.8	49	33.8	9	6.2	87	60.0
C46,C49 Soft tissue	12	0.7	2	16.7	3	25.0	7	58.3
C50 Breast	415	25.3	292	70.4	31	7.5	92	22.2
C51 Vulva	15	0.9	9	60.0			6	40.0
C53 Cervix uteri	35	2.1	24	68.6	3	8.6	8	22.9
C54 Corpus uteri	64	3.9	49	76.6	4	6.3	11	17.2
C56 Ovary	47	2.9	17	36.2	_ 8	17.0	22	46.8
C64 Kidney	29	1.8	14	48.3	6	20.7	9	31.0
C67 Bladder	37	2.3	18	48.6	5	13.5	14	37.8
C70-C72 CNS cancer	37	2.3	17	45.9	4	10.8	16	43.2
C73 Thyroid	26	1.6	21	80.8			5	19.2
C76-C79 CUP	23	1.4	7	30.4	1	4.3	15	65.2
C82-C85 NHL	71	4.3			11	15.5	60	84.5
C90 Mult. myeloma	33	2.0			3	9.1	30	90.9
C91-C96 Leukaemia	164	10.0			48	29.3	116	70.7
Other primaries	75	4.6	33	44.0	4	5.3	38	50.7
All mult. primaries	1641	100.0	709	43.2	187	11.4	745	45.4

Multiple primaries with number of cases n<10 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
death	Males	Females		_	spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
0 - 4	4	6	0.3		0.5	0.06	15.4	26.1
5- 9	14	8	1.0		0.6	0.15	42.4	22.2
10-14	14	12	1.0		0.9		42.4	46.2
15-19	16	13	/ 1/.1		1.0	0.14	41.0	41.9
20-24	23	16 /	1.4		/1.0	0.13	29.5	37.2
25-29	27	16	1.5		0.9		30.0	15.5
30-34	42	20	2.0	0.18	1.0	0.14	24.4	10.7
35-39	60	43	2.6		1.9	0.23	16.7	9.6
40-44	95	48	3.9	0.25	2.1	0.20	12.7	5.1
45-49	127	89	5.9	0.27	4.2	0.33	8.3	5.5
50-54	168	115	9.1	0.29	6.1	0.29	6.3	4.8
55-59	304	205	17.9	0.41	11.5	0.35	6.3	5.5
60-64	447	280	27.1	0.46	16.1	0.40	6.4	5.6
65-69	671	441	45.7	0.53	27.5	0.48	7.4	7.1
70-74	799	589	69.0	0.64	42.7	0.60	8.1	8.2
75-79	773	671	102.6	0.72	61.3	0.65	8.4	8.5
80-84	595	715	131.0	0.82	82.8	0.74	8.0	8.6
85+	446	694	143.8	0.78	84.7	0.68	7.3	6.8
All ages	4625	3981					7.8	7.3
Mortality								
Raw			16.8	0.50	13.9	0.50		
WS			8.8		5.5			
ES			13.2		8.2			
BRD-S			17.7		10.9			
PYLL-70								
per 100,000			104.1		69.1			
ES			97.1		65.1			
AYLL-70			12.8		12.9			
-								

^{*} 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	4	6	0.3		0.5		16.0	26.1
5- 9	13	7	0.9	0.14	0.5	0.13	40.6	20.0
10-14	14	10	1,0	0.20	0.7	0.18	42.4	41.7
15-19	16	11	/ 1/.1	0.14	0.8	0.12	41.0	42.3
20-24	20	14	1.2	0.15	0.9	0.11	27.4	35.0
25-29	25	13	1.4	0.16	0.7	0.09	29.8	13.4
30-34	40	17	1.9	0.18	0.8	0.13	24.0	10.1
35-39	54	35	2.3	0.20	1.6	0.19	15.7	8.5
40-44	83	42	3.4	0.23	1.8	0.18	11.7	4.9
45-49	107	75	5.0	0.24	3.5	0.30	7.5	5.1
50-54	138	101	7.5	0.27	5.3	0.28	5.7	4.6
55-59	264	185	15.5	0.40	10.4	0.35	6.1	5.5
60-64	370	238	22.5	0.44	13.7	0.38	6.0	5.5
65-69	544	372	37.1	0.50	23.2	0.44	6.9	7.0
70-74	661	519	57.0	0.60	37.6	0.58	8.0	8.6
75-79	638	582	84.7	0.66	53.2	0.61	8.6	8.7
80-84	501	633	110.3	0.74	73.3	0.70	8.5	9.1
85+	381	630	122.9	0.69	76.9	0.63	7.7	7.2
All ages	3873	3490					7.7	7.5
Mortality								
Raw			14.1	0.46	12.2	0.47		
WS			7.4	0.38	4.8	0.34		
ES			11.1	0.43	7.1	0.39		
BRD-S			14.9	0.48	9.6	0.44		
PYLL-70								
per 100,000			91.0		59.6			
ES			85.4		56.3			
AYLL-70			13.3		13.0			

^{*} See corresponding tables with multiple primaries.



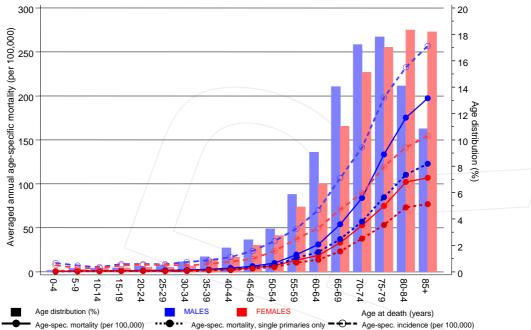
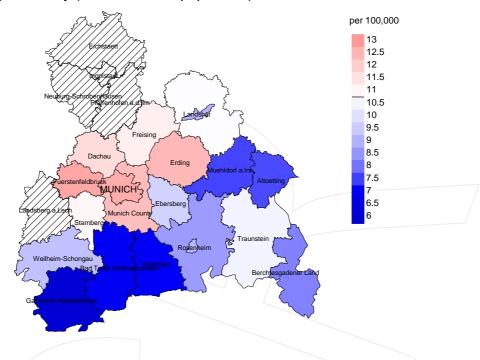


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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



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



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

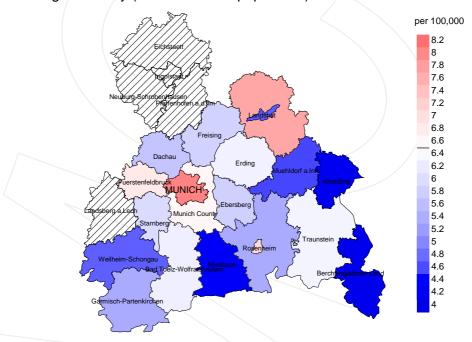


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 10.8/100,000 WS N=2,432, females 6.5/100,000 WS N=2,038). 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 51 women died from systemic neoplasms. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 5.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.8 and 8.6/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males

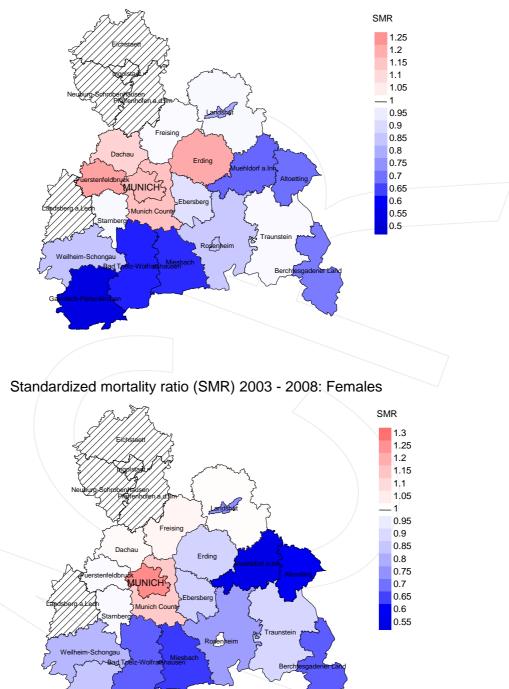


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=2,432, females N=2,038). 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 51 women died from systemic neoplasms. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.88. Though, the value of this parameter may vary with an underlying probability of 99% between 0.59 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

Munich Cancer Registry. Baseline statistics C81-C96: Systemic neoplasms [Internet]. 2014 [updated 2014 Mar 20; cited 2014 May 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/base_C8196E.pdf

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