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

C91-C95: Leukaemias

Year of diagnosis	1998-2011
Patients	6973
Diseases	7023
Creation date	04/02/2013
Export date	01/03/2013
Population	4.5 m



http://www.tumorregister-muenchen.de/en/facts/base/base_C9195E.pdf

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

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.5 million inhabitants, account for the frequency of cancer diseases^{##} and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

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

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR. The time-delayed acquisition of data and the occasionally high DCO-rates indicate optimizing reserves, among others, because of current financial and legal conditions that hinder the analyses.

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

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

Munich Cancer Registry, April 2013

- Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.51 million to 3.96 in 2002, and to 4.52 million in 2007). Death certificates from 2011 are incorporated into these analyses.
- Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.
- DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate. A high proportion of DCO cases (≥5%) in particular cancer types indicate insufficient participation of specific cancer specializations.

Some remarks regarding this cancer type

The results for leukemias should be interpreted with caution. As with other primarily non-surgically or non-radiologically treated cancer diseases, the MCR hardly manages to obtain even the simplest information on this cancer. The proportion of DCO cases indicates a situation that is far away from a satisfying cooperation. In the group of institutions that potentially participate in reporting are a few hospitals that refuse any contribution to MCR.

ICD-10 codes used for specifying cancer site

ICD-10	Description
C91	Lymphoid leukaemia
C92	Myeloid leukaemia
C93	Monocytic leukaemia
C94	Other leukaemias of specified cell type
C95	Leukaemia of unspecified cell type

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	%	96	90	90
1998	294	85	28.9	18.0	80.6	98.6
1999	295	75	25.4	21.0	73.9	98.6
2000	320	92	28.8	21.9	71.3	98.1
2001	352	127	36.1	21.0	75.9	98.6
2002	550	194	35.3	24.5	75.1	96.5
2003	555	197	35.5	22.3	72.3	97.7
2004	598	195	32.6	26.1	66.4	95.5
2005	564	179	31.7	29.1	70.0	95.7
2006	580	173	29.8	32.4	69.3	94.1
2007	614	161	26.2	25.7	60.7	87.0 ##
2008	598	167	27.9	30.1	59.7	81.3
2009	602	161	26.7	27.6	59.0	84.1
2010	602	152	25.2	30.4	56.8	94.7
2011	499	138	27.7	30.9	46.5	84.0 ###
1998-2011	7023	2096	29.8	26.6	65.7	92.4

[#] 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	294	163	131	55.4	
1999	295	159	136	53.9	
2000	320	176	144	55.0	
2001	352	191	161	54.3	
2002	550	299	251	54.4	
2003	555	306	249	55.1	
2004	598	319	279	53.3	
2005	564	326	238	57.8	
2006	580	356	224	61.4	
2007	614	343	271	55.9	
2008	598	334	264	55.9	
2009	602	315	287	52.3	
2010	602	317	285	52.7	
2011	499	261	238	52.3	
1998-2011	7023	3865	3158	55.0	

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	163	131	14.7	1/1.1	10.1	6.1	13.7	7.9	17.0	9.5
1999	159	136	14.2	11.5	9.6	7.3	13.1	8.8	16.4	10.0
2000	176	144	15.5	12.0	11.2	7.0	14.6	8.9	17.7	10.3
2001	191	161	16.5	13.2	11.2	6.7	15.0	9.0	18.3	10.9
2002	299	251	16.0	12.8	10.7	6.0	14.2	8.3	17.6	10.4
2003	306	249	16.3	12.6	10.1	6.7	14.1	8.6	18.0	10.4
2004	319	279	17.0	14.1	10.9	7.7	14.4	9.8	17.9	11.7
2005	326	238	17.2	12.0	11.0	6.5	14.5	8.2	18.5	10.0
2006	356	224	18.6	11.2	11.9	5.5	15.7	7.1	19.3	8.9
2007	343	271	15.5	11.7	9.3	6.6	12.6	8.2	16.0	9.7
2008	334	264	15.0	11.4	9.6	5.6	12.1	7.4	14.9	9.1
2009	315	287	14.1	12.3	7.9	6.0	11.0	8.0	13.8	9.6
2010	317	285	14.1	12.2	8.2	6.3	11.0	8.0	13.8	9.6
2011	261	238	11.6	10.2	7.4	5.7	9.3	6.8	11.1	7.9
1998-2011	3865	3158	15.4	12.0	9.7	6.3	13.0	8.1	16.1	9.8



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	294	64.5	20.4	0.9	95.8	37.1	55.3	68.1	79.0	86.5
1999	295	63.3	20.9	0.3	104	38.9	55.6	68.0	77.1	85.0
2000	320	62.6	20.5	0.4	97.6	35.3	53.6	66.7	76.8	85.7
2001	352	65.0	19.4	1.4	96.4	39.4	57.2	67.6	78.1	86.4
2002	550	66.3	19.1	1.0	99.3	41.5	59.0	69.6	79.0	86.4
2003	555	66.5	19.9	0.3	98.9	41.6	58.0	70.9	80.7	86.6
2004	598	65.4	20.4	0.4	98.6	37.5	58.6	69.2	79.8	85.6
2005	564	65.4	21.8	0.6	98.2	34.0	58.2	71.6	79.7	85.1
2006	580	66.6	20.9	0.6	95.4	38.0	60.6	72.3	80.0	86.4
2007	614	65.4	20.4	0.3	99.8	38.7	57.4	70.3	79.9	85.3
2008	598	66.3	21.1	0.4	98.1	36.5	61.2	71.3	79.8	86.4
2009	602	67.7	18.7	1.3	100	42.2	58.8	71.8	81.1	87.2
2010	602	67.3	20.9	0.3	101	40.3	59.4	72.1	81.7	87.9
2011	499	65.2	23.2	0.3	101	23.9	55.6	71.5	81.5	87.7
1998-2011	7023	65.8	20.6	0.3	104	38.3	58.0	70.5	79.9	86.5

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	163	63.3	20.6	0.9	95.8	37.1	55.0	65.6	78.2	86.4
1999	159	62.8	19.5	0.3	91.5	38.9	55.0	65.8	77.0	84.0
2000	176	61.4	20.7	0.4	97.6	34.1	52.9	66.5	74.9	84.0
2001	191	61.4	18.8	1.4	96.4	37.9	54.4	64.0	75.1	80.8
2002	299	63.0	20.0	1.0	98.3	32.3	55.6	67.7	76.1	82.4
2003	306	65.3	18.9	1.6	93.6	40.6	58.9	68.7	78.0	84.5
2004	319	64.2	20.5	0.4	96.1	34.9	58.6	67.9	78.3	84.7
2005	326	64.3	21.8	0.7	94.6	32.1	56.7	70.9	78.6	84.1
2006	356	64.4	20.7	1.0	95.4	36.0	57.9	70.0	77.7	84.2
2007	343	64.6	19.3	0.3	97.8	39.6	56.3	69.9	78.2	83.3
2008	334	64.1	22.0	0.4	98.1	28.0	60.5	70.3	78.0	83.6
2009	315	66.8	17.5	2.2	97.0	45.5	58.2	70.5	78.3	85.2
2010	317	66.9	20.4	0.3	101	42.6	60.3	71.8	80.0	87.0
2011	261	64.0	22.5	2.5	101	30.5	54.3	69.8	79.3	85.2
1998-2011	3865	64.3	20.3	0.3	101	36.8	56.9	69.1	77.9	84.4

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	131	66.1	20.0	1.3	93.9	38.4	57.0	71.5	81.5	86.7
1999	136	63.8	22.6	1.5	104	35.3	56.0	69.6	77.1	87.9
2000	144	64.0	20.2	2,1	95.1	36.3	54.1	68.4	77.3	86.2
2001	161	69.2	19,3	2.8	95.5	51.5	61.8	72.4	81.9	88.5
2002	251	70.2	17.3	2.9	99.3	47.5	61.8	73.2	82.6	89.0
2003	249	67.9	20.9	0.3	98.9	42.2	57.5	74.1	82.3	89.0
2004	279	66.8	20.2	0.7	98.6	41.0	58.1	70.3	81.7	87.1
2005	238	66.8	21.8	0.6	98.2	36.5	60.6	74.0	81.6	86.9
2006	224	69.9	20.9	0.6	95.1	40.9	65.9	75.5	82.8	88.6
2007	271	66.4	21.8	1.0	99.8	37.6	59.9	71.9	81.2	86.5
2008	264	68.9	19.6	1.4	97.4	42.6	61.7	73.5	82.6	88.2
2009	287	68.6	19.8	1.3	100	40.5	59.2	72.7	83.0	88.7
2010	285	67.7	21.4	0.8	98.7	37.4	58.9	72.4	82.7	88.9
2011	238	66.5	24.0	0.3	96.7	23.2	57.2	73.2	83.6	89.1
1998-2011	3158	67.6	20.8	0.3	104	40.2	59.4	72.5	82.2	88.2

Age at									
diagnosis	Cases			Males			Females		
Years	n	%	Cum.%	n	96	Cum.%	n	%	Cum.%
0-4	191	2.7	2.7	108	2.8	2.8	83	2.6	2.6
5-9	88	1.3	4.0	55	1.4	4.2	33	1.0	3.7
10-14	61	0.9	4.8	31	0.8	5.0	30	0.9	4.6
15-19	64	0.9	5.8	43	1.1	6.1	21	0.7	5.3
20-24	56	0.8	6.5	29	0.8	6.9	27	0.9	6.1
25-29	61	0.9	7.4	35	0.9	7.8	26	0.8	7.0
30-34	86	1.2	8.6	60	1.6	9.3	26	0.8	7.8
35-39	142	2.0	10.7	74	1.9	11.3	68	2.2	9.9
40-44	202	2.9	13.5	119	3.1	14.3	83	2.6	12.6
45-49	230	3.3	16.8	126	3.3	17.6	104	3.3	15.9
50-54	318	4.5	21.3	197	5.1	22.7	121	3.8	19.7
55-59	453	6.5	27.8	262	6.8	29.5	191	6.0	25.7
60-64	611	8.7	36.5	368	9.5	39.0	243	7.7	33.4
65-69	866	12.3	48.8	522	13.5	52.5	344	10.9	44.3
70-74	918	13.1	61.9	552	14.3	66.8	366	11.6	55.9
75-79	942	13.4	75.3	523	13.5	80.3	419	13.3	69.2
80-84	838	11.9	87.2	407	10.5	90.8	431	13.6	82.8
85+	896	12.8	100.0	354	9.2	100.0	542	17.2	100.0
All ages	7023	100.0		3865	100.0		3158	100.0	

Included in the statistics are 35.5% multiple primaries in males and 29.3% in females.

Table 5

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

			101 1	errou r	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
							Males	Females
			Malec	Females	Males	Females		Prop.all
Age at				Age-		DCO rate		cancers
diagnosis	Malac	Females	spec.	_	n=1031			n=129521
Years	nares	n		incid.	%	%	%	%
iears	11	11	incia.	incia.	•	•	•	•
0- 4	108	83	8.5	6.9		1.2	38.2	39.9
5- 9	55	33	4.3	2.7	1.8	3.0	35.7	31.7
10-14	31	30	2.4	2.4	1.0	3.0	23.3	19.7
15-19	43	21	3.3	1.7	7.0		14.8	8.8
20-24	29	27	2.0	1.8	6.9	11.1	5.7	6.2
25-29	35	26	2.1	1.5	2.9	3.8	4.3	2.8
30-34	60	26	3.1	1.4	10.0	/ 3.3	4.6	1.5
35-39	74	68	3.4	3.3	9.5	7.4	3.7	2.1
40-44	119	83	5.3	3.9	8.4	6.0	4.3	1.6
45-49	126	104	6.5	5.4	7.1	11.5	2.8	1.4
50-54	197	121	11.8	7.1	10.7	14.0	2.7	1.3
55-59	262	191	16.8	11.7	12.6	15.2	2.1	1.6
60-64	367	242	24.1	15.1	15.5	16.5	2.0	1.6
65-69	522	344	38.3	23.1	20.3	23.8	2.2	2.1
70-74	550	364	53.3	29.5	25.8	24.7	2.5	2.4
75-79	520	415	77.0	41.7	35.6	36.4	3.1	2.8
80-84	404	428	99.5	53.8	51.7	55.8	3.7	3.2
85+	352	539	126.9	72.6	67.9	69.4	4.3	3.7
All ages	3854	3145			26.8	33.4	2.9	2.4
Incidence								
Raw			15.3	11.9				
WS			9.7	6.3				
ES			12.9	8.1				
BRD-S			16.0	9.7				

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

Table 6a

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

MALES

Observed Expected LCL UCL											
Diagnosis	n	n	SIR	95%	95%	EAR	%				
C07-C08 Salivary gland	5	0.2	20.9		48.8 #						
C09-C10 Oropharynx	3 /	1.2	2.6	0.5	7.5	2.4					
C15 Oesophagus	4/	1.9	2.1	0.6	5.4	2.7					
C16 Stomach	/ 11/	4.6	2.4	1.2	4.3 #						
C18 Colon	21	10.9	1.9	1.2	2.9 #		4.8				
C19-C20 Rectum	15	6.2	2.4	1.3	4.0 #	11.4					
C22 Liver	7	3.0	2.4	0.9	4.8	5.2	14.3				
C25 Pancreas	4	3.8	1.1	0.3	2.7	0.3					
C33-C34 Lung	31	13.1	2.4	1.6	3.4 #	23.4					
C38,C45 Mesothelioma	3	0.7	4.2		12.3	3.0	33.3				
C43 Malign. melanoma	19	4.1	4.6	2.8	7.2 #	19.4					
C46,C49 Soft tissue	4	0.6	6.9	1.9	17.6 #	4.5					
C50 Breast	2	0.3	7.4	0.9	26.7	2.3					
C61 Prostate	71	31.8	2.2	1.7	2.8 #	51.1	7.0				
C64 Kidney	5	3.8	1.3	0.4	3.0	1.5					
C67 Bladder	14	4.6	3.1	1.7	5.1 #	12.3	14.3				
C70-C72 CNS cancer	5	1.5	3.3/	1.1	7.7 #	4.6					
C73 Thyroid	2	0.7	2.7	0.3	9.8	1.6					
C76-C79 CUP	6	1.8	3.3	1.2	7.2 #	5.4					
C81 Hodgkin lymphoma	4	0.2	17.1	4.7	43.9 #	4.9					
C82-C85 NHL	19	4.2	4.5	2.7	7.0 #	19.2	15.8				
C90 Mult. myeloma	6	1.4	4.4	1.6	9.6 #	6.0					
C91-C96 Leukaemia	21	1.7	12.4	7.7	19.0 #	25.2	42.9				
Other primaries	6	2.8	2.2	0.8	4.7	4.2					
Not observed	0	4.4	0.0	0.0	0.8 #	-5.7					
All mult. primaries	288	109.6	2.6	2.3	2.9 #	232.6	7.6				

Patients	2347
Mean age at second malignancy (years)	70.9
Person-years	7668
Mean observation time (years)	3.3
Median observation time (years)	2.3

The occurrence of second malignancy is statistically significant.

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

Table 6b

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

FEMALES

	Observed E	xpected		LCL UCL		DCO
Diagnosis	'n	n	SIR	95% 95%	EAR	%
C16 Stomach	6	2.0	3.0	1.1 6.6	[#] 7.5	
C18 Colon	/ 13 /	5.4	2.4	1.3 4.1	# 14.2	15.4
C19-C20 Rectum	3/	2.4	1.3	0.3 3.7	1.2	
C22 Liver	2 5	0.6	3.4	0.4 12.4	2.7	50.0
C25 Pancreas	/ 5	2.3	2.2	0.7 5.2	5.1	20.0
C33-C34 Lung	13	3.6	3.6	1.9 6.1	# 17.6	
C43 Malign. melanoma	4	1.8	2.2	0.6 5.7	4.2	
C50 Breast	31	15.8	2.0	1.3 2.8	# 28.5	
C53 Cervix uteri	2	0.7	2.8	0.3 10.0	2.4	100.0
C54 Corpus uteri	9	3.0	3.0	1.4 5.8	# 11.3	
C56 Ovary	3	2.3	1.3	0.3 3.9	1.4	
C73 Thyroid	3	1.0	3.1	0.6 9.0	3.8	
C76-C79 CUP	2	0.9	2.2	0.3 8.1	2.1	
C82-C85 NHL	11	2.0	5.5	2.7 9.8	# 16.9	27.3
C91-C96 Leukaemia	6	0.8	7.3	2.7 15.9	# 9.7	16.7
Other primaries	11	3.5	3.1	1.6 5.6	# 14.0	
Not observed	0	4.8	0.0	0.0 0.8	# -9.0	
All mult. primaries	124	52.8	2.3	2.0 2.8	# 133.6	8.1

Patients	1763					
Mean age at second malignancy (years)	69.1					
Person-years	5331					
Mean observation time (years)						
Median observation time (years)	1.8					

The occurrence of second malignancy is statistically significant.

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

C91-C95: Leukaemias

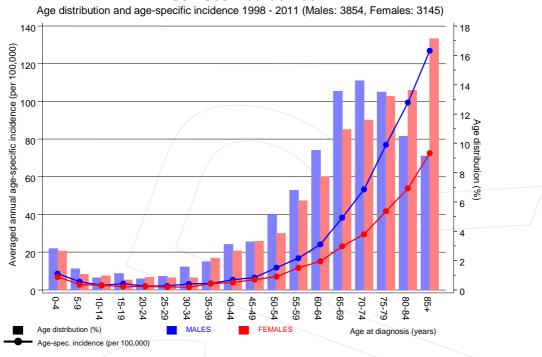


Figure 7. Age distribution and age-specific incidence



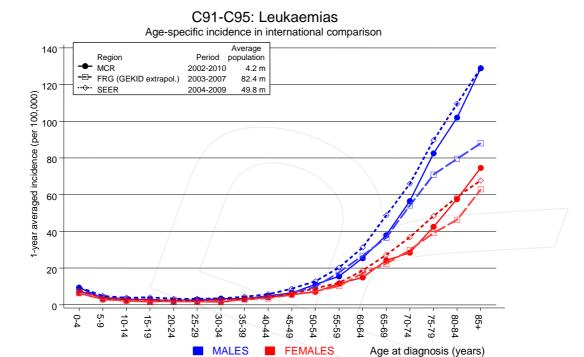


Figure 7a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).



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.

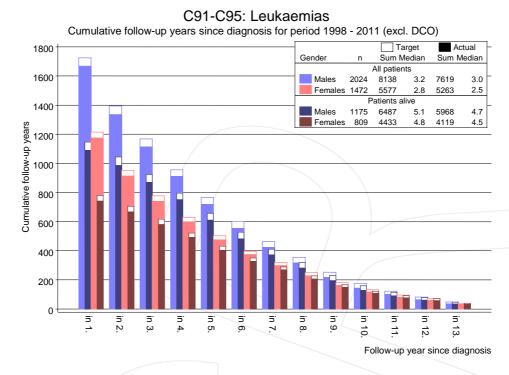
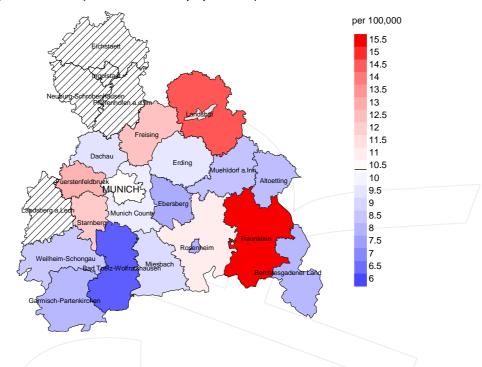


Figure 8. Cumulative follow-up years depending on time since diagnosis

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

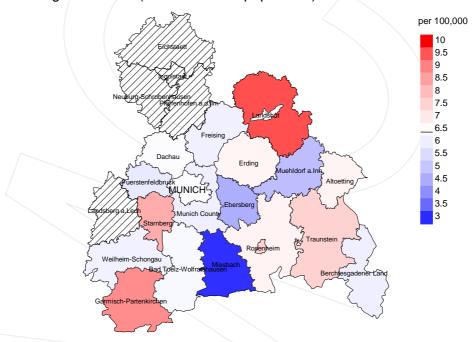
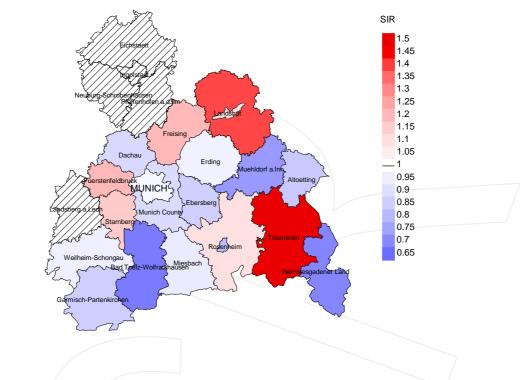


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 10.4/100,000 WS N=1,879, females 6.4/100,000 WS N=1,458). 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 27 women were identified with newly diagnosed leukaemias. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 4.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.2 and 9.1/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males



Standardized incidence ratio (SIR) 2003 - 2008: Females



Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,879, females N=1,458). 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 27 women were identified with newly diagnosed leukaemias. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.64. Though, the value of this parameter may vary with an underlying probability of 99% between 0.36 and 1.02, and is therefore not statistically striking.

MORTALITY

Table 10a

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

		Prop.				Prop. deaths
	Incident	actively	Prop.		Prop.	with death
Year of	cases	followed	DCO	Deaths	deaths	certific.
diagnosis	n	%	%	/ n /	%	%
1998	294	98.6	28.9	237	80.6	97.9
1999	295	98.6	25.4	218	73.9	96.8
2000	320	98.1	28.8	228	71.3	97.4
2001	352	98.6	36.1	267	75.9	98.1
2002	550	96.5	35.3	413	75.1	98.3
2003	555	97.7	35.5	401	72.3	99.3
2004	598	95.5	32.6	397	66.4	98.7
2005	564	95.7	31.7	395	70.0	99.2
2006	580	94.1	29.8	402	69.3	98.0
2007	614	87.0	26.2	373	60.7	99.2
2008	598	81.3	27.9	357	59.7	98.6
2009	602	84.1	26.7	355	59.0	98.0
2010	602	94.7	25.2	342	56.8	99.4
2011	499	84.0	27.7	232	46.5	99.6
1998-2011	7023	92.4	29.8	4617	65.7	98.5

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 4.52 m as of 2007, respectively)

			Prop.		
			deaths		Prop.
Year of	Incident		with death	Deaths in	deaths in
diagnosis/	cases	Deaths	certific.	same year	same year
death	n	n	96	n	ફ
1998	294	221	98.2	113	38.4
1999	295	201	97.0	89	30.2
2000	320	219	96.3	112	35.0
2001	352	264	97.3	136	38.6
2002	550	340	98.2	225	40.9
2003	555	330	98.2	235	42.3
2004	598	332	98.8	223	37.3
2005	564	397	99.7	230	40.8
2006	580	378	98.7	241	41.6
2007	614	391	98.2	218	35.5
2008	598	395	98.5	221	37.0
2009	602	390	97.9	232	38.5
2010	602	435	98.2	249	41.4
2011	499	406	99.3	191	38.3
1998-2011	7023	4699	98.3	2715	38.7

Table 10c

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

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

				Prop. cancer	
		Prop.	Prop.	recorded	
		/-	\ -		
	_ /	cancer-	not cancer-	on death	
Year of	Deaths	related	related	certificate	
death	n	ે %	%	%	
1998	221	65.6	34.4	95.9	
1999	201	71.1	28.9	95.9	
2000	219	74.9	25.1	98.1	
2001	264	72.0	28.0	95.7	
2002	340	81.5	18.5	97.6	
2003	330	83.6	16.4	96.6	
2004	332	86.7	13.3	96.3	
2005	397	86.1	13.9	98.0	
2006	378	86.5	13.5	95.7	
2007	391	84.4	15.6	95.3	
2008	395	82.0	18.0	91.8	
2009	390	85.6	14.4	93.5	
2010	435	83.2	16.8	95.1	
2011	406	83.7	16.3	93.3	
1998-2011	4699	81.8	18.2	95.5	
				\	

Table 11a $\begin{tabular}{ll} \begin{tabular}{ll} \begin{tabula$

					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	121	66.8	64.4	72.3	67.1
1999	115	68.7	64.7	77.5	68.0
2000	131	68.0	65.7	75.8	68.3
2001	127	70.0	69.2	72.7	69.7
2002	177	70.5	70.1	72.6	70.6
2003	180	70.5	69.7	75.8	70.4
2004	181	71.7	70.9	77.5	71.8
2005	220	71.7	70.5	78.2	71.4
2006	224	71.5	70.4	78.2	71.1
2007	208	69.8	69.0	74.7	70.1
2008	225	71.8	71.2	74.6	71.8
2009	207	72.9	72.0	77.9	73.1
2010	239	74.0	72.9	79.0	74.0
2011	223	72.5	71.7	77.3	72.6
1998-2011	2578	71.1	70.1	76.1	71.1

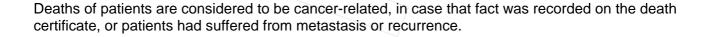


Table 11b Means of age at death according to the grouping in Table 10 FEMALES

					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	100	70.1	66.2	76.2	70.1
1999	86	74.5	72.8	79.6	74.3
2000	88	73.9	69.1	86.1	73.3
2001	137	73.9	70.8	80.2	73.8
2002	163	74.5	71.9	83.8	74.2
2003	150	74.4	72.4	82.6	74.3
2004	151	74.3	73.4	80.1	74.3
2005	177	73.4	72.6	79.4	73.7
2006	154	74.4	73.6	80.5	74.0
2007	183	73.6	72.1	80.6	74.0
2008	170	74.9	72.9	83.1	74.3
2009	183	74.2	73.6	78.3	74.2
2010	196	76.0	75.6	78.3	75.9
2011	183	73.7	71.8	82.4	73.1
1998-2011	2121	74.1	72.5	80.8	74.0



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.

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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	84	7.6	0.52	5.2	0.52	7.1	0.52	8.9	0.53
1999	79	7.1	0.50	4.7	0.50	6.5	0.50	8.2	0.50
2000	101	8.9	0.57	5.8	0.52	8.2	0.56	10.7	0.60
2001	98	8.5	0.51	4.9	0.44	7.5	0.50	10.2	0.56
2002	149	8.0	0.50	4.5	0.42	6.8	0.48	9.3	0.53
2003	155	8.3	0.51	4.6	0.46	7.0	0.50	9.3	0.52
2004	158	8.4	0.50	4.4	0.40	6.8	0.47	9.5	0.53
2005	185	9.8	0.57	5.1	0.46	7.7	0.54	10.7	0.58
2006	192	10.0	0.54	5.0	0.42	7.7	0.49	10.6	0.55
2007	180	8.1	0.52	4.3	0.46	6.2	0.50	8.6	0.54
2008	188	8.4	0.57	4.1	0.43	6.2	0.52	8.5	0.58
2009	176	7.9	0.56	3.6	0.46	5.7	0.52	8.0	0.58
2010	195	8.7	0.62	3.9	0.48	6.1	0.56	8.5	0.61
2011	190	8.4	0.73	3.9	0.53	6.0	0.64	8.4	0.75
1998-2011	2130	8.5	0.55	4.5	0.46	6.7	0.52	9.2	0.57

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	61	5.2	0.47	2.9	0.48	3.7	0.47	4.4	0.46
1999	64	5.4	0.47	2.3	0.32	3.4	0.38	4.5	0.44
2000	63	5.2	0.44	2.5	0.35	3.4	0.38	4.4	0.43
2001	92	7.6	0.58	3.3	0.50	4.8	0.54	6.4	0.59
2002	128	6.5	0.51	2.9	0.47	4.1	0.49	5.4	0.52
2003	121	6.1	0.49	2.5	0.37	3.7	0.43	5.0	0.48
2004	130	6.6	0.47	2.7	0.35	3.9	0.40	5.2	0.45
2005	157	7.9	0.66	3.2	0.49	4.7	0.58	6.1	0.61
2006	135	6.7	0.61	2.6	0.48	3.9	0.56	5.4	0.61
2007	150	6.5	0.56	2.8	0.42	4.0	0.49	5.1	0.53
2008	136	5.9	0.52	2.3	0.42	3.4	0.46	4.5	0.50
2009	158	6.8	0.55	2.7	0.45	4.0	0.50	5.3	0.55
2010	167	7.1	0.59	2.4	0.39	3.7	0.47	5.2	0.55
2011	150	6.4	0.64	2.6	0.45	3.8	0.56	4.9	0.63
1998-2011	1712	6.5	0.54	2.7	0.42	3.9	0.48	5.2	0.53

Table 13

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

Age at								
death	Cases		Males			Females		
Years	n	% Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	9	0.2 0.2	4	0.2	0.2	5	0.3	0.3
5-9	13	0.3 0.6	/ 8	0.4	0.6	5	0.3	0.6
10-14	20	0.5 1.1	/ 10	0.5	1.0	10	0.6	1.2
15-19	20	0.5 1.6	/ 11	0.5	1.5	9	0.5	1.7
20-24	24	0.6 2.2	/ 17	0.8	2.3	7	0.4	2.1
25-29	24	0.6 2.8	17	0.8	3.1	7	0.4	2.5
30-34	28	0.7 / 3.6/	20	0.9	4.0	8	0.5	3.0
35-39	59	1.5 5.1	32	1.5	5.5	27	1.6	4.5
40-44	62	1.6 6.7	39	1.8	7.3	23	1.3	5.9
45-49	83	2.1 8.8	41	1.9	9,2	42	2.4	8.3
50-54	109	2.8 11.6	65	3.0	12.2	44	2.6	10.9
55-59	215	5.5 17.2	119	5.5	17.7	96	5.6	16.5
60-64	296	7.6 24.8	176	8.1	25.9	120	7.0	23.4
65-69	492	12.7 37.5	314	14.5	40.4	178	10.3	33.8
70-74	580	14.9 52.4	351	16.3	56.7	229	13.3	47.1
75-79	696	17.9 70.4	399	18.5	75.1	297	17.3	64.4
80-84	595	15.3 85.7	298	13.8	88.9	297	17.3	81.6
85+	555	14.3 100.0	239	11.1	100.0	316	18.4	100.0
All ages	3880	100.0	2160	100.0		1720	100.0	

Included in the statistics are 35.5% multiple primaries in males and 29.3% in females.

Table 14

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

			Males		Females		Males	Females
Age at			Age-		Age-		Prop.all	Prop.all
death	Males	Females	spec.		spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	왕	%
0 - 4	4	5	0.3	0.04	0.4		13.8	22.7
5- 9	8	5	0.6	0.15	0.4		25.8	13.9
10-14	10	10	0.8	0.32	0.8		34.5	41.7
15-19	11	9	0.8	0.26	0.7		28.9	31.0
20-24	17	7 /	1.1		0.5		21.3	16.3
25-29	17	7	1.0	0.49	0.4		19.5	6.9
30-34	20	8	1.0	0.33	0.4		11.9	3.9
35-39	32	27	1.5	0.43	1.3		8.8	5.9
40-44	39	23	1.7	0.33	1.1	0.28	5.1	2.3
45-49	41	42	2.1	0.33	2.2	0.40	2.7	2.4
50-54	65	44	3.9	0.33	2.6		2.3	1.7
55-59	119	96	7.6	0.45	5.9		2.3	2.4
60-64	176	120	11.6		7.5	0.49	2.3	2.2
65-69	314	178	23.0		12.0		3.0	2.5
70-74	351		34.0	0.64	18.6		3.2	2.9
75-79	399	297	59.0	0.76	29.9		3.7	3.3
80-84	298	297	73.4		37.4		3.4	3.1
85+	239	316	86.2	0.68	42.5	0.58	3.4	2.8
All ages	2160	1720					3.2	2.8
Mortality								
Raw			8.6	0.56	6.5	0.54		
WS			4.5	0.46	2.7	0.42		
ES			6.8	0.53	3.9			
BRD-S			9.3	0.58	5.2	0.53		
PYLL-70								
per 100,000			52.6		37.2			
ES			50.8		36.4			
AYLL-70			13.7		14.5			

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

Table 15a

Multiple primaries in deaths in period 1998-2011

MALES

					Syn- chron	Syn- chron		
	Total	Total	Pre	Pre	±30d	±30d	Post	Post
Diagnosis	n	%↓	n	∠%	n	← %	n	← %
5								
C03-C06 Oral cavity	10	/1.1	5	50.0	2	20.0	3	30.0
C16 Stomach	19	2.0	10	52.6	\ 1	5.3	8	42.1
C18 Colon	72	7.7	38	52.8	11	15.3	23	31.9
C19-C20 Rectum	34	3.7	14	41.2	5	14.7	15	44.1
C25 Pancreas	/ 11	1.2	1	9.1	3	27.3	7	63.6
C33-C34 Lung	72	7.7	14	19.4	18	25.0	40	55.6
C43 Malign. melanoma	37	4.0	18	48.6	5	13.5	14	37.8
C44 Skin others	158	17.0	21	13.3	6	3.8	131	82.9
C46,C49 Soft tissue	12	1.3	6	50.0			6	50.0
C61 Prostate	156	16.8	103	66.0	17	10.9	36	23.1
C64 Kidney	30	3.2	21	70.0	3	10.0	6	20.0
C67 Bladder	50	5.4	29	58.0	7	14.0	14	28.0
C70-C72 CNS cancer	18	1.9	3	16.7	5	27.8	10	55.6
C76-C79 CUP	11	1.2	2	18.2	2	18.2	7	63.6
C81 Hodgkin lymphoma	12	1.3	6	50.0	1	8.3	5	41.7
C82-C85 NHL	27	2.9			6	22.2	21	77.8
C90 Mult. myeloma	16	1.7	8	50.0	6	37.5	2	12.5
C91-C96 Leukaemia	128	13.7			41	32.0	87	68.0
Other primaries	58	6.2	24	41.4	10	17.2	24	41.4
All mult. primaries	931	100.0	323	34.7	149	16.0	459	49.3

Multiple primaries with number of cases n<9 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 1998-2011
FEMALES

		matal.	maka 1	Deed	Desc	Syn- chron	Syn- chron ±30d	Do	D
5 '		Total	Total	Pre	Pre	±30d		Post	Post
Diagnos	ls	n	%↓	n	←%	n	← %	n	~%
C16	Stomach	12	2.0	5	41.7	3	25.0	4	33.3
C18	Colon	37	6.1	21	56.8	6	16.2	10	27.0
C19-C20		14	2.3	9	64.3	1	7.1	4	28.6
C25	Pancreas	10	1.7	1	10.0	3	30.0	6	60.0
C33-C34		23	3.8	5	21.7	5	21.7	13	56.5
C43	Malign. melanoma	20	3.3	18	90.0		,	2	10.0
C44	Skin others	63	10.4	21	33.3	4	6.3	38	60.3
C50	Breast	142	23.5	110	77.5	10	7.0	22	15.5
C51	Vulva	6	1.0	4	66.7		,	2	33.3
C53	Cervix uteri	14	2.3	9	64.3	2	14.3	3	21.4
C54	Corpus uteri	29	4.8	21	72.4	3	10.3	5	17.2
C56	Ovary	14	2.3	8	57.1	3	21.4	3	21.4
C64	Kidney	7	1.2	3	42.9	3	42.9	1	14.3
C67	Bladder	17	2.8	10	58.8	3	17.6	4	23.5
C70-C72	CNS cancer	11	1.8	4	36.4	2	18.2	5	45.5
C73	Thyroid	14	2.3	13	92.9			_/ 1	7.1
C76-C79	CUP	6	1.0	2	33.3/			4	66.7
C82-C85	NHL	13	2.2					13	100.0
C90	Mult. myeloma	12	2.0	4	33.3	4	33.3	4	33.3
C91-C96	Leukaemia	101	16.7			37	36.6	64	63.4
Other p	rimaries	39	6.5	17	43.6	3	7.7	19	48.7
All mul	t. primaries	604	100.0	285	47.2	92	15.2	227	37.6

Multiple primaries with number of cases n<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 16

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

(Singular primaries only *)

			Males		Females		Males	Females
Age at			Age-		Age-		Prop.all	Prop.all
death	Males	Females			spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
0 - 4	4	5	0.3		0.4		16.7	22.7
5- 9	8	5	0.6		0.4		27.6	15.2
10-14	10	10	0.8		0.8	0.33	34.5	43.5
15-19	11	9	0.8	0.26	0.7	0.43	31.4	33.3
20-24	16	6 /	1.1	0.59	0.4		21.3	15.4
25-29	15	7/	0.9	0.45	0.4	0.28	18.5	7.3
30-34	20	8	1.0	0.34	0.4	0.32	12.2	4.5
35-39	30	24	1.4	0.44	1.2	0.37	8.8	5.8
40-44	35	18	1.6	0.32	0.8	0.25	5.0	2.1
45-49	37	37	1.9	0.32	1.9	0.43	2.6	2.4
50-54	55	35	3.3	0.31	2.0	0.36	2.2	1.6
55-59	106	75	6.8	0.46	4.6	0.48	2.4	2.2
60-64	137	95	9.0	0.46	5.9	0.49	2.1	2.1
65-69	241	147	17.7	0.60	9.9	0.55	2.9	2.6
70-74	274	176	26.6	0.70	14.3	0.62	3.1	2.7
75-79	283	225	41.9	0.75	22.6	0.73	3.4	3.1
80-84	223	226	54.9	0.79	28.4	0.70	3.3	3.0
85+	171	233	61.6	0.70	31.4	0.54	3.1	2.5
All ages	1676	1341					3.1	2.7
Mortality								
Raw			6.7	0.55	5.1	0.53		
WS			3.6	0.44	2.2	0.40		
ES			5.3	0.51	3.1	0.46		
BRD-S			7.2	0.57	4.1	0.52		
PYLL-70								
per 100,000			47.3		32.4			
ES			46.2		32.3			
AYLL-70			14.8		15.2			

^{*} See corresponding tables with multiple primaries.

Table 17

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

(Single primaries only *)

			Males		Females		Males	Females
Age at			Age-		Age-			Prop.all
death		Females			spec.		cancers	cancers
Years	n	n	mortal.	MI-index	mortal.	MI-index	%	%
		_	/	/	\	\		
0 - 4	4	5	0.3		0.4		17.4	22.7
5- 9	7	4	0.5		0.3		25.0	12.5
10-14	10	9	0.8		0.7		34.5	40.9
15-19	11	9	0.8		0.7		31.4	39.1
20-24	14	5	0.9		0.3		20.0	13.9
25-29	14	7	0.8		0.4		18.7	7.8
30-34	20	8	1.0		0.4		12.6	4.9
35-39	26	22	1.2		_/ 1.1/		8.0	5.8
40-44	33	17	1.5		0.8		5.0	2.1
45-49	33	34	1.7		1.8		2.5	2.5
50-54	52	32	3.1		1.9		2.3	1.6
55-59	97	69	6.2	0.48	4.2	0.49	2.4	2.2
60-64	115	86	7.6	0.48	5.4	0.48	2.0	2.1
65-69	195	137	14.3	0.57	9.2	0.55	2.7	2.8
70-74	226	156	21.9	0.67	12.6		3.0	2.9
75-79	240	199	35.5	0.69	20.0	0.68	3.5	3.3
80-84	188	210	46.3	0.70	26.4	0.69	3.5	3.3
85+	147	213	53.0	0.62	28.7	0.51	3.3	2.7
All ages	1432	1222					3.1	2.8
Mortality								
Raw			5.7	0.52	4.6	0.51		
WS			3.1	0.42	2.0	0.39		
ES			4.6	0.48	2.8	0.45		
BRD-S			6.1	0.53	3.7	0.50		
PYLL-70								
per 100,000			43.3		30.0			
ES			42.5		29.9			
AYLL-70			15.6		15.2			

^{*} See corresponding tables with multiple primaries.

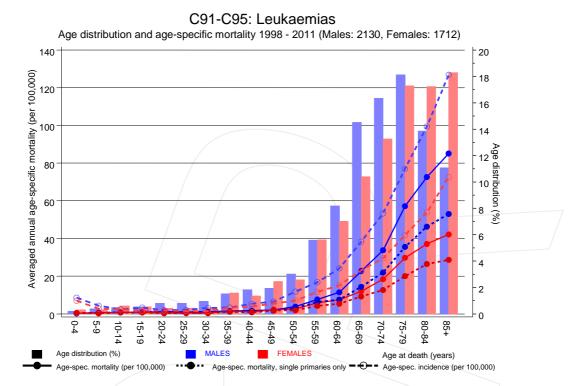
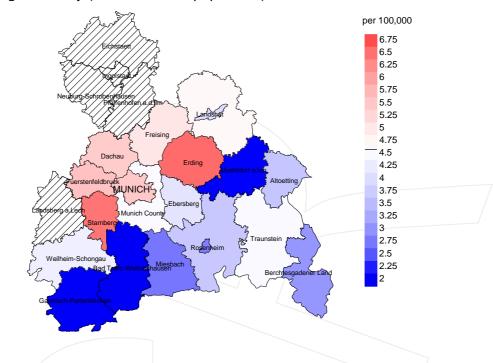


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

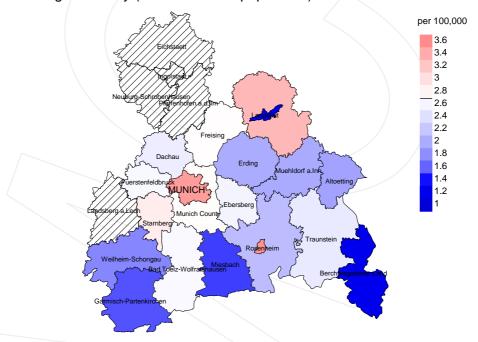


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 4.6/100,000 WS N=1,020, females 2.7/100,000 WS N=806). 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 20 women died from leukaemias. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.3 and 4.8/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males

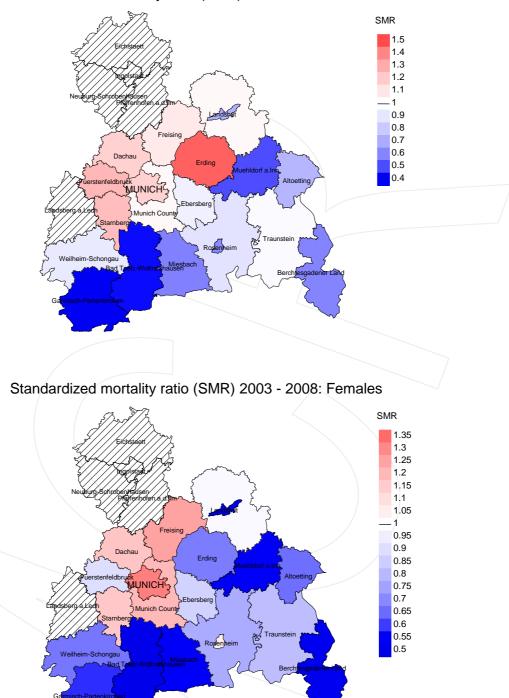


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,020, females N=806). 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 20 women died from leukaemias. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.87. Though, the value of this parameter may vary with an underlying probability of 99% between 0.45 and 1.50, 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

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Index of figures and tables

Fig./Tb	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
7a	Age-specific incidence internationally (chart)	14
8	Cumulative follow-up years (chart)	15
9a	Map of cancer incidence (WS) by county (chart)	16
9b	Standardized incidence ratio (SIR) by county (chart)	17
10a	Pts incident cohorts and mortality / yr	18
10b	Incidence and mortality by year of diagnosis	19
10c	Cancer-related deaths, death certification available / yr	20
11	Means of age at death / yr	21
12	Mortality by year of death	23
13	Distribution of age at death	24
14	Age-specific mortality	25
15	Multiple primaries in deaths	26
16	Age-specific mortality (first primaries)	28
17	Age-specific mortality (single primaries)	29
18	Age distribution and age-specific mortality (chart)	30
19a	Map of cancer mortality (WS) by county (chart)	31
19b	Standardized mortality ratio (SMR) by county (chart)	32