Munich Cancer Registry

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

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

Cancer statistics: Baseline statistics

AML: Acute myelobl. leukemia (morph.)

Year of diagnosis	1998-2012
Patients	2,219
Diseases	2,221
Creation date	03/20/2014
Export date	02/12/2014
Population	4.5 m

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.

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
C92.0	Acute myeloblastic leukaemia

ICD-O-3 codes (morphology) used for specifying cancer site

Code	Description
9840/3	Acute myeloid leukemia, M6 type
9861/3	Acute myeloid leukemia, NOS
9866/3	Acute promyelocytic leukemia
9867/3	Acute myelomonocytic leukemia
9870/3	Acute basophilic leukemia
9871/3	Acute myeloid leukemia with abnormal marrow eosinophils
9872/3	Acute myeloid leukemia, minimal differentiation
9873/3	Acute myeloid leukemia without maturation
9874/3	Acute myeloid leukemia with maturation
9891/3	Acute monocytic leukemia
9895/3	Acute myeloid leukemia with multilineage dysplasia
9896/3	Acute myeloid leukemia, t(8;21)
9897/3	Acute myeloid leukemia, 11q23 abnormalities
9910/3	Acute megakaryoblastic leukemia
9920/3	Therapy-related acute myeloid leukemia, NOS
9931/3	Acute panmyelosis with myelofibrosis

INCIDENCE

Table 1

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

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	48	2	4.2	14.6	85.4	100.0
1999	48	2	4.2	16.7	75.0	97.9
2000	80	19	23.8	13.8	75.0	98.8
2001	95	41	43.2	22.1	87.4	98.9
2002	119	41	34.5	18.5	82.4	96.6 #
2003	163	60	36.8	22.1	84.7	98.8 #
2004	169	67	39.6	27.2	82.2	98.8 #
2005	162	55	34.0	28.4	80.9	96.9 #
2006	189	73	38.6	31.7	89.4	97.9 #
2007	175	52	29.7	27.4	81.7	95.4 # ##
2008	176	51	29.0	33.5	79.5	87.5
2009	193	42	21.8	32.6	80.8	88.6
2010	241	47	19.5	36.9	76.3	85.9
2011	179	34	19.0	38.0	72.1	89.9
2012	184	60	32.6	40.2	67.9	98.9 ###
1998–2012	2221	646	29.1	29.6	79.8	94.3

\#   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 diagnosis	All n	Males n	Females n	Prop. males %
1998	48	22	26	45.8
1999	48	32	16	66.7
2000	80	39	41	48.8
2001	95	51	44	53.7
2002	119	62	57	52.1
2003	163	83	80	50.9
2004	169	77	92	45.6
2005	162	82	80	50.6
2006	189	109	80	57.7
2007	175	98	77	56.0
2008	176	89	87	50.6
2009	193	93	100	48.2
2010	241	121	120	50.2
2011	179	90	89	50.3
2012	184	84	100	45.7
1998-2012	2221	1132	1089	51.0

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)

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	22	26	2.0	2.2	1.6	1.6	1.9	1.8	2.3	2.0
1999	32	16	2.9	1.3	1.8	0.9	2.5	1.1	2.9	1.2
2000	39	41	3.4	3.4	2.8	2.2	3.3	2.8	3.8	3.1
2001	51	44	4.4	3.6	2.6	1.8	3.7	2.6	4.8	3.2
2002	62	57	3.3	2.9	2.3	1.5	3.0	2.0	3.6	2.5
2003	83	80	4.4	4.1	2.5	2.3	3.7	2.9	4.9	3.5
2004	77	92	4.1	4.7	2.4	2.7	3.4	3.4	4.2	4.0
2005	82	80	4.3	4.0	2.7	2.3	3.5	2.9	4.5	3.4
2006	109	80	5.7	4.0	3.2	1.8	4.5	2.4	5.9	3.2
2007	98	77	4.4	3.3	2.8	1.8	3.6	2.3	4.4	2.9
2008	89	87	4.0	3.7	2.6	1.8	3.2	2.5	4.0	3.2
2009	93	100	4.2	4.3	2.4	2.1	3.2	2.9	4.0	3.5
2010	121	120	5.4	5.1	2.9	2.5	4.1	3.4	5.2	4.1
2011	90	89	3.9	3.8	2.3	2.2	3.1	2.6	3.7	3.1
2012	84	100	3.7	4.2	1.9	2.3	2.7	2.9	3.5	3.5
1998-2012	1132	1089	4.1	3.8	2.5	2.0	3.4	2.7	4.2	3.2

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 diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	48	57.2	23.5	0.9	88.3	24.3	42.3	60.4	75.9	85.4
1999	48	61.6	18.0	12.6	88.2	38.9	54.2	63.8	75.0	79.3
2000	80	55.9	21.3	0.4	94.3	26.9	41.1	60.1	72.3	80.0
2001	95	65.3	13.6	26.8	89.5	45.0	57.2	66.2	76.3	81.0
2002	119	62.7	18.8	2.0	94.9	36.6	52.1	67.5	77.5	83.1
2003	163	65.4	17.3	1.0	93.6	42.5	55.1	67.2	79.4	83.6
2004	169	64.9	18.8	0.4	92.3	39.1	57.0	68.3	78.3	84.2
2005	162	63.0	20.2	0.6	91.3	36.4	52.1	68.0	78.3	83.1
2006	189	67.7	17.8	1.0	95.1	40.8	62.9	72.3	79.5	84.8
2007	175	63.1	19.2	3.0	94.5	36.4	55.2	68.4	75.9	82.3
2008	176	64.6	19.7	0.6	94.8	35.0	55.1	69.3	77.8	83.9
2009	193	65.1	18.8	4.2	99.2	37.6	53.2	70.5	78.3	85.9
2010	241	67.7	17.1	1.3	94.2	47.1	60.0	70.7	78.3	86.3
2011	179	64.3	20.1	0.3	98.4	39.2	54.3	70.1	77.4	85.1
2012	184	66.3	17.4	0.0	92.6	44.3	56.9	71.1	78.6	84.0
1998-2012	2221	64.6	18.8	0.0	99.2	39.1	55.9	69.2	78.0	83.9

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	22	55.7	25.0	0.9	88.3	24.3	39.4	59.5	75.2	84.3
1999	32	61.1	15.7	26.3	86.9	39.5	51.1	61.3	73.8	77.7
2000	39	53.8	24.2	0.4	86.5	8.6	37.0	61.2	72.7	80.3
2001	51	63.9	13.2	30.9	89.0	45.0	56.5	64.8	76.0	79.9
2002	62	60.1	20.4	2.0	94.9	30.6	51.9	64.0	73.8	81.2
2003	83	67.5	15.5	10.1	93.6	44.8	59.0	68.7	79.2	85.6
2004	77	66.2	17.7	0.4	89.2	40.2	61.6	68.8	78.6	85.0
2005	82	62.3	19.6	2.7	91.3	32.1	52.1	68.2	77.1	81.0
2006	109	65.8	17.2	1.0	93.6	40.8	60.7	70.6	76.3	81.6
2007	98	61.1	19.9	3.0	94.5	32.1	48.7	67.6	75.0	81.9
2008	89	61.4	22.3	0.6	93.8	25.9	49.3	68.9	75.6	82.4
2009	93	63.8	18.6	4.2	87.9	37.6	52.8	70.1	75.9	82.0
2010	121	67.2	16.0	2.9	92.8	48.7	60.6	70.3	76.9	83.4
2011	90	64.7	18.7	6.4	98.4	41.3	56.3	68.5	76.8	83.5
2012	84	67.7	14.6	26.2	92.6	47.0	58.6	70.2	79.1	84.7
1998-2012	1132	63.8	18.6	0.4	98.4	38.8	55.2	68.7	76.4	82.5

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	26	58.3	22.5	1.3	87.5	27.9	43.1	60.4	76.6	85.4
1999	16	62.7	22.6	12.6	88.2	15.1	54.6	70.1	76.6	87.9
2000	41	58.0	18.2	16.5	94.3	35.6	46.4	60.1	69.8	78.6
2001	44	66.9	14.1	26.8	89.5	52.7	57.6	71.2	77.3	81.9
2002	57	65.6	16.6	13.5	89.0	42.8	55.9	69.0	80.1	83.5
2003	80	63.2	18.8	1.0	89.1	40.0	49.9	65.1	79.7	83.2
2004	92	63.9	19.7	0.7	92.3	37.9	55.1	67.2	78.2	83.4
2005	80	63.7	20.8	0.6	90.8	39.5	53.9	67.3	80.5	84.3
2006	80	70.3	18.4	1.8	95.1	43.2	65.8	75.6	82.4	86.7
2007	77	65.8	17.9	3.5	94.3	42.1	60.4	69.5	76.8	84.3
2008	87	67.7	16.1	15.7	94.8	45.9	61.6	70.9	79.0	84.0
2009	100	66.2	19.0	17.8	99.2	37.5	54.2	71.8	80.3	86.8
2010	120	68.1	18.2	1.3	94.2	45.2	59.1	70.9	81.1	87.3
2011	89	63.9	21.6	0.3	90.0	38.4	51.4	70.9	78.8	85.4
2012	100	65.1	19.5	0.0	92.4	42.7	55.2	71.9	78.3	82.6
1998-2012	1089	65.4	18.9	0.0	99.2	39.6	56.1	70.0	79.0	85.0

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	33	1.5	1.5	17	1.5	1.5	16	1.5	1.5
5-9	14	0.6	2.1	9	0.8	2.3	5	0.5	1.9
10-14	16	0.7	2.8	9	0.8	3.1	7	0.6	2.6
15-19	17	0.8	3.6	8	0.7	3.8	9	0.8	3.4
20-24	23	1.0	4.6	10	0.9	4.7	13	1.2	4.6
25-29	23	1.0	5.7	15	1.3	6.0	8	0.7	5.3
30-34	46	2.1	7.7	27	2.4	8.4	19	1.7	7.1
35-39	63	2.8	10.6	28	2.5	10.9	35	3.2	10.3
40-44	99	4.5	15.0	51	4.5	15.4	48	4.4	14.7
45-49	91	4.1	19.1	41	3.6	19.0	50	4.6	19.3
50-54	118	5.3	24.4	66	5.8	24.8	52	4.8	24.1
55-59	149	6.7	31.2	63	5.6	30.4	86	7.9	32.0
60-64	190	8.6	39.7	116	10.2	40.6	74	6.8	38.8
65-69	284	12.8	52.5	159	14.0	54.7	125	11.5	50.2
70-74	308	13.9	66.4	172	15.2	69.9	136	12.5	62.7
75-79	313	14.1	80.5	160	14.1	84.0	153	14.0	76.8
80-84	255	11.5	91.9	111	9.8	93.8	144	13.2	90.0
85+	179	8.1	100.0	70	6.2	100.0	109	10.0	100.0
All ages	2221	100.0		1132	100.0		1089	100.0	

Included in the statistics are 35.8% multiple primaries in males and 36.3% in females.

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=318 %	Females DCO rate n=327 %	Males Prop.all cancers n=146755 %	Females Prop.all cancers n=142297 %
0- 4	17	16	1.2	1.2			5.6	7.1
5- 9	9	5	0.6	0.4			5.5	4.4
10-14	9	7	0.6	0.5			6.1	4.3
15-19	8	9	0.6	0.7			2.5	3.4
20-24	10	13	0.6	0.8	10.0	7.7	1.8	2.7
25-29	15	8	0.8	0.4			1.7	0.8
30-34	27	19	1.3	0.9	11.1	5.3	1.9	1.0
35-39	28	35	1.2	1.6	25.0	5.7	1.3	1.0
40-44	51	48	2.1	2.1	11.8	14.6	1.7	0.8
45-49	41	50	1.9	2.4	14.6	18.0	0.8	0.6
50-54	66	52	3.6	2.8	22.7	23.1	0.8	0.5
55-59	63	86	3.7	4.8	20.6	19.8	0.5	0.7
60-64	116	74	7.0	4.3	22.4	21.6	0.6	0.5
65-69	159	125	10.8	7.8	29.6	32.0	0.6	0.7
70-74	172	136	14.8	9.9	27.9	27.9	0.7	0.8
75-79	159	153	21.1	14.0	30.8	38.6	0.8	0.9
80-84	111	144	24.4	16.7	50.5	50.7	0.9	1.0
85+	70	109	22.6	13.3	58.6	47.7	0.8	0.7
All ages	1131	1089			28.1	30.0	0.8	0.8

Incidence		
Raw	4.1	3.8
WS	2.5	2.0
ES	3.4	2.7
BRD-S	4.2	3.2

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
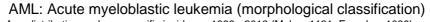for period 1998-2012
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C18	Colon	2	1.2	1.7	0.2	6.1		6.9	
C33-C34	Lung	4	1.5	2.7	0.7	6.9		21.1	
C43	Malign. melanoma	2	0.5	3.9	0.5	14.0		12.5	
C61	Prostate	5	3.7	1.3	0.4	3.1		10.6	20.0
C82-C85	NHL	6	0.5	12.1	4.5	26.4	#	46.4	
C90	Mult. myeloma	3	0.2	19.4	4.0	56.8	#	24.0	
C91-C96	Leukaemia	6	0.2	30.6	11.2	66.5	#	48.9	66.7
Other primaries		8	1.6	5.1	2.2	10.1	#	54.2	
Not observed		0	3.4	0.0	0.0	1.1		-28.5	
All mult. primaries		36	12.7	2.8	2.0	3.9	#	195.9	13.9

Patients	678
Mean age at second malignancy (years)	68.0
Person-years	1187
Mean observation time (years)	1.8
Median observation time (years)	0.7

The occurrence of second malignancy is statistically significant.
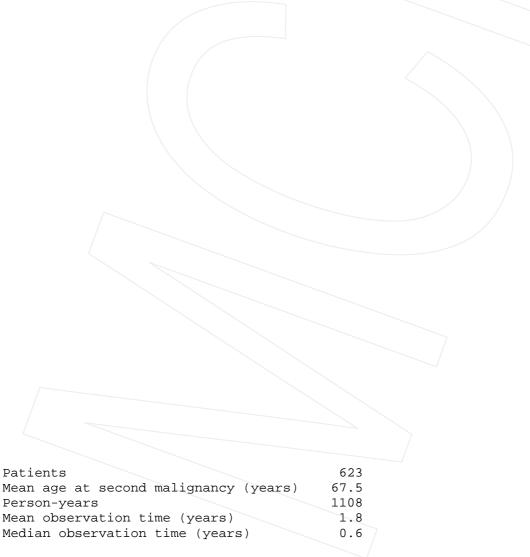
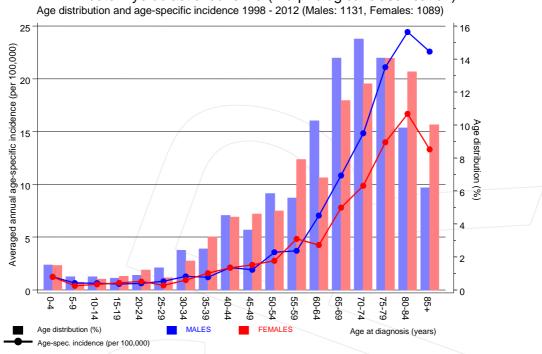Observed second primaries with count 1 are pooled in category "Other primaries".

Table 6b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of second primaries
for period 1998-2012
FEMALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C15	Oesophagus	2	0.0	41.9	5.1	151.5	#	17.6	
C33-C34	Lung	3	0.6	5.0	1.0	14.7	#	21.7	
C50	Breast	3	2.8	1.1	0.2	3.1		1.5	
C53	Cervix uteri	2	0.2	13.3	1.6	48.0	#	16.7	100.0
C54	Corpus uteri	2	0.5	4.1	0.5	14.9		13.7	
Other primaries		5	1.6	3.1	1.0	7.1		30.4	
Not observed		0	2.8	0.0	0.0	1.3		-25.4	
All mult. primaries		17	8.6	2.0	1.2	3.2	#	76.1	11.8

Patients	623
Mean age at second malignancy (years)	67.5
Person-years	1108
Mean observation time (years)	1.8
Median observation time (years)	0.6

The occurrence of second malignancy is statistically significant.

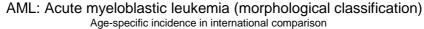Observed second malignancies with count 1 are pooled in category "Other primaries".

AML: Acute myeloblastic leukemia (morphological classification)
Age distribution and age-specific incidence 1998 - 2012 (Males: 1131, Females: 1089)

Figure 7. Age distribution and age-specific incidence

AML: Acute myeloblastic leukemia (morphological classification)
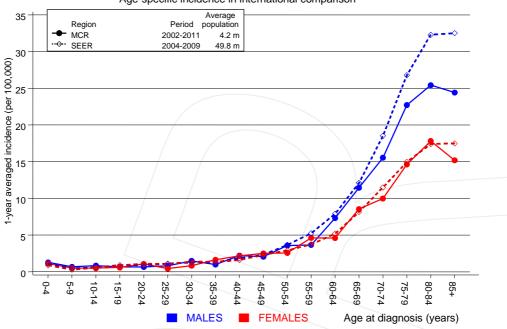### Age-specific incidence in international comparison

Figure 7a. 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 2012, based on the November 2011 submission. http://www.seer.cancer.gov.
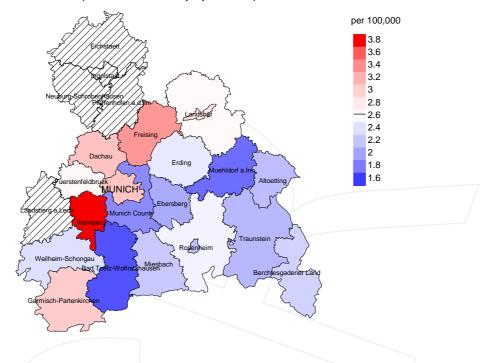
AML: Acute myeloblastic leukemia (morphological classification)
Cumulative follow-up years since diagnosis for period 1998 - 2012 (excl. DCO)

			Target		Actual	
Gender	n	Sum	Median		Sum	Median
All patients						
Males	516	1226	1.0		1148	1.0
Females	483	1148	1.0		1078	0.9
Patients alive						
Males	178	922	4.4		844	3.9
Females	160	866	4.9		795	4.2
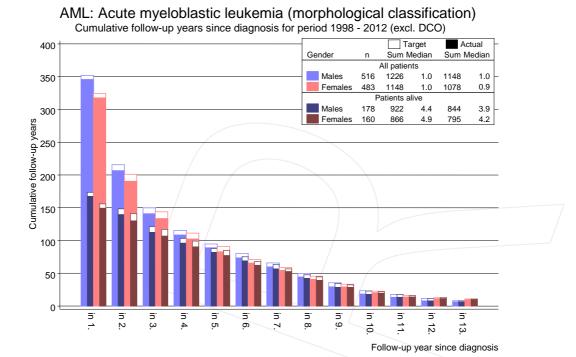
Figure 8. Cumulative follow-up years depending on time since diagnosis

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
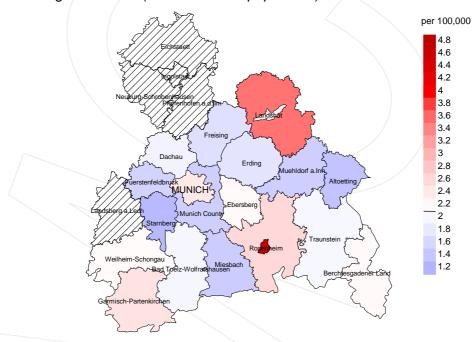
Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 2.6/100,000 WS N=506, females 2.1/100,000 WS N=480). 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 10 women were identified with newly diagnosed acute myelobl. leukemia (morph.). Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.2/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.6 and 6.3/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males

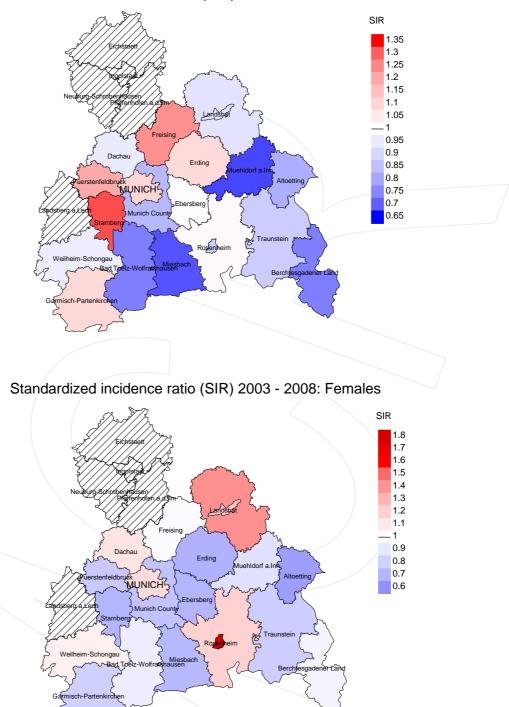## Standardized incidence ratio (SIR) 2003 - 2008: Females

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=506, females N=480). 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 10 women were identified with newly diagnosed acute myelobl. leukemia (morph.). Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.70. Though, the value of this parameter may vary with an underlying probability of 99% between 0.26 and 1.51, 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)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	48	100.0	4.2	41	85.4	97.6
1999	48	97.9	4.2	36	75.0	94.4
2000	80	98.8	23.8	60	75.0	95.0
2001	95	98.9	43.2	83	87.4	100.0
2002	119	96.6	34.5	98	82.4	96.9
2003	163	98.8	36.8	138	84.7	99.3
2004	169	98.8	39.6	139	82.2	99.3
2005	162	96.9	34.0	131	80.9	99.2
2006	189	97.9	38.6	169	89.4	98.2
2007	175	95.4	29.7	143	81.7	97.2
2008	176	87.5	29.0	140	79.5	99.3
2009	193	88.6	21.8	156	80.8	99.4
2010	241	85.9	19.5	184	76.3	98.9
2011	179	89.9	19.0	129	72.1	100.0
2012	184	98.9	32.6	125	67.9	97.6
1998-2012	2221	94.3	29.1	1772	79.8	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)

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	48	47	97.9	21	43.8
1999	48	30	96.7	11	22.9
2000	80	52	98.1	32	40.0
2001	95	86	97.7	49	51.6
2002	119	84	97.6	54	45.4
2003	163	112	98.2	82	50.3
2004	169	102	99.0	79	46.7
2005	162	142	99.3	86	53.1
2006	189	130	98.5	112	59.3
2007	175	137	98.5	85	48.6
2008	176	138	97.8	89	50.6
2009	193	134	97.0	91	47.2
2010	241	174	98.9	116	48.1
2011	179	161	98.8	83	46.4
2012	184	163	99.4	105	57.1
1998-2012	2221	1692	98.4	1095	49.3

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)

Year of death	Deaths n	Prop. cancer-related %	Prop. not cancer-related %	Prop. cancer recorded on death certificate %
1998	47	80.9	19.1	95.7
1999	30	80.0	20.0	96.6
2000	52	96.2	3.8	100.0
2001	86	88.4	11.6	98.8
2002	84	94.0	6.0	100.0
2003	112	94.6	5.4	99.1
2004	102	96.1	3.9	99.0
2005	142	95.8	4.2	100.0
2006	130	94.6	5.4	98.4
2007	137	94.2	5.8	98.5
2008	138	92.8	7.2	96.3
2009	134	94.8	5.2	96.9
2010	174	95.4	4.6	98.8
2011	161	91.9	8.1	96.9
2012	163	95.7	4.3	99.4
1998-2012	1692	93.6	6.4	98.4

Table 11a

Means 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 (not cancer-related) Years	Age at death (according to death certificate) Years
1998	24	53.5	52.0	59.4	53.8
1999	17	65.5	64.4	69.0	65.9
2000	33	62.4	62.5	61.4	62.7
2001	44	68.2	68.5	65.6	68.4
2002	43	65.9	65.3	78.9	66.1
2003	64	69.6	69.0	78.5	69.5
2004	50	69.2	69.4	64.7	69.3
2005	70	69.6	70.1	61.1	69.6
2006	76	68.4	68.4	68.4	68.0
2007	68	65.9	67.1	28.3	66.7
2008	73	68.3	69.0	62.3	68.9
2009	67	68.2	68.3	67.0	68.9
2010	85	70.5	70.7	66.9	70.4
2011	77	69.5	69.5	69.3	69.5
2012	81	69.9	71.1	47.8	69.9
1998-2012	872	68.0	68.3	64.2	68.2

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (not cancer-related) Years	Age at death (according to death certificate) Years
1998	23	60.7	56.3	81.8	59.1
1999	13	71.9	73.4	63.9	73.4
2000	19	65.6	65.6		65.6
2001	42	65.4	66.0	61.9	66.3
2002	41	69.4	69.7	66.5	69.4
2003	48	68.8	69.1	61.0	68.8
2004	52	71.8	71.6	76.9	72.0
2005	72	67.0	68.0	29.8	67.7
2006	54	72.1	72.0	76.7	72.1
2007	69	67.3	68.2	57.9	67.8
2008	65	72.2	71.6	83.1	71.9
2009	67	71.6	71.6	71.0	71.7
2010	89	74.1	74.3	70.5	74.4
2011	84	71.8	71.3	77.9	72.1
2012	82	68.5	68.4	71.2	68.4
1998-2012	820	69.9	70.0	68.3	70.1

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

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

Table 12a

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

Year of 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	19	1.7	0.86	1.5	0.98	1.7	0.89	2.0	0.86
1999	13	1.2	0.41	0.7	0.37	1.0	0.39	1.1	0.39
2000	31	2.7	0.79	1.7	0.59	2.4	0.72	3.0	0.81
2001	40	3.5	0.78	2.0	0.77	3.0	0.81	4.3	0.88
2002	41	2.2	0.66	1.4	0.60	1.9	0.65	2.4	0.68
2003	60	3.2	0.72	1.8	0.72	2.7	0.72	3.5	0.72
2004	48	2.6	0.63	1.4	0.57	2.1	0.62	2.9	0.70
2005	66	3.5	0.80	1.8	0.67	2.7	0.77	3.7	0.83
2006	70	3.7	0.64	1.8	0.57	2.8	0.61	3.8	0.64
2007	66	3.0	0.67	1.6	0.57	2.3	0.63	3.1	0.70
2008	66	3.0	0.74	1.5	0.56	2.2	0.67	3.0	0.74
2009	63	2.8	0.68	1.4	0.58	2.0	0.64	2.8	0.70
2010	81	3.6	0.67	1.8	0.60	2.6	0.64	3.4	0.65
2011	70	3.1	0.78	1.5	0.63	2.2	0.70	3.0	0.80
2012	77	3.4	0.92	1.6	0.84	2.4	0.87	3.2	0.91
1998-2012	811	3.0	0.72	1.6	0.63	2.3	0.69	3.1	0.74

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	19	1.6	0.73	1.2	0.79	1.4	0.76	1.5	0.78
1999	11	0.9	0.69	0.4	0.42	0.6	0.52	0.8	0.61
2000	19	1.6	0.46	0.8	0.34	1.0	0.38	1.3	0.43
2001	36	3.0	0.82	1.6	0.91	2.2	0.84	2.7	0.83
2002	38	1.9	0.67	0.9	0.58	1.2	0.61	1.6	0.67
2003	46	2.3	0.58	1.0	0.45	1.5	0.52	1.9	0.56
2004	50	2.5	0.54	1.1	0.40	1.6	0.46	2.0	0.51
2005	70	3.5	0.88	1.7	0.73	2.3	0.80	2.8	0.84
2006	53	2.6	0.66	1.0	0.59	1.5	0.64	2.2	0.68
2007	63	2.7	0.82	1.3	0.74	1.8	0.77	2.3	0.80
2008	62	2.7	0.71	1.1	0.61	1.6	0.65	2.1	0.66
2009	64	2.8	0.64	1.2	0.55	1.8	0.61	2.3	0.64
2010	85	3.6	0.71	1.3	0.53	2.0	0.59	2.7	0.66
2011	78	3.3	0.88	1.3	0.60	2.0	0.74	2.6	0.83
2012	79	3.3	0.79	1.4	0.64	2.0	0.69	2.7	0.76
1998-2012	773	2.7	0.71	1.2	0.59	1.7	0.64	2.2	0.69

Table 13

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	3	0.2	0.2	1	0.1	0.1	2	0.3	0.3
5-9	3	0.2	0.4	2	0.2	0.4	1	0.1	0.4
10-14	6	0.4	0.8	3	0.4	0.7	3	0.4	0.8
15-19	9	0.6	1.3	5	0.6	1.4	4	0.5	1.3
20-24	8	0.5	1.8	5	0.6	2.0	3	0.4	1.7
25-29	14	0.9	2.7	9	1.1	3.1	5	0.6	2.3
30-34	15	0.9	3.7	10	1.2	4.3	5	0.6	3.0
35-39	31	2.0	5.6	16	2.0	6.3	15	1.9	4.9
40-44	43	2.7	8.3	20	2.5	8.7	23	3.0	7.9
45-49	43	2.7	11.0	22	2.7	11.4	21	2.7	10.6
50-54	62	3.9	14.9	34	4.2	15.6	28	3.6	14.2
55-59	94	5.9	20.9	41	5.0	20.7	53	6.9	21.1
60-64	137	8.6	29.5	75	9.2	29.9	62	8.0	29.1
65-69	203	12.8	42.3	118	14.5	44.4	85	11.0	40.1
70-74	258	16.3	58.6	142	17.5	61.9	116	15.0	55.1
75-79	294	18.5	77.1	158	19.4	81.3	136	17.6	72.7
80-84	219	13.8	90.9	93	11.4	92.7	126	16.3	89.0
85+	144	9.1	100.0	59	7.3	100.0	85	11.0	100.0
All ages	1586	100.0		813	100.0		773	100.0	

Included in the statistics are 35.8% multiple primaries in males and 36.3% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2012
(**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	1	2	0.1	0.06	0.2	0.13	3.2	8.7
5- 9	2	1	0.1	0.22	0.1	0.20	5.7	2.6
10-14	3	3	0.2	0.33	0.2	0.43	9.1	10.7
15-19	5	4	0.4	0.63	0.3	0.44	11.9	11.8
20-24	5	3	0.3	0.50	0.2	0.23	6.0	6.4
25-29	9	5	0.5	0.60	0.3	0.63	9.4	4.6
30-34	10	5	0.5	0.37	0.2	0.26	5.7	2.3
35-39	16	15	0.7	0.57	0.7	0.43	4.2	3.0
40-44	20	23	0.8	0.39	1.0	0.48	2.5	2.1
45-49	22	21	1.0	0.54	1.0	0.42	1.3	1.1
50-54	34	28	1.8	0.52	1.5	0.54	1.1	1.0
55-59	41	53	2.4	0.65	3.0	0.62	0.7	1.2
60-64	75	62	4.6	0.65	3.6	0.84	0.9	1.0
65-69	118	85	8.0	0.74	5.3	0.68	1.0	1.1
70-74	142	116	12.3	0.83	8.4	0.85	1.1	1.3
75-79	158	136	21.0	0.99	12.4	0.89	1.3	1.4
80-84	93	126	20.5	0.84	14.6	0.88	0.9	1.2
85+	59	85	19.0	0.84	10.4	0.78	0.7	0.7
All ages	813	773					1.1	1.2
Mortality								
Raw			3.0	0.72	2.7	0.71		
WS			1.6	0.63	1.2	0.59		
ES			2.3	0.69	1.7	0.64		
BRD-S			3.1	0.74	2.2	0.69		
PYLL-70								
per 100,000			20.8		18.5			
ES			19.6		17.3			
AYLL-70			14.3		14.7			

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

Table 15a

Multiple primaries in deaths in period 1998-2012
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	3	0.9	3	100.0				
C18	Colon	23	6.9	18	78.3	3	13.0	2	8.7
C19-C20	Rectum	8	2.4	6	75.0	1	12.5	1	12.5
C25	Pancreas	3	0.9					3	100.0
C33-C34	Lung	10	3.0	5	50.0	4	40.0	1	10.0
C43	Malign. melanoma	10	3.0	10	100.0				
C44	Skin others	12	3.6	4	33.3			8	66.7
C61	Prostate	59	17.7	55	93.2	2	3.4	2	3.4
C64	Kidney	9	2.7	9	100.0				
C67	Bladder	17	5.1	14	82.4	1	5.9	2	11.8
C70-C72	CNS cancer	7	2.1	3	42.9	2	28.6	2	28.6
C73	Thyroid	3	0.9	3	100.0				
C81	Hodgkin lymphoma	5	1.5	4	80.0			1	20.0
C82-C85	NHL	27	8.1	19	70.4	3	11.1	5	18.5
C90	Mult. myeloma	4	1.2	3	75.0	1	25.0		
C91-C96	Leukaemia	116	34.7			36	31.0	80	69.0
Other primaries		18	5.4	11	61.1	2	11.1	5	27.8
All mult. primaries		334	100.0	167	50.0	55	16.5	112	33.5

Multiple primaries with number of cases n<3 are pooled in category "Other primaries".

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

Table 15b

Multiple primaries in deaths in period 1998-2012
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C16	Stomach	4	1.3	4	100.0				
C18	Colon	10	3.2	9	90.0	1	10.0		
C19-C20	Rectum	6	1.9	3	50.0	1	16.7	2	33.3
C33-C34	Lung	8	2.6	5	62.5	1	12.5	2	25.0
C43	Malign. melanoma	5	1.6	5	100.0				
C44	Skin others	9	2.9	7	77.8			2	22.2
C50	Breast	87	28.0	79	90.8	4	4.6	4	4.6
C53	Cervix uteri	6	1.9	4	66.7	1	16.7	1	16.7
C54	Corpus uteri	19	6.1	14	73.7	2	10.5	3	15.8
C56	Ovary	7	2.3	6	85.7			1	14.3
C67	Bladder	7	2.3	5	71.4	1	14.3	1	14.3
C73	Thyroid	10	3.2	10	100.0				
C81	Hodgkin lymphoma	4	1.3	4	100.0				
C82-C85	NHL	15	4.8	15	100.0				
C90	Mult. myeloma	9	2.9	6	66.7	3	33.3		
C91-C96	Leukaemia	88	28.3			31	35.2	57	64.8
Other primaries		17	5.5	9	52.9			8	47.1
All mult. primaries		311	100.0	185	59.5	45	14.5	81	26.0

Multiple primaries with number of cases n<3 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 ***)

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	1	2	0.1	0.06	0.2	0.13	3.8	8.7
5- 9	2	1	0.1	0.25	0.1	0.20	6.1	2.8
10-14	3	3	0.2	0.38	0.2	0.43	9.1	11.5
15-19	5	4	0.4	0.63	0.3	0.44	12.8	12.9
20-24	4	2	0.2	0.50	0.1	0.15	5.1	4.7
25-29	8	5	0.4	0.57	0.3	0.63	8.9	4.9
30-34	10	5	0.5	0.40	0.2	0.28	5.8	2.7
35-39	15	13	0.6	0.60	0.6	0.41	4.2	2.9
40-44	16	20	0.7	0.36	0.9	0.48	2.1	2.1
45-49	18	17	0.8	0.53	0.8	0.45	1.2	1.0
50-54	30	21	1.6	0.53	1.1	0.58	1.1	0.9
55-59	37	38	2.2	0.66	2.1	0.58	0.8	1.0
60-64	52	43	3.2	0.60	2.5	0.91	0.7	0.9
65-69	72	66	4.9	0.68	4.1	0.73	0.8	1.1
70-74	96	64	8.3	0.86	4.6	0.74	1.0	0.9
75-79	96	92	12.7	0.93	8.4	0.88	1.0	1.2
80-84	62	95	13.7	0.83	11.0	0.93	0.8	1.1
85+	34	57	11.0	0.79	7.0	0.73	0.6	0.6
All ages	561	548					0.9	1.0
Mortality								
Raw			2.0	0.68	1.9	0.69		
WS			1.1	0.59	0.9	0.55		
ES			1.6	0.65	1.2	0.61		
BRD-S			2.1	0.70	1.6	0.66		
PYLL-70								
per 100,000			17.9		15.3			
ES			17.0		14.6			
AYLL-70			16.2		15.7			

* See corresponding tables with multiple primaries.

Table 17

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

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	1	2	0.1	0.06	0.2	0.13	4.0	8.7
5- 9	2	1	0.1	0.25	0.1	0.20	6.3	2.9
10-14	3	3	0.2	0.38	0.2	0.43	9.1	12.5
15-19	5	4	0.4	0.63	0.3	0.44	12.8	15.4
20-24	4	2	0.2	0.57	0.1	0.17	5.5	5.0
25-29	8	5	0.4	0.57	0.3	0.63	9.5	5.2
30-34	10	5	0.5	0.40	0.2	0.29	6.0	3.0
35-39	13	12	0.6	0.54	0.5	0.38	3.8	2.9
40-44	16	19	0.7	0.36	0.8	0.48	2.3	2.2
45-49	16	16	0.7	0.48	0.8	0.43	1.1	1.1
50-54	28	21	1.5	0.55	1.1	0.66	1.1	1.0
55-59	35	36	2.1	0.70	2.0	0.57	0.8	1.1
60-64	49	41	3.0	0.60	2.4	1.00	0.8	0.9
65-69	68	61	4.6	0.67	3.8	0.69	0.9	1.1
70-74	93	61	8.0	0.87	4.4	0.73	1.1	1.0
75-79	92	88	12.2	0.90	8.0	0.87	1.2	1.3
80-84	61	93	13.4	0.82	10.8	0.92	1.0	1.3
85+	33	55	10.6	0.80	6.7	0.72	0.7	0.6
All ages	537	525					1.1	1.1
Mortality								
Raw			2.0	0.68	1.8	0.68		
WS			1.1	0.59	0.8	0.55		
ES			1.6	0.65	1.2	0.61		
BRD-S			2.0	0.70	1.5	0.66		
PYLL-70								
per 100,000			17.0		14.8			
ES			16.3		14.1			
AYLL-70			16.4		15.9			

* See corresponding tables with multiple primaries.

AML: Acute myeloblastic leukemia (morphological classification)
Age distribution and age-specific mortality 1998 - 2012 (Males: 811, Females: 773)
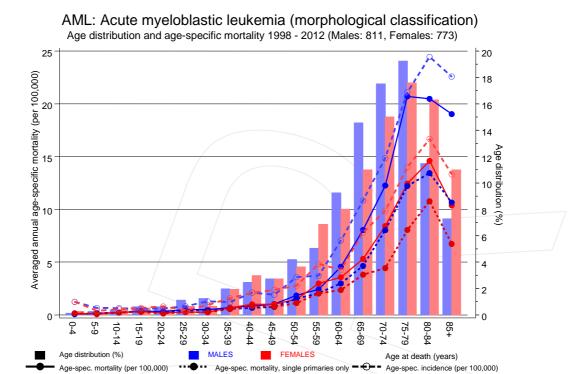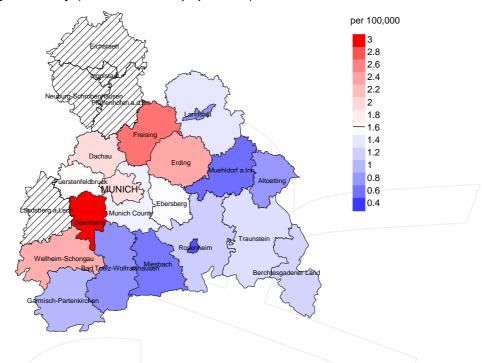
Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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

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

Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 1.6/100,000 WS N=359, females 1.2/100,000 WS N=333). 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 8 women died from acute myelobl. leukemia (morph.). Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.4 and 3.2/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males

Standardized mortality ratio (SMR) 2003 - 2008: Females
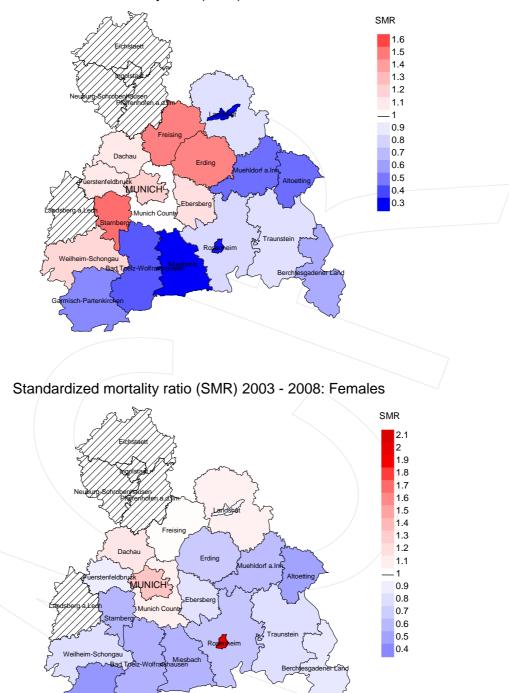
Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=359, females N=333). 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 8 women died from acute myelobl. leukemia (morph.). Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.83. Though, the value of this parameter may vary with an underlying probability of 99% between 0.27 and 1.92, 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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