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

C00-C97: All cancers (excl. C44)

Year of diagnosis	1998-2011
Patients	249060
Diseases	270234
Creation date	04/02/2013
Export date	01/03/2013
Population	4.5 m

http://www.tumorregister-muenchen.de/en/facts/base/base_C0097E.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.

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	12190	1332	10.9	22.6	68.1	97.9
1999	12118	1254	10.3	22.6	65.7	97.9
2000	12114	1400	11.6	22.9	63.3	98.3
2001	12559	1409	11.2	23.3	61.0	97.6
2002	21612	3150	14.6	23.5	62.0	97.7
2003	21072	2633	12.5	22.9	58.8	97.4
2004	21279	2442	11.5	23.2	56.1	97.0
2005	21192	2155	10.2	23.7	53.8	96.1
2006	21223	1872	8.8	23.5	50.7	94.0
2007	24310	2278	9.4	22.3	48.7	82.9 ##
2008	24465	2112	8.6	22.6	45.5	68.8
2009	23877	1989	8.3	23.1	42.3	72.6
2010	22618	2025	9.0	22.7	37.6	91.3
2011	19605	1894	9.7	21.8	28.8	73.8 ###
1998-2011	270234	27945	10.3	22.9	51.3	88.8

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	12190	6031	6159	49.5
1999	12118	6006	6112	49.6
2000	12114	6146	5968	50.7
2001	12559	6329	6230	50.4
2002	21612	11201	10411	51.8
2003	21072	10961	10111	52.0
2004	21279	11023	10256	51.8
2005	21192	10872	10320	51.3
2006	21223	11000	10223	51.8
2007	24310	12668	11642	52.1
2008	24465	12353	12112	50.5
2009	23877	11963	11914	50.1
2010	22618	11047	11571	48.8
2011	19605	9368	10237	47.8
1998-2011	270234	136968	133266	50.7

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	6031	6159	544.3	523.6	339.9	272.1	495.1	379.9	634.4	457.4
1999	6006	6112	536.6	515.1	329.4	268.1	480.8	373.2	610.7	448.8
2000	6146	5968	539.7	496.8	328.7	257.7	480.3	359.6	611.8	431.6
2001	6329	6230	546.1	512.1	330.5	266.1	481.2	372.0	607.2	445.2
2002	11201	10411	601.2	531.7	348.6	264.0	510.2	372.0	649.3	451.3
2003	10961	10111	584.7	513.3	335.2	257.7	489.0	360.5	619.3	433.6
2004	11023	10256	585.9	518.8	330.7	263.0	479.6	364.7	607.4	437.6
2005	10872	10320	574.0	518.6	320.7	258.1	461.9	360.0	583.1	432.7
2006	11000	10223	574.4	508.9	314.6	253.9	456.2	353.4	577.0	423.0
2007	12668	11642	571.9	504.2	313.7	252.2	451.9	350.9	569.3	419.3
2008	12353	12112	555.0	521.9	296.9	260.9	429.3	362.1	541.2	432.5
2009	11963	11914	536.0	512.3	282.6	255.1	408.8	354.7	513.9	423.2
2010	11047	11571	490.1	494.4	258.8	243.4	371.9	338.2	465.7	403.3
2011	9368	10237	415.6	437.4	217.9	218.4	313.4	301.9	393.3	358.4
1998-2011	136968	133266	545.0	506.3	303.5	254.4	439.3	354.3	554.1	424.4

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	12190	65.9	14.8	0.1	107	47.4	57.0	67.0	76.8	84.4
1999	12118	66.0	14.7	0.3	104	47.5	57.5	67.0	76.7	84.3
2000	12114	66.1	14.7	0.2	103	47.4	57.8	66.9	76.9	84.4
2001	12559	66.0	14.4	0.1	103	47.6	57.9	66.6	76.3	83.6
2002	21612	67.3	14.3	0.0	104	48.4	59.4	68.2	77.6	84.3
2003	21072	67.0	14.4	0.2	105	48.5	59.3	67.9	77.2	83.8
2004	21279	66.8	14.5	0.0	103	47.6	59.1	67.6	77.1	83.9
2005	21192	67.1	14.5	0.2	103	48.3	59.4	68.0	77.2	84.1
2006	21223	67.1	14.2	0.2	103	48.2	59.3	68.1	77.2	84.2
2007	24310	66.9	14.5	0.0	103	47.5	59.0	68.3	77.2	84.3
2008	24465	67.2	14.3	0.0	109	47.8	59.3	68.7	77.2	84.2
2009	23877	67.2	14.2	0.2	109	48.0	59.1	68.8	77.1	84.2
2010	22618	67.2	14.6	0.0	105	47.8	58.9	69.1	77.4	84.7
2011	19605	67.0	14.7	0.0	109	47.2	58.4	69.2	77.0	84.6
1998-2011	270234	66.9	14.5	0.0	109	47.8	58.8	68.2	77.1	84.2

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	6031	65.7	14.0	0.4	99.8	49.0	57.9	66.8	75.4	82.7
1999	6006	66.0	13.5	0.3	99.5	50.5	58.6	66.9	74.9	82.2
2000	6146	66.2	13.6	0.2	99.7	50.3	59.0	67.0	75.5	82.2
2001	6329	66.0	13.2	0.1	102	50.3	59.3	66.6	74.9	81.4
2002	11201	67.1	13.3	0.1	102	51.1	60.6	68.0	75.8	82.2
2003	10961	67.0	13.1	0.3	101	51.6	60.6	67.9	75.6	82.2
2004	11023	66.9	13.3	0.0	101	50.6	60.6	67.7	75.9	82.2
2005	10872	67.0	13.4	0.2	102	50.9	60.9	67.9	75.8	82.4
2006	11000	67.4	13.0	0.2	102	51.7	61.1	68.3	76.0	82.2
2007	12668	67.1	13.5	0.0	101	50.1	60.6	68.4	76.1	82.2
2008	12353	67.6	13.1	0.0	105	51.5	61.3	69.0	76.2	82.5
2009	11963	67.6	13.0	0.2	105	50.6	60.9	69.2	76.2	82.6
2010	11047	67.6	13.6	0.0	102	50.5	60.6	69.4	76.5	83.0
2011	9368	67.7	13.6	0.0	109	50.1	60.9	69.7	76.3	83.1
1998-2011	136968	67.1	13.4	0.0	109	50.7	60.4	68.3	75.9	82.4

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	6159	66.2	15.6	0.1	107	46.1	56.0	67.2	77.9	85.5
1999	6112	66.0	15.7	0.7	104	45.2	56.2	67.1	78.0	85.7
2000	5968	65.9	15.8	0.4	103	44.5	55.9	66.7	78.3	85.8
2001	6230	66.1	15.5	0.5	103	45.2	56.4	66.6	78.0	85.9
2002	10411	67.5	15.4	0.0	104	46.6	58.0	68.5	79.4	86.6
2003	10111	67.0	15.6	0.2	105	45.8	57.3	67.8	79.2	85.8
2004	10256	66.7	15.7	0.0	103	45.6	57.0	67.5	78.8	85.1
2005	10320	67.2	15.5	0.3	103	45.9	57.6	68.1	79.2	85.5
2006	10223	66.9	15.4	0.2	103	45.4	57.2	67.9	78.9	85.5
2007	11642	66.8	15.6	0.2	103	45.2	57.0	68.2	78.8	85.7
2008	12112	66.7	15.4	0.1	109	45.5	56.9	68.2	78.6	85.8
2009	11914	66.7	15.3	0.2	109	45.8	56.7	68.1	78.4	85.7
2010	11571	66.9	15.5	0.2	105	45.9	56.7	68.6	78.5	86.1
2011	10237	66.5	15.6	0.0	102	45.7	55.9	68.5	77.8	85.9
1998-2011	133266	66.7	15.5	0.0	109	45.6	56.8	68.0	78.6	85.7

Table 4

Age distribution by 5-year age group and gender for period 1998-2011 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	496	0.2	0.2	287	0.2	0.2	209	0.2	0.2
5-9	259	0.1	0.3	154	0.1	0.3	105	0.1	0.2
10-14	286	0.1	0.4	134	0.1	0.4	152	0.1	0.3
15-19	531	0.2	0.6	291	0.2	0.6	240	0.2	0.5
20-24	948	0.4	0.9	511	0.4	1.0	437	0.3	0.9
25-29	1744	0.6	1.6	815	0.6	1.6	929	0.7	1.6
30-34	3066	1.1	2.7	1313	1.0	2.6	1753	1.3	2.9
35-39	5298	2.0	4.7	1998	1.5	4.0	3300	2.5	5.3
40-44	8150	3.0	7.7	2792	2.0	6.1	5358	4.0	9.4
45-49	11956	4.4	12.1	4565	3.3	9.4	7391	5.5	14.9
50-54	16972	6.3	18.4	7472	5.5	14.8	9500	7.1	22.0
55-59	24875	9.2	27.6	12812	9.4	24.2	12063	9.1	31.1
60-64	34666	12.8	40.4	19360	14.1	38.3	15306	11.5	42.6
65-69	40948	15.2	55.6	24226	17.7	56.0	16722	12.5	55.1
70-74	38081	14.1	69.7	22538	16.5	72.5	15543	11.7	66.8
75-79	32766	12.1	81.8	17539	12.8	85.3	15227	11.4	78.2
80-84	25544	9.5	91.2	11531	8.4	93.7	14013	10.5	88.7
85+	23648	8.8	100.0	8630	6.3	100.0	15018	11.3	100.0
All ages	270234	100.0		136968	100.0		133266	100.0	

Included in the statistics are 20.5% multiple primaries in males and 18.3% in females.

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=12778 %	Females DCO rate n=14000 %	Males Prop.all cancers n=132509 %	Females Prop.all cancers n=129521 %
0- 4	283	208	22.4	17.3	1.8	4.3	100.0	100.0
5- 9	154	104	12.1	8.6	1.9	1.0	100.0	100.0
10-14	133	152	10.2	12.3	2.3	0.7	100.0	100.0
15-19	291	240	22.3	19.2	1.7	1.3	100.0	100.0
20-24	507	437	34.2	29.1	1.4	2.1	100.0	100.0
25-29	805	916	47.6	53.1	0.5	0.4	100.0	100.0
30-34	1304	1736	67.0	91.9	1.2	0.5	100.0	100.0
35-39	1975	3262	90.5	157.8	1.8	1.2	100.0	100.0
40-44	2760	5299	123.7	249.8	1.8	1.1	100.0	100.0
45-49	4483	7230	230.7	377.5	3.0	1.7	100.0	100.0
50-54	7290	9258	436.6	540.0	4.0	1.9	100.0	100.0
55-59	12488	11758	800.4	717.8	3.9	2.5	100.0	100.0
60-64	18819	14872	1236.4	927.9	4.6	3.2	100.0	100.0
65-69	23397	16237	1716.8	1090.7	5.4	4.4	100.0	100.0
70-74	21680	15048	2102.1	1219.0	7.4	7.5	100.0	100.0
75-79	16847	14697	2493.1	1477.9	12.7	13.0	100.0	100.0
80-84	11020	13518	2712.9	1700.2	21.6	22.3	100.0	100.0
85+	8273	14549	2982.6	1959.0	42.0	41.4	100.0	100.0
All ages	132509	129521			9.6	10.8	100.0	100.0
Incidence								
Raw			527.2	492.1				
WS			294.3	248.0				
ES			425.4	345.0				
BRD-S			535.6	412.7				

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

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	112	41.0	2.7	2.3	3.3	#	2.4	8.0
C07-C08	Salivary gland	26	11.1	2.3	1.5	3.4	#	0.5	11.5
C09-C10	Oropharynx	149	50.9	2.9	2.5	3.4	#	3.3	3.4
C12-C13	Hypopharynx	90	28.7	3.1	2.5	3.9	#	2.0	8.9
C15	Oesophagus	243	87.2	2.8	2.4	3.2	#	5.2	12.3
C16	Stomach	386	224.3	1.7	1.6	1.9	#	5.4	10.4
C17	Small intestine	85	22.6	3.8	3.0	4.7	#	2.1	3.5
C18	Colon	990	527.0	1.9	1.8	2.0	#	15.4	5.3
C19-C20	Rectum	510	292.7	1.7	1.6	1.9	#	7.2	3.5
C21	Anus/canal	23	9.5	2.4	1.5	3.6	#	0.5	8.7
C22	Liver	244	139.9	1.7	1.5	2.0	#	3.5	20.1
C23-C24	Bile	79	49.3	1.6	1.3	2.0	#	1.0	19.0
C25	Pancreas	384	180.0	2.1	1.9	2.4	#	6.8	25.8
C30-C31	Sinuses	16	8.3	1.9	1.1	3.1	#	0.3	12.5
C32	Larynx	126	52.7	2.4	2.0	2.8	#	2.4	14.3
C33-C34	Lung	1319	616.5	2.1	2.0	2.3	#	23.4	12.6
C38,C45	Mesothelioma	55	33.3	1.7	1.2	2.2	#	0.7	5.5
C43	Malign. melanoma	596	188.0	3.2	2.9	3.4	#	13.6	1.3
C46,C49	Soft tissue	54	26.8	2.0	1.5	2.6	#	0.9	1.9
C50	Breast	21	12.7	1.6	1.0	2.5	#	0.3	19.0
C60	Penis	20	11.2	1.8	1.1	2.7	#	0.3	
C61	Prostate	1660	1537.2	1.1	1.0	1.1	#	4.1	8.0
C62	Testis	71	13.8	5.1	4.0	6.5	#	1.9	2.8
C64	Kidney	530	178.3	3.0	2.7	3.2	#	11.7	7.2
C65	Renal pelvis	85	20.5	4.2	3.3	5.1	#	2.2	1.2
C66	Ureter	56	11.2	5.0	3.8	6.5	#	1.5	
C67	Bladder	518	225.4	2.3	2.1	2.5	#	9.8	6.6
C68	Urethra	18	2.0	9.2	5.5	14.6	#	0.5	
C70-C72	CNS cancer	125	67.8	1.8	1.5	2.2	#	1.9	16.8
C73	Thyroid	87	31.7	2.7	2.2	3.4	#	1.8	3.4
C76-C79	CUP	162	87.9	1.8	1.6	2.2	#	2.5	4.9
C81	Hodgkin lymphoma	24	9.6	2.5	1.6	3.7	#	0.5	4.2
C82-C85	NHL	399	200.5	2.0	1.8	2.2	#	6.6	7.0
C90	Mult. myeloma	116	65.3	1.8	1.5	2.1	#	1.7	15.5
C91-C96	Leukaemia	197	80.1	2.5	2.1	2.8	#	3.9	33.0
Other primaries		105	54.7	1.9	1.6	2.3	#	1.7	22.9
Not observed		0	0.6	0.0	0.0	6.4		-0.0	
All mult. primaries		9681	5200.1	1.9	1.8	1.9	#	149.4	9.4

Patients	86944
Mean age at second malignancy (years)	71.0
Person-years	299951
Mean observation time (years)	3.4
Median observation time (years)	2.4

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 to 14 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

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	40	20.2	2.0	1.4	2.7	#	0.6	
C07-C08	Salivary gland	14	5.5	2.6	1.4	4.3	#	0.3	14.3
C09-C10	Oropharynx	58	14.4	4.0	3.1	5.2	#	1.4	
C12-C13	Hypopharynx	16	3.8	4.2	2.4	6.8	#	0.4	18.8
C15	Oesophagus	53	17.9	3.0	2.2	3.9	#	1.1	5.7
C16	Stomach	236	124.9	1.9	1.7	2.1	#	3.5	16.1
C17	Small intestine	55	14.5	3.8	2.9	4.9	#	1.3	5.5
C18	Colon	680	341.2	2.0	1.8	2.1	#	10.6	9.9
C19-C20	Rectum	255	149.6	1.7	1.5	1.9	#	3.3	7.5
C21	Anus/canal	35	17.8	2.0	1.4	2.7	#	0.5	2.9
C22	Liver	82	36.5	2.2	1.8	2.8	#	1.4	32.9
C23-C24	Bile	83	49.0	1.7	1.3	2.1	#	1.1	25.3
C25	Pancreas	255	141.2	1.8	1.6	2.0	#	3.6	27.5
C26	GI cancer	15	6.2	2.4	1.3	4.0	#	0.3	46.7
C32	Larynx	20	6.3	3.2	1.9	4.9	#	0.4	15.0
C33-C34	Lung	614	230.7	2.7	2.5	2.9	#	12.0	15.8
C43	Malign. melanoma	306	115.9	2.6	2.4	3.0	#	5.9	2.3
C46,C49	Soft tissue	52	18.8	2.8	2.1	3.6	#	1.0	7.7
C48	Peritoneal	22	10.0	2.2	1.4	3.3	#	0.4	13.6
C50	Breast	2447	1035.9	2.4	2.3	2.5	#	44.0	3.2
C51	Vulva	65	31.3	2.1	1.6	2.6	#	1.1	6.2
C52	Vagina	18	6.5	2.8	1.7	4.4	#	0.4	5.6
C53	Cervix uteri	100	48.9	2.0	1.7	2.5	#	1.6	20.0
C54	Corpus uteri	383	186.0	2.1	1.9	2.3	#	6.1	5.0
C56	Ovary	406	142.9	2.8	2.6	3.1	#	8.2	19.5
C64	Kidney	226	82.6	2.7	2.4	3.1	#	4.5	11.5
C65	Renal pelvis	36	9.4	3.8	2.7	5.3	#	0.8	2.8
C66	Ureter	18	4.3	4.1	2.5	6.6	#	0.4	
C67	Bladder	131	60.3	2.2	1.8	2.6	#	2.2	11.5
C70-C72	CNS cancer	81	48.5	1.7	1.3	2.1	#	1.0	32.1
C73	Thyroid	141	65.2	2.2	1.8	2.5	#	2.4	5.7
C76-C79	CUP	69	58.0	1.2	0.9	1.5		0.3	7.2
C82-C85	NHL	245	125.9	1.9	1.7	2.2	#	3.7	9.8
C90	Mult. myeloma	52	40.6	1.3	1.0	1.7		0.4	21.2
C91-C96	Leukaemia	163	50.8	3.2	2.7	3.7	#	3.5	23.9
Other primaries		108	58.3	1.9	1.5	2.2	#	1.5	16.7
Not observed		0	0.0	0.0	0.0	2008		-0.0	
All mult. primaries		7580	3380.0	2.2	2.2	2.3	#	131.1	9.9

Patients	85287
Mean age at second malignancy (years)	69.5
Person-years	320435
Mean observation time (years)	3.8
Median observation time (years)	2.8

The occurrence of second malignancy is statistically significant.

Observed second malignancy with count 1 to 12 are pooled in category "Other primaries".

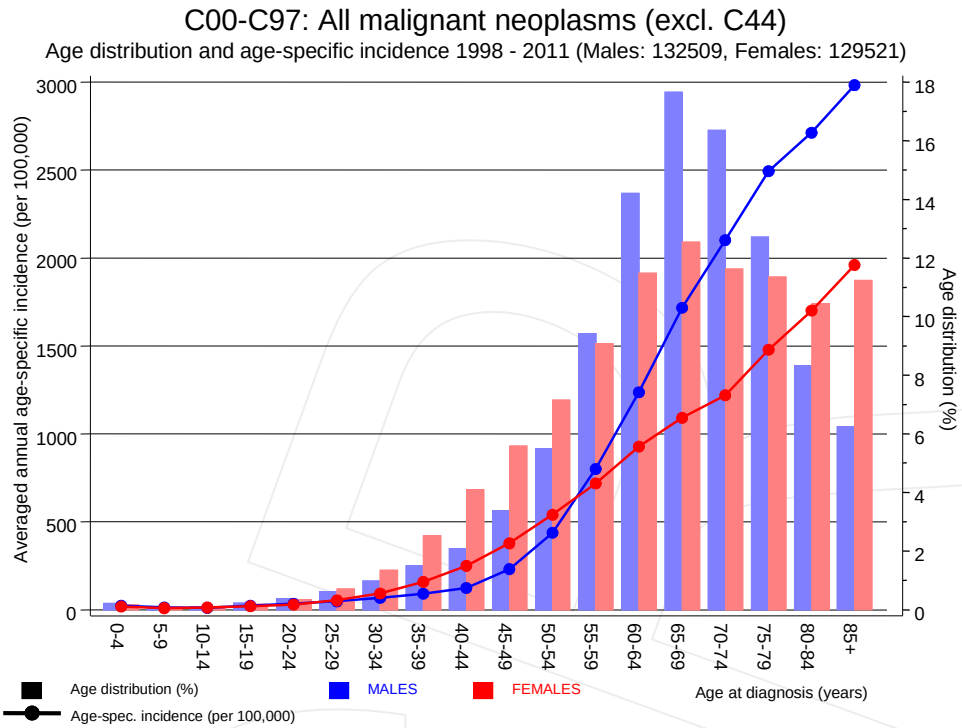


Figure 7. Age distribution and age-specific incidence

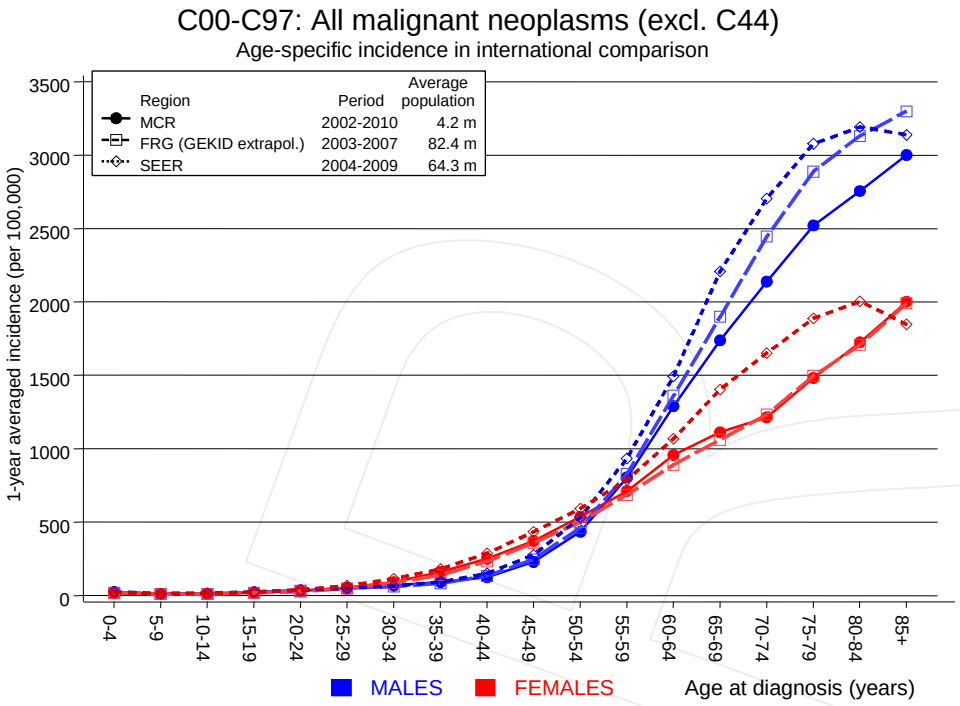


Figure 7a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

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.

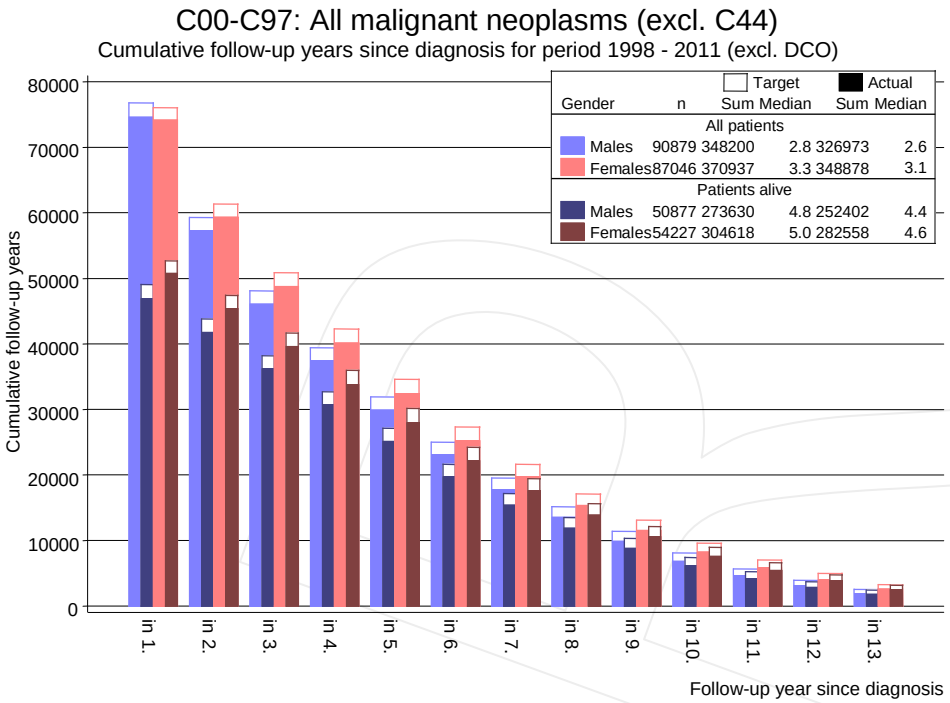
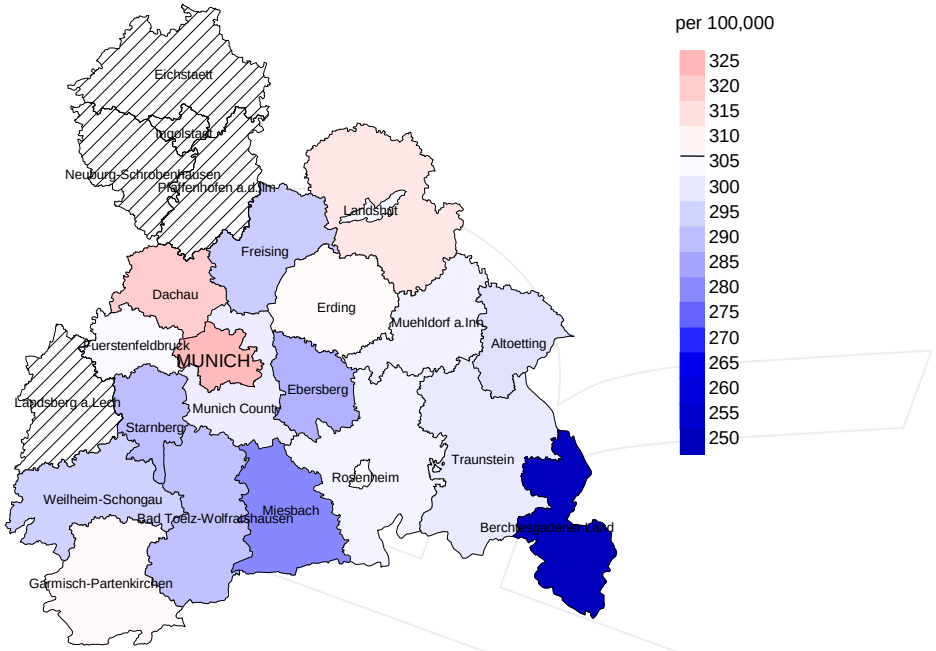


Figure 8. Cumulative follow-up years depending on time since diagnosis

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

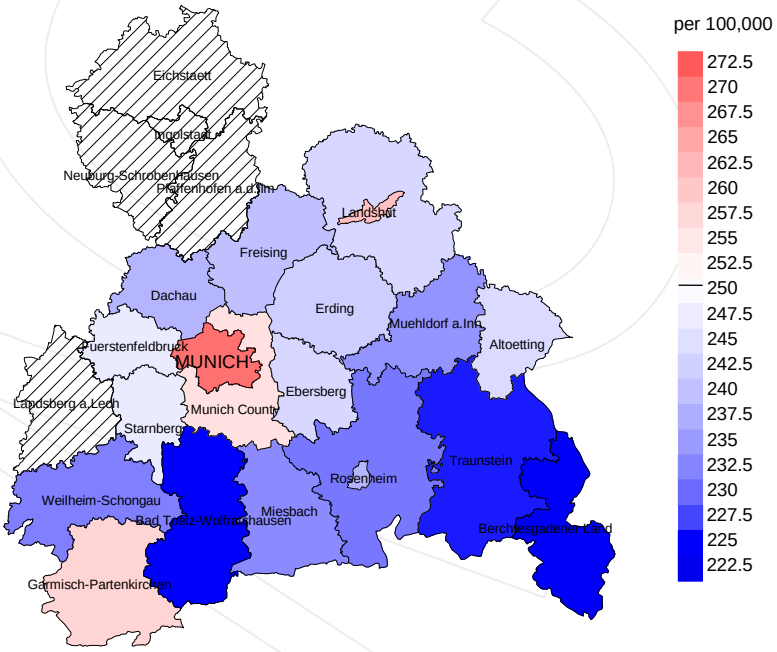
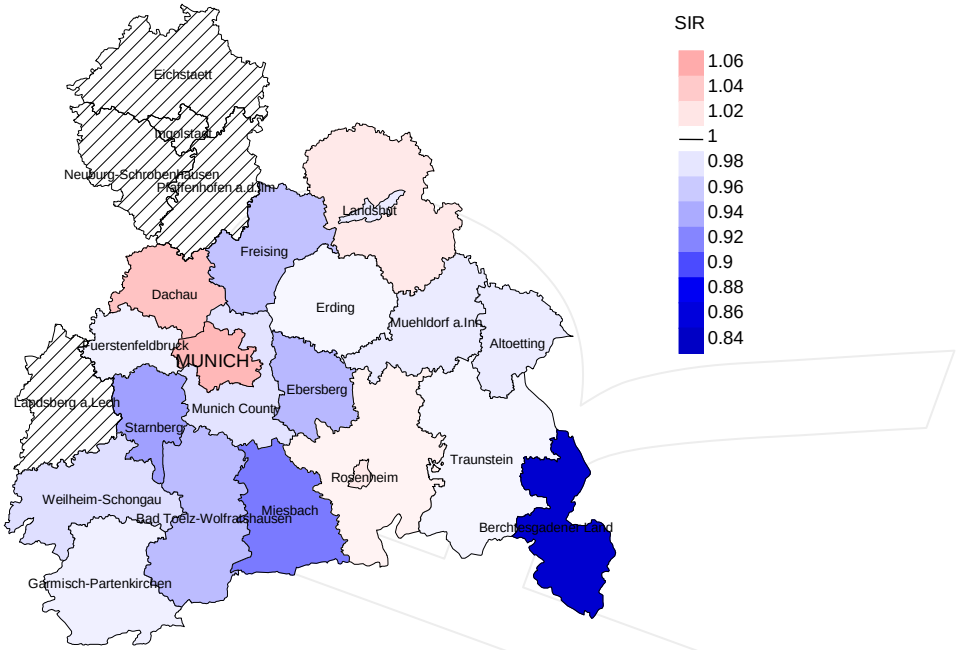


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 306.7/100,000 WS N=63,429, females 250.6/100,000 WS N=60,143). 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 1,707 women were identified with newly diagnosed all cancers (excl. C44). Therefore, the mean incidence rate for this cancer type in this area can be calculated at 243.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 227.1 and 261.7/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males



Standardized incidence ratio (SIR) 2003 - 2008: Females

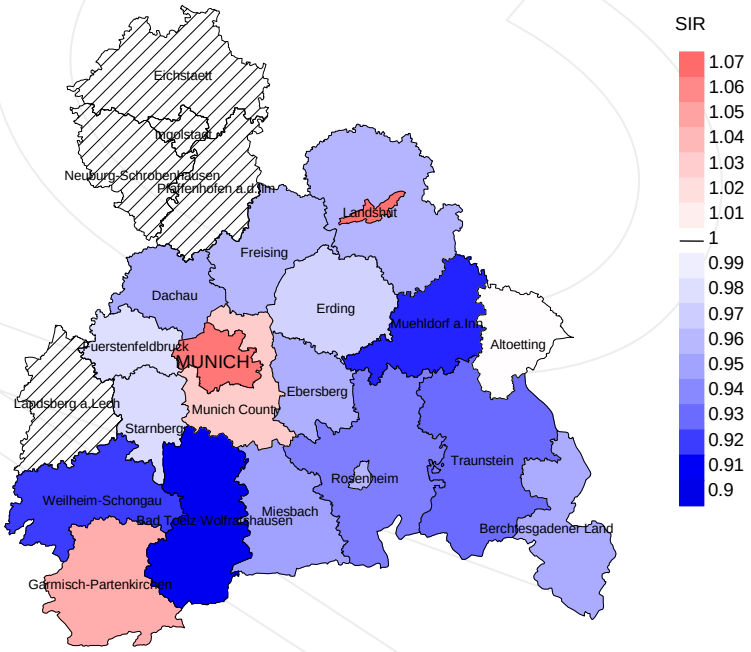


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=63,429, females N=60,143). 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 1,707 women were identified with newly diagnosed all cancers (excl. C44). Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.96. Though, the value of this parameter may vary with an underlying probability of 99% between 0.90 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)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	12190	97.9	10.9	8296	68.1	93.9
1999	12118	97.9	10.3	7960	65.7	94.7
2000	12114	98.3	11.6	7668	63.3	96.0
2001	12559	97.6	11.2	7663	61.0	96.2
2002	21612	97.7	14.6	13400	62.0	97.5
2003	21072	97.4	12.5	12392	58.8	97.8
2004	21279	97.0	11.5	11935	56.1	97.9
2005	21192	96.1	10.2	11407	53.8	98.3
2006	21223	94.0	8.8	10769	50.7	98.8
2007	24310	82.9	9.4	11843	48.7	98.6
2008	24465	68.8	8.6	11131	45.5	98.7
2009	23877	72.6	8.3	10089	42.3	98.7
2010	22618	91.3	9.0	8499	37.6	98.1
2011	19605	73.8	9.7	5644	28.8	97.7
1998-2011	270234	88.8	10.3	138696	51.3	97.5

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	12190	6513	92.0	2681	22.0
1999	12118	6598	92.1	2564	21.2
2000	12114	6600	94.1	2520	20.8
2001	12559	6794	93.9	2596	20.7
2002	21612	9818	97.1	5208	24.1
2003	21072	10372	97.2	4714	22.4
2004	21279	10573	97.5	4514	21.2
2005	21192	10770	97.1	4371	20.6
2006	21223	11140	97.4	4266	20.1
2007	24310	12209	98.0	4898	20.1
2008	24465	12533	98.7	4893	20.0
2009	23877	12807	98.6	4669	19.6
2010	22618	13241	98.6	4804	21.2
2011	19605	12442	98.8	4012	20.5
1998-2011	270234	142410	97.1	56710	21.0

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	6513	72.5	27.5	89.0
1999	6598	76.8	23.2	89.3
2000	6600	77.8	22.2	88.7
2001	6794	74.9	25.1	88.4
2002	9818	78.8	21.2	89.1
2003	10372	78.5	21.5	88.4
2004	10573	80.1	19.9	88.2
2005	10770	78.5	21.5	86.5
2006	11140	78.0	22.0	86.4
2007	12209	78.1	21.9	86.0
2008	12533	77.5	22.5	84.6
2009	12807	76.5	23.5	84.2
2010	13241	76.2	23.8	84.2
2011	12442	74.4	25.6	82.5
1998-2011	142410	77.2	22.8	86.4

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	3271	71.1	69.2	76.1	70.7
1999	3397	71.0	69.3	76.6	70.4
2000	3351	71.4	69.7	77.2	70.8
2001	3449	71.0	69.3	76.5	70.5
2002	5022	71.6	70.1	77.3	70.8
2003	5343	71.7	70.2	77.8	70.9
2004	5392	72.1	70.4	78.7	71.2
2005	5525	72.3	70.4	79.1	71.2
2006	5835	72.4	70.7	78.3	71.5
2007	6440	72.6	71.0	78.5	71.7
2008	6607	73.1	71.2	79.9	71.7
2009	6788	73.3	71.3	79.7	72.0
2010	6961	73.5	71.7	79.5	72.4
2011	6546	73.8	71.8	79.9	72.5
1998-2011	73927	72.4	70.7	78.5	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

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	3242	74.3	72.2	80.2	74.4
1999	3201	74.5	72.5	80.8	74.3
2000	3249	74.2	72.1	81.7	73.5
2001	3345	74.9	72.3	82.2	74.1
2002	4796	74.7	72.5	82.8	73.8
2003	5029	74.5	72.1	82.8	73.3
2004	5181	74.8	72.7	82.9	73.6
2005	5245	75.0	72.5	83.8	73.5
2006	5305	75.4	73.1	83.1	74.0
2007	5769	75.3	72.9	83.5	73.9
2008	5926	75.6	72.9	84.3	73.9
2009	6019	75.5	72.7	84.3	73.8
2010	6280	75.8	73.2	84.2	74.2
2011	5896	76.0	73.0	84.3	74.1
1998-2011	68483	75.1	72.7	83.2	73.9

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	2365	213.5	0.40	127.7	0.38	195.5	0.40	261.8	0.42
1999	2627	234.7	0.45	138.4	0.43	212.7	0.45	285.3	0.48
2000	2605	228.7	0.44	132.9	0.42	205.1	0.44	274.4	0.46
2001	2638	227.6	0.43	131.7	0.41	202.4	0.43	267.8	0.45
2002	3984	213.8	0.37	118.4	0.35	181.8	0.37	241.3	0.38
2003	4264	227.5	0.40	123.1	0.38	188.9	0.40	252.2	0.42
2004	4329	230.1	0.41	121.6	0.38	187.2	0.40	251.6	0.43
2005	4378	231.1	0.42	119.0	0.38	182.2	0.41	246.5	0.44
2006	4581	239.2	0.43	121.7	0.40	186.7	0.42	249.5	0.45
2007	5110	230.7	0.42	115.2	0.38	177.5	0.41	239.1	0.43
2008	5193	233.3	0.44	114.3	0.40	175.7	0.42	236.5	0.45
2009	5220	233.9	0.45	112.6	0.41	172.4	0.44	230.0	0.46
2010	5326	236.3	0.50	111.1	0.44	170.6	0.47	228.8	0.51
2011	4939	219.1	0.55	102.9	0.49	158.6	0.52	211.8	0.56
1998-2011	57559	229.0	0.43	118.0	0.40	181.2	0.43	242.5	0.45

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	2370	201.5	0.39	86.6	0.33	129.5	0.35	168.3	0.38
1999	2449	206.4	0.41	86.8	0.33	130.7	0.36	171.7	0.39
2000	2546	212.0	0.44	89.9	0.36	134.9	0.38	174.4	0.41
2001	2464	202.6	0.41	86.0	0.33	129.2	0.36	167.7	0.39
2002	3762	192.1	0.37	79.9	0.31	119.5	0.33	154.8	0.35
2003	3892	197.6	0.40	83.6	0.33	124.9	0.35	160.4	0.38
2004	4150	209.9	0.42	85.6	0.33	128.3	0.36	167.1	0.39
2005	4090	205.5	0.41	84.5	0.34	126.1	0.36	161.9	0.39
2006	4123	205.2	0.42	81.6	0.33	122.8	0.36	160.8	0.39
2007	4452	192.8	0.39	77.4	0.31	116.2	0.34	150.6	0.37
2008	4541	195.7	0.39	77.8	0.31	116.6	0.33	150.9	0.36
2009	4594	197.5	0.40	78.7	0.32	117.4	0.34	151.5	0.37
2010	4790	204.7	0.43	79.2	0.33	118.7	0.36	154.6	0.40
2011	4338	185.3	0.44	72.8	0.34	108.8	0.37	140.2	0.40
1998-2011	52561	199.7	0.41	81.1	0.33	121.4	0.35	157.3	0.38

Table 13

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	51	0.0	0.0	29	0.0	0.0	22	0.0	0.0
5-9	67	0.1	0.1	31	0.0	0.1	36	0.1	0.1
10-14	53	0.0	0.1	29	0.0	0.1	24	0.0	0.1
15-19	67	0.1	0.2	38	0.1	0.2	29	0.0	0.2
20-24	123	0.1	0.3	80	0.1	0.3	43	0.1	0.3
25-29	189	0.1	0.4	87	0.1	0.4	102	0.2	0.4
30-34	371	0.3	0.7	168	0.3	0.7	203	0.3	0.8
35-39	821	0.6	1.4	364	0.5	1.2	457	0.7	1.5
40-44	1760	1.4	2.7	759	1.1	2.4	1001	1.6	3.1
45-49	3275	2.6	5.3	1540	2.3	4.7	1735	2.8	6.0
50-54	5460	4.3	9.6	2835	4.2	8.9	2625	4.3	10.3
55-59	9218	7.2	16.8	5144	7.7	16.6	4074	6.7	17.0
60-64	13287	10.4	27.1	7714	11.5	28.1	5573	9.1	26.1
65-69	17422	13.6	40.8	10367	15.5	43.5	7055	11.6	37.7
70-74	19088	14.9	55.7	11068	16.5	60.0	8020	13.2	50.9
75-79	19890	15.5	71.2	10913	16.3	76.3	8977	14.7	65.6
80-84	18344	14.3	85.5	8771	13.1	89.4	9573	15.7	81.3
85+	18519	14.5	100.0	7131	10.6	100.0	11388	18.7	100.0
All ages	128005	100.0		67068	100.0		60937	100.0	

Included in the statistics are 20.5% multiple primaries in males and 18.3% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2011
(**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	29	22	2.3	0.10	1.8	0.11	100.0	100.0
5- 9	31	36	2.4	0.20	3.0	0.34	100.0	100.0
10-14	29	24	2.2	0.22	1.9	0.16	100.0	100.0
15-19	38	29	2.9	0.13	2.3	0.12	100.0	100.0
20-24	80	43	5.4	0.16	2.9	0.10	100.0	100.0
25-29	87	102	5.1	0.11	5.9	0.11	100.0	100.0
30-34	168	203	8.6	0.13	10.7	0.12	100.0	100.0
35-39	364	457	16.7	0.18	22.1	0.14	100.0	100.0
40-44	759	1001	34.0	0.27	47.2	0.19	100.0	100.0
45-49	1540	1735	79.2	0.34	90.6	0.23	100.0	100.0
50-54	2835	2625	169.8	0.38	153.1	0.28	100.0	100.0
55-59	5144	4074	329.7	0.40	248.7	0.34	100.0	100.0
60-64	7714	5573	506.8	0.40	347.7	0.36	100.0	100.0
65-69	10367	7055	760.7	0.43	473.9	0.42	100.0	100.0
70-74	11068	8020	1073.1	0.49	649.7	0.52	100.0	100.0
75-79	10913	8977	1615.0	0.62	902.7	0.59	100.0	100.0
80-84	8771	9573	2159.3	0.76	1204.0	0.68	100.0	100.0
85+	7131	11388	2570.9	0.83	1533.4	0.76	100.0	100.0
All ages	67068	60937					100.0	100.0
Mortality								
Raw			266.8	0.49	231.5	0.46		
WS			136.2	0.45	93.3	0.37		
ES			210.4	0.48	140.1	0.40		
BRD-S			283.9	0.51	182.2	0.43		
PYLL-70								
per 100,000			1259.3		1145.4			
ES			1127.1		1000.3			
AYLL-70			9.8		11.2			

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

Table 15a

Multiple primaries in deaths in period 1998-2011
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	179	1.3			10	5.6	169	94.4
C09-C10 Oropharynx	206	1.5			30	14.6	176	85.4
C12-C13 Hypopharynx	136	1.0			22	16.2	114	83.8
C15 Oesophagus	348	2.5			31	8.9	317	91.1
C16 Stomach	536	3.9			45	8.4	491	91.6
C18 Colon	1036	7.6			159	15.3	877	84.7
C19-C20 Rectum	565	4.1			121	21.4	444	78.6
C22 Liver	390	2.9			42	10.8	348	89.2
C23-C24 Bile	132	1.0			12	9.1	120	90.9
C25 Pancreas	596	4.4			48	8.1	548	91.9
C32 Larynx	171	1.3			18	10.5	153	89.5
C33-C34 Lung	2279	16.7			220	9.7	2059	90.3
C43 Malign. melanoma	362	2.6			40	11.0	322	89.0
C44 Skin others	1099	8.0	407	37.0	102	9.3	590	53.7
C61 Prostate	1531	11.2			244	15.9	1287	84.1
C64 Kidney	463	3.4			107	23.1	356	76.9
C65 Renal pelvis	153	1.1			18	11.8	135	88.2
C67 Bladder	970	7.1			206	21.2	764	78.8
C70-C72 CNS cancer	280	2.0			31	11.1	249	88.9
C76-C79 CUP	282	2.1			46	16.3	236	83.7
C82-C85 NHL	494	3.6			117	23.7	377	76.3
C90 Mult. myeloma	201	1.5			32	15.9	169	84.1
C91-C96 Leukaemia	487	3.6			83	17.0	404	83.0
Other primaries	778	5.7			76	9.8	702	90.2
All mult. primaries	13674	100.0	407	3.0	1860	13.6	11407	83.4

Multiple primaries with number of cases n<100 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

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C15	Oesophagus	116	1.0			5	4.3	111	95.7
C16	Stomach	442	3.9			34	7.7	408	92.3
C18	Colon	926	8.2			103	11.1	823	88.9
C19-C20	Rectum	396	3.5			60	15.2	336	84.8
C22	Liver	140	1.2			12	8.6	128	91.4
C23-C24	Bile	155	1.4			13	8.4	142	91.6
C25	Pancreas	558	5.0			42	7.5	516	92.5
C33-C34	Lung	1107	9.8			73	6.6	1034	93.4
C43	Malign. melanoma	241	2.1			21	8.7	220	91.3
C44	Skin others	490	4.3	182	37.1	54	11.0	254	51.8
C50	Breast	2523	22.4			592	23.5	1931	76.5
C51	Vulva	101	0.9			6	5.9	95	94.1
C53	Cervix uteri	152	1.3			33	21.7	119	78.3
C54	Corpus uteri	342	3.0			47	13.7	295	86.3
C56	Ovary	693	6.1			156	22.5	537	77.5
C64	Kidney	229	2.0			58	25.3	171	74.7
C67	Bladder	368	3.3			29	7.9	339	92.1
C70-C72	CNS cancer	269	2.4			36	13.4	233	86.6
C76-C79	CUP	198	1.8			25	12.6	173	87.4
C82-C85	NHL	338	3.0			56	16.6	282	83.4
C90	Mult. myeloma	160	1.4			12	7.5	148	92.5
C91-C96	Leukaemia	417	3.7			66	15.8	351	84.2
Other primaries		911	8.1			114	12.5	797	87.5
All mult. primaries		11272	100.0	182	1.6	1647	14.6	9443	83.8

Multiple primaries with number of cases n<100 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** *)

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	24	22	1.9	0.09	1.8	0.11	100.0	100.0
5- 9	29	33	2.3	0.19	2.7	0.32	100.0	100.0
10-14	29	23	2.2	0.22	1.9	0.16	100.0	100.0
15-19	35	27	2.7	0.12	2.2	0.12	100.0	100.0
20-24	75	39	5.1	0.15	2.6	0.09	100.0	100.0
25-29	81	96	4.8	0.11	5.6	0.11	100.0	100.0
30-34	164	179	8.4	0.13	9.5	0.11	100.0	100.0
35-39	341	416	15.6	0.18	20.1	0.13	100.0	100.0
40-44	700	871	31.4	0.27	41.1	0.18	100.0	100.0
45-49	1398	1512	71.9	0.33	79.0	0.23	100.0	100.0
50-54	2486	2223	148.9	0.37	129.7	0.27	100.0	100.0
55-59	4473	3457	286.7	0.40	211.0	0.34	100.0	100.0
60-64	6513	4589	427.9	0.39	286.3	0.36	100.0	100.0
65-69	8425	5733	618.2	0.42	385.1	0.42	100.0	100.0
70-74	8815	6428	854.7	0.49	520.7	0.52	100.0	100.0
75-79	8384	7232	1240.7	0.63	727.3	0.60	100.0	100.0
80-84	6666	7652	1641.1	0.78	962.4	0.69	100.0	100.0
85+	5497	9239	1981.8	0.84	1244.0	0.75	100.0	100.0
All ages	54135	49771					100.0	100.0
Mortality								
Raw			215.4	0.48	189.1	0.45		
WS			111.5	0.44	77.1	0.36		
ES			170.7	0.47	115.4	0.39		
BRD-S			227.5	0.50	149.2	0.42		
PYLL-70								
per 100,000			1104.6		981.2			
ES			990.5		859.7			
AYLL-70			10.1		11.5			

* 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** *)

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	23	22	1.8	0.08	1.8	0.11	100.0	100.0
5- 9	28	32	2.2	0.18	2.6	0.32	100.0	100.0
10-14	29	22	2.2	0.23	1.8	0.15	100.0	100.0
15-19	35	23	2.7	0.13	1.8	0.10	100.0	100.0
20-24	70	36	4.7	0.15	2.4	0.09	100.0	100.0
25-29	75	90	4.4	0.10	5.2	0.11	100.0	100.0
30-34	159	163	8.2	0.13	8.6	0.10	100.0	100.0
35-39	326	381	14.9	0.18	18.4	0.13	100.0	100.0
40-44	664	799	29.8	0.26	37.7	0.17	100.0	100.0
45-49	1309	1360	67.4	0.33	71.0	0.22	100.0	100.0
50-54	2267	1999	135.8	0.36	116.6	0.26	100.0	100.0
55-59	4080	3088	261.5	0.39	188.5	0.33	100.0	100.0
60-64	5762	4005	378.6	0.38	249.9	0.34	100.0	100.0
65-69	7301	4897	535.7	0.40	328.9	0.39	100.0	100.0
70-74	7431	5453	720.5	0.46	441.7	0.47	100.0	100.0
75-79	6820	6104	1009.3	0.56	613.8	0.54	100.0	100.0
80-84	5356	6445	1318.6	0.68	810.6	0.61	100.0	100.0
85+	4487	7987	1617.6	0.72	1075.4	0.67	100.0	100.0
All ages	46222	42906					100.0	100.0
Mortality								
Raw			183.9	0.44	163.0	0.41		
WS			96.5	0.41	67.2	0.33		
ES			146.4	0.44	100.1	0.36		
BRD-S			192.9	0.46	128.8	0.39		
PYLL-70								
per 100,000			1010.1		879.8			
ES			907.4		772.8			
AYLL-70			10.4		11.7			

* See corresponding tables with multiple primaries.

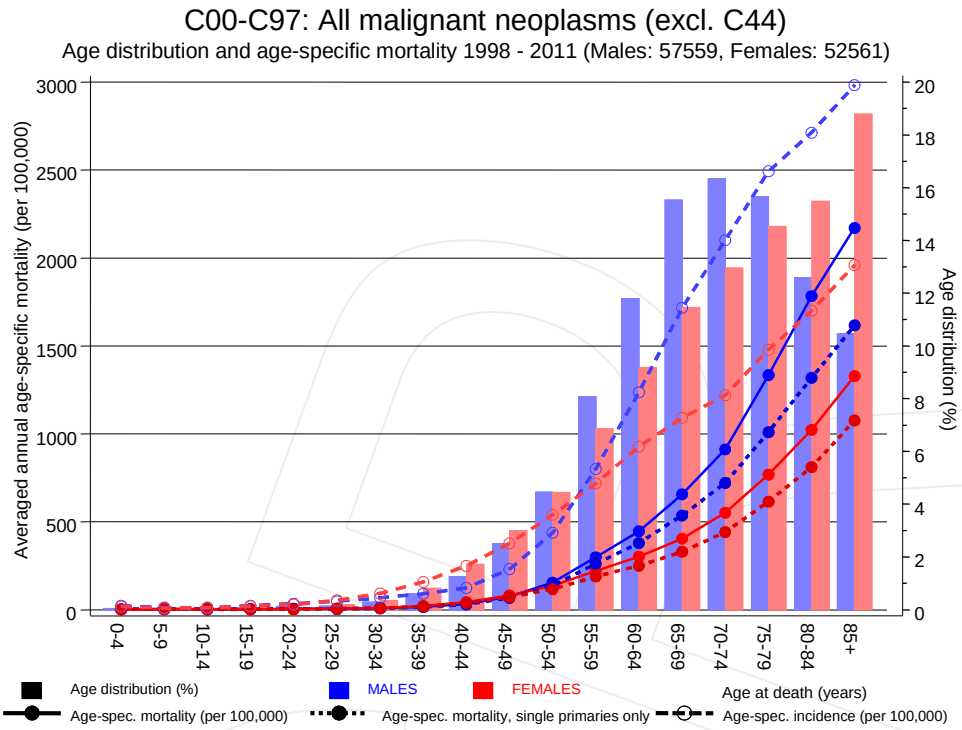
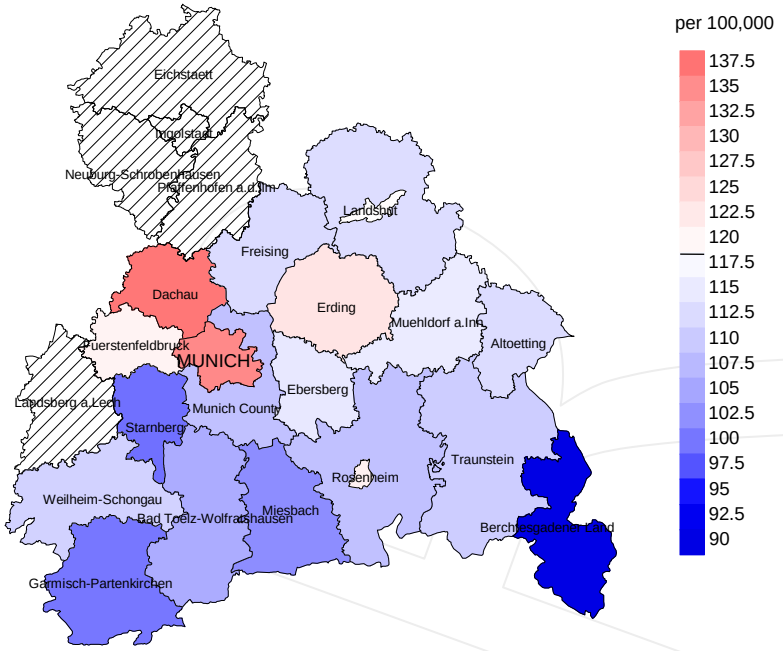


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at all cancers (excl. C44)-related death (see Table 10) should be considered.

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



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

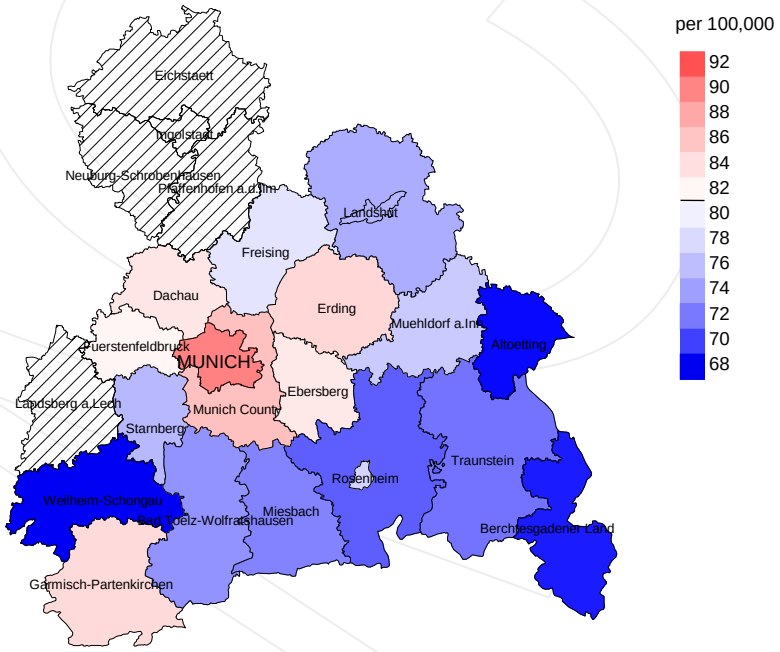
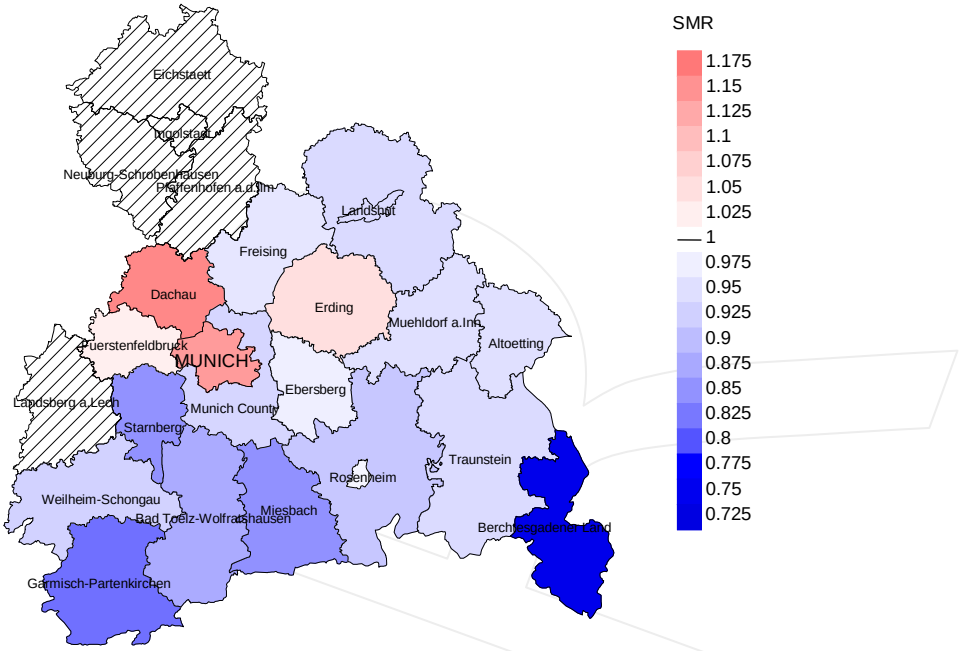


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 118.6/100,000 WS N=26,651, females 81.2/100,000 WS N=24,201). 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 729 women died from all cancers (excl. C44). Therefore, the mean mortality rate for this cancer type in this area can be calculated at 83.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 74.7 and 93.0/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males



Standardized mortality ratio (SMR) 2003 - 2008: Females

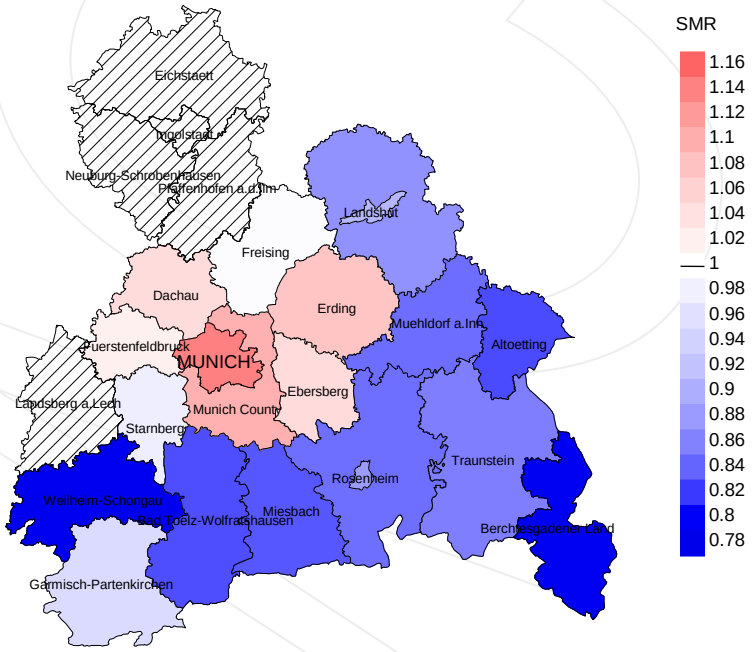


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=26,651, females N=24,201). 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 729 women died from all cancers (excl. C44). Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.05. Though, the value of this parameter may vary with an underlying probability of 99% between 0.95 and 1.15, 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 C00-C97: All cancers (excl. C44) [Internet]. 2013 [updated 2013 Apr 2; cited 2013 Jun 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/base_C0097E.pdf

Copyright

Disclaimer

Index of figures and tables