Munich Cancer Registry

Munich Cancer Registry at Munich Cancer Center
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Munich, 81377
Germany

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

Cancer statistics: Baseline statistics

C67: Bladder cancer

Year of diagnosis	1998-2012
Patients	7,917
Diseases	7,921
Creation date	03/20/2014
Export date	02/12/2014
Population	4.5 m

BERLIN

GERMANY

BAVARIA

MUNICH

**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.

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	309	21	6.8	30.1	78.0	98.7
1999	286	20	7.0	35.7	77.3	99.0
2000	290	29	10.0	34.8	76.6	98.6
2001	304	21	6.9	38.8	70.7	98.4
2002	616	78	12.7	37.3	76.9	98.4 #
2003	607	73	12.0	36.4	72.7	97.7 #
2004	573	65	11.3	38.9	72.3	98.4 #
2005	549	53	9.7	36.4	64.1	97.1 #
2006	626	48	7.7	35.3	68.7	94.9 #
2007	630	45	7.1	38.9	60.5	87.1 # ##
2008	648	60	9.3	40.4	62.0	78.2
2009	645	54	8.4	42.3	62.2	79.4
2010	633	58	9.2	42.2	55.3	75.0
2011	643	48	7.5	42.1	48.2	75.6
2012	562	51	9.1	41.1	36.5	97.0 ###
1998–2012	7921	724	9.1	38.6	63.9	90.1

\#   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	309	216	93	69.9
1999	286	220	66	76.9
2000	290	196	94	67.6
2001	304	202	102	66.4
2002	616	441	175	71.6
2003	607	450	157	74.1
2004	573	410	163	71.6
2005	549	387	162	70.5
2006	626	453	173	72.4
2007	630	441	189	70.0
2008	648	470	178	72.5
2009	645	471	174	73.0
2010	633	445	188	70.3
2011	643	466	177	72.5
2012	562	410	152	73.0
1998-2012	7921	5678	2243	71.7

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	216	93	19.5	7.9	11.6	3.1	18.1	4.8	24.7	6.3
1999	220	66	19.7	5.6	11.4	2.2	17.7	3.5	24.0	4.7
2000	196	94	17.2	7.8	9.6	2.7	15.3	4.3	22.0	6.1
2001	202	102	17.4	8.4	10.2	3.0	15.6	4.8	20.3	6.7
2002	441	175	23.7	8.9	12.4	3.2	19.8	5.0	27.7	6.9
2003	450	157	24.0	8.0	12.5	2.8	19.8	4.5	27.3	6.1
2004	410	163	21.8	8.2	11.1	2.7	17.5	4.5	24.2	6.3
2005	387	162	20.4	8.1	10.1	2.9	15.9	4.5	22.1	6.0
2006	453	173	23.7	8.6	11.7	3.3	18.4	5.0	25.3	6.6
2007	441	189	19.9	8.2	9.7	2.9	15.2	4.6	20.5	6.3
2008	470	178	21.1	7.7	9.8	2.8	15.7	4.3	21.7	5.7
2009	471	174	21.1	7.5	9.7	2.5	15.4	4.0	21.3	5.4
2010	445	188	19.7	8.0	9.1	2.4	14.2	3.9	19.1	5.5
2011	466	177	20.4	7.5	9.3	2.8	14.5	4.2	19.5	5.5
2012	410	152	17.9	6.4	7.6	2.2	12.2	3.5	17.3	4.6
1998-2012	5678	2243	20.7	7.8	10.2	2.7	16.0	4.3	22.0	5.8

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 diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	309	72.2	13.0	26.3	96.1	55.0	64.9	73.2	82.5	88.1
1999	286	71.1	10.9	42.1	94.1	55.6	63.7	71.8	78.8	85.3
2000	290	73.5	10.2	45.0	99.7	59.8	65.3	74.6	80.6	86.5
2001	304	71.7	12.0	30.9	95.8	55.5	62.8	72.8	80.8	87.1
2002	616	73.9	10.7	36.1	99.5	60.0	66.7	74.5	81.7	88.1
2003	607	73.4	11.7	25.4	103	59.3	65.6	74.3	81.7	88.0
2004	573	73.5	11.7	33.3	99.0	58.7	64.8	75.4	81.5	87.9
2005	549	73.4	11.8	28.0	101	58.7	65.2	74.5	82.0	87.8
2006	626	73.1	12.0	3.0	101	57.5	66.0	74.2	81.7	86.9
2007	630	73.2	11.5	1.3	101	57.2	66.8	73.7	81.4	86.8
2008	648	74.0	11.6	6.6	100	57.8	67.2	74.8	82.6	87.8
2009	645	74.0	10.9	39.9	103	59.1	66.8	75.0	82.5	87.3
2010	633	74.3	11.9	31.5	100	57.5	67.4	75.4	83.4	88.3
2011	643	73.4	12.4	1.5	97.6	56.9	65.5	74.6	82.5	88.5
2012	562	74.6	10.6	37.0	97.8	59.5	68.5	75.3	82.1	87.2
1998-2012	7921	73.5	11.6	1.3	103	58.1	66.0	74.5	81.9	87.6

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	216	71.3	12.5	26.3	95.6	55.4	64.3	72.2	80.0	87.1
1999	220	70.3	10.8	42.6	94.1	55.6	62.9	70.5	78.1	85.0
2000	196	71.7	10.0	45.0	99.7	58.4	64.1	73.7	78.8	84.1
2001	202	69.4	11.1	44.0	95.1	54.1	61.5	69.5	77.7	85.4
2002	441	72.9	10.3	37.0	97.6	59.9	65.8	73.4	80.2	86.0
2003	450	72.4	11.2	25.4	101	59.1	65.2	72.9	80.0	86.5
2004	410	71.9	11.3	37.8	98.8	58.0	63.6	73.1	79.9	85.6
2005	387	72.3	10.7	38.6	101	58.9	64.7	73.6	80.0	84.7
2006	453	72.6	11.2	3.0	101	58.4	65.3	73.3	80.5	85.8
2007	441	72.4	11.3	1.3	101	57.0	66.5	72.5	80.0	86.6
2008	470	73.6	11.2	37.5	100	57.8	66.7	74.2	81.6	87.3
2009	471	73.1	10.6	46.0	97.4	58.9	66.2	74.3	81.1	86.2
2010	445	72.5	11.7	31.5	99.1	56.0	65.9	72.8	81.1	87.0
2011	466	72.9	12.0	1.5	95.4	56.7	65.8	74.2	81.5	87.5
2012	410	74.1	9.9	45.3	97.8	60.3	68.5	75.0	81.0	85.5
1998-2012	5678	72.5	11.1	1.3	101	57.8	65.3	73.2	80.5	86.2

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	93	74.2	13.8	31.4	96.1	54.2	67.3	77.2	85.7	89.0
1999	66	74.0	10.7	42.1	91.3	56.4	70.1	75.7	80.3	86.0
2000	94	77.2	9.7	56.1	94.5	62.6	70.4	78.8	85.9	89.2
2001	102	76.2	12.4	30.9	95.8	57.6	68.2	77.9	84.8	90.1
2002	175	76.5	11.4	36.1	99.5	62.6	68.0	78.5	85.7	89.3
2003	157	76.3	12.6	25.4	103	60.0	69.2	78.6	85.0	90.7
2004	163	77.7	11.5	33.3	99.0	59.5	72.4	79.0	86.1	90.6
2005	162	76.2	13.7	28.0	98.8	57.9	66.5	79.7	85.8	91.8
2006	173	74.6	13.8	4.3	96.7	56.0	67.5	76.8	84.5	91.3
2007	189	74.9	12.0	34.4	98.4	57.7	68.3	77.8	83.8	87.8
2008	178	75.0	12.6	6.6	97.0	58.5	68.2	76.6	85.1	88.2
2009	174	76.4	11.5	39.9	103	61.4	68.9	78.6	84.9	89.2
2010	188	78.7	11.2	37.0	100	64.0	71.1	81.0	87.2	91.1
2011	177	74.6	13.3	12.3	97.6	57.2	65.3	75.7	84.5	90.7
2012	152	75.8	12.2	37.0	96.4	58.5	68.6	78.0	85.0	90.2
1998-2012	2243	76.0	12.3	4.3	103	58.6	68.7	78.2	85.1	90.1

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	4	0.1	0.1	3	0.1	0.1	1	0.0	0.0
5-9	1	0.0	0.1			0.1	1	0.0	0.1
10-14	1	0.0	0.1			0.1	1	0.0	0.1
15-19	0	0.0	0.1			0.1			0.1
20-24	0	0.0	0.1			0.1			0.1
25-29	4	0.1	0.1	2	0.0	0.1	2	0.1	0.2
30-34	7	0.1	0.2	2	0.0	0.1	5	0.2	0.4
35-39	23	0.3	0.5	14	0.2	0.4	9	0.4	0.8
40-44	59	0.7	1.2	44	0.8	1.1	15	0.7	1.5
45-49	143	1.8	3.1	105	1.8	3.0	38	1.7	3.2
50-54	272	3.4	6.5	208	3.7	6.7	64	2.9	6.1
55-59	481	6.1	12.6	359	6.3	13.0	122	5.4	11.5
60-64	791	10.0	22.5	644	11.3	24.3	147	6.6	18.1
65-69	1072	13.5	36.1	855	15.1	39.4	217	9.7	27.7
70-74	1252	15.8	51.9	940	16.6	55.9	312	13.9	41.6
75-79	1341	16.9	68.8	1002	17.6	73.6	339	15.1	56.8
80-84	1186	15.0	83.8	789	13.9	87.5	397	17.7	74.5
85+	1284	16.2	100.0	711	12.5	100.0	573	25.5	100.0
All ages	7921	100.0		5678	100.0		2243	100.0	

Included in the statistics are 54.6% multiple primaries in males and 38.1% 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=413 %	Females DCO rate n=310 %	Males Prop.all cancers n=146755 %	Females Prop.all cancers n=142297 %
0- 4	3	1	0.2	0.1			1.0	0.4
5- 9		1	0.0	0.1				0.9
10-14		1	0.0	0.1				0.6
15-19			0.0	0.0				
20-24			0.0	0.0				
25-29	2	2	0.1	0.1			0.2	0.2
30-34	2	5	0.1	0.2			0.1	0.3
35-39	14	9	0.6	0.4			0.7	0.3
40-44	44	15	1.8	0.7	2.3		1.5	0.3
45-49	105	38	4.9	1.8	1.0		2.1	0.5
50-54	208	64	11.3	3.4	0.5	1.6	2.6	0.6
55-59	359	122	21.1	6.8	0.8	1.6	2.7	1.0
60-64	644	147	39.1	8.4	2.0	2.7	3.1	0.9
65-69	855	217	58.3	13.5	3.3	4.1	3.3	1.2
70-74	940	312	81.1	22.6	3.7	2.9	3.8	1.8
75-79	1002	339	133.0	31.0	7.1	6.2	5.3	2.1
80-84	787	397	173.3	46.0	11.4	15.9	6.3	2.7
85+	711	573	229.3	70.0	23.9	35.1	7.7	3.6
All ages	5676	2243			7.3	13.8	3.9	1.6
Incidence								
Raw			20.7	7.8				
WS			10.2	2.7				
ES			16.0	4.3				
BRD-S			22.0	5.8				

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 %
C03-C06	Oral cavity	6	1.8	3.4	1.2	7.3	#	3.4	16.7
C07-C08	Salivary gland	2	0.6	3.4	0.4	12.2		1.1	
C09-C10	Oropharynx	3	2.1	1.4	0.3	4.2		0.7	
C12-C13	Hypopharynx	3	1.2	2.6	0.5	7.5		1.5	
C15	Oesophagus	11	4.1	2.7	1.3	4.8	#	5.5	18.2
C16	Stomach	22	12.0	1.8	1.1	2.8	#	7.9	
C17	Small intestine	4	1.2	3.4	0.9	8.8		2.3	
C18	Colon	55	27.6	2.0	1.5	2.6	#	21.8	5.5
C19-C20	Rectum	27	14.1	1.9	1.3	2.8	#	10.3	11.1
C21	Anus/canal	2	0.5	4.2	0.5	15.1		1.2	
C22	Liver	14	7.0	2.0	1.1	3.4	#	5.6	7.1
C23-C24	Bile	5	2.6	1.9	0.6	4.5		1.9	20.0
C25	Pancreas	22	9.4	2.3	1.5	3.5	#	10.0	36.4
C26	GI cancer	2	0.4	5.1	0.6	18.5		1.3	50.0
C32	Larynx	4	2.3	1.7	0.5	4.4		1.3	
C33-C34	Lung	111	30.2	3.7	3.0	4.4	#	64.3	12.6
C43	Malign. melanoma	18	9.1	2.0	1.2	3.1	#	7.1	
C46,C49	Soft tissue	2	1.4	1.5	0.2	5.3		0.5	
C48	Peritoneal	2	0.2	11.6	1.4	41.9	#	1.5	50.0
C60	Penis	2	0.6	3.3	0.4	12.0		1.1	
C61	Prostate	558	77.5	7.2	6.6	7.8	#	382.3	5.7
C64	Kidney	43	8.6	5.0	3.6	6.7	#	27.4	23.3
C65	Renal pelvis	29	1.1	26.3	17.6	37.7	#	22.2	
C66	Ureter	20	0.6	32.7	20.0	50.5	#	15.4	
C68	Urethra	22	0.1	163.9	102.7	248.2	#	17.4	
C70-C72	CNS cancer	4	3.2	1.2	0.3	3.2		0.6	
C76-C79	CUP	15	4.7	3.2	1.8	5.2	#	8.2	13.3
C82-C85	NHL	15	10.5	1.4	0.8	2.4		3.6	13.3
C90	Mult. myeloma	6	3.4	1.8	0.6	3.8		2.1	
C91-C96	Leukaemia	9	4.5	2.0	0.9	3.8		3.6	44.4
	Other primaries	7	17.1	0.4	0.2	0.8	#	-8.0	28.6
	Not observed	0	3.0	0.0	0.0	1.2		-2.4	
	All mult. primaries	1045	262.7	4.0	3.7	4.2	#	622.4	8.3

Patients	3950
Mean age at second malignancy (years)	72.5
Person-years	12568
Mean observation time (years)	3.2
Median observation time (years)	2.0

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 %
C16	Stomach	5	2.7	1.9	0.6	4.3		5.4	20.0
C17	Small intestine	2	0.2	8.1	1.0	29.1		4.1	
C18	Colon	11	7.2	1.5	0.8	2.8		9.0	9.1
C19-C20	Rectum	10	2.9	3.5	1.7	6.4	#	16.7	10.0
C23-C24	Bile	2	1.1	1.9	0.2	6.8		2.2	50.0
C25	Pancreas	13	3.0	4.3	2.3	7.4	#	23.4	30.8
C33-C34	Lung	20	3.9	5.1	3.1	7.9	#	37.7	25.0
C43	Malign. melanoma	2	1.8	1.1	0.1	3.9		0.4	50.0
C50	Breast	30	15.8	1.9	1.3	2.7	#	33.1	10.0
C53	Cervix uteri	8	0.7	11.6	5.0	22.9	#	17.1	12.5
C54	Corpus uteri	7	3.1	2.3	0.9	4.7		9.2	14.3
C56	Ovary	7	2.5	2.8	1.1	5.8	#	10.6	28.6
C64	Kidney	14	1.5	9.1	5.0	15.2	#	29.2	28.6
C65	Renal pelvis	19	0.2	95.6	57.6	149.3	#	44.0	
C66	Ureter	10	0.1	104.6	50.2	192.4	#	23.2	
C68	Urethra	2	0.0	104.5	12.7	377.3	#	4.6	
C76-C79	CUP	2	1.3	1.5	0.2	5.6		1.7	
C82-C85	NHL	3	2.4	1.2	0.3	3.6		1.3	33.3
C91-C96	Leukaemia	4	1.0	3.8	1.0	9.8	#	6.9	25.0
Other primaries		14	5.3	2.7	1.5	4.5	#	20.5	7.1
Not observed		0	3.3	0.0	0.0	1.1		-7.7	
All mult. primaries		185	60.1	3.1	2.7	3.6	#	292.4	15.1

Patients	1522
Mean age at second malignancy (years)	75.8
Person-years	4272
Mean observation time (years)	2.8
Median observation time (years)	1.4

The occurrence of second malignancy is statistically significant.

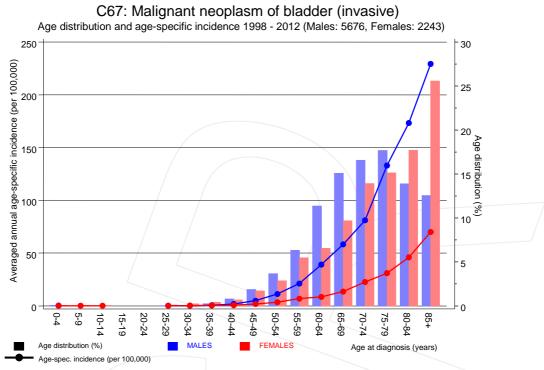Observed second malignancies with count 1 are pooled in category "Other primaries".

C67: Malignant neoplasm of bladder (invasive)
Age distribution and age-specific incidence 1998 - 2012 (Males: 5676, Females: 2243)

Figure 7. Age distribution and age-specific incidence

C67: Malignant neoplasm of bladder (invasive)
Age-specific incidence in international comparison

Region	Period	Average population
MCR	2002-2011	4.2 m
SEER	2004-2009	49.8 m

1-year averaged incidence (per 100,000)

■ MALES   ■ FEMALES   Age at diagnosis (years)

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.

C67: Malignant neoplasm of bladder (invasive)
Cumulative follow-up years since diagnosis for period 1998 - 2012 (excl. DCO)

Gender	n	Target Sum	Median	Actual Sum	Median
All patients					
Males	3594	13283	2.5	12569	2.3
Females	1362	4549	1.8	4310	1.6
Patients alive					
Males	1738	9598	5.0	8883	4.6
Females	575	3236	5.0	2997	4.6
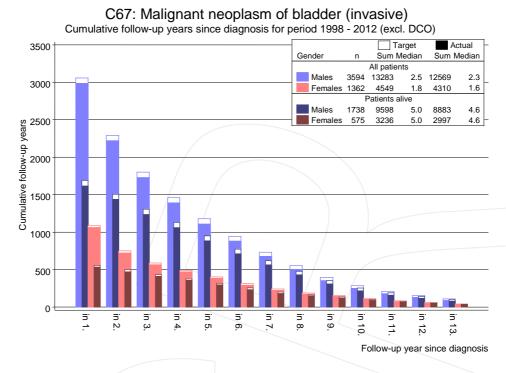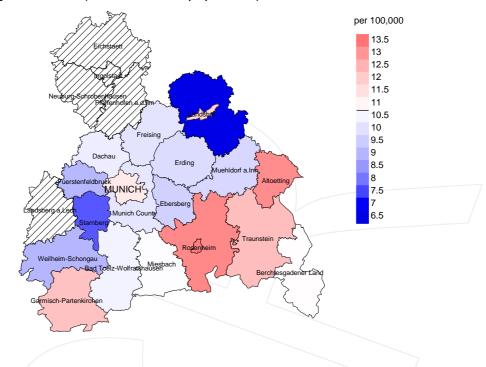
Figure 8. Cumulative follow-up years depending on time since diagnosis

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
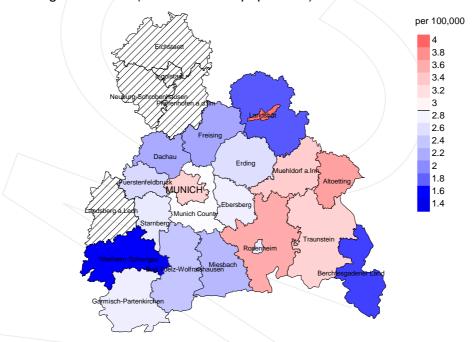
Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 10.7/100,000 WS N=2,499, females 2.9/100,000 WS N=974). 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 25 women were identified with newly diagnosed bladder cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.4 and 4.9/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males

Standardized incidence ratio (SIR) 2003 - 2008: Females
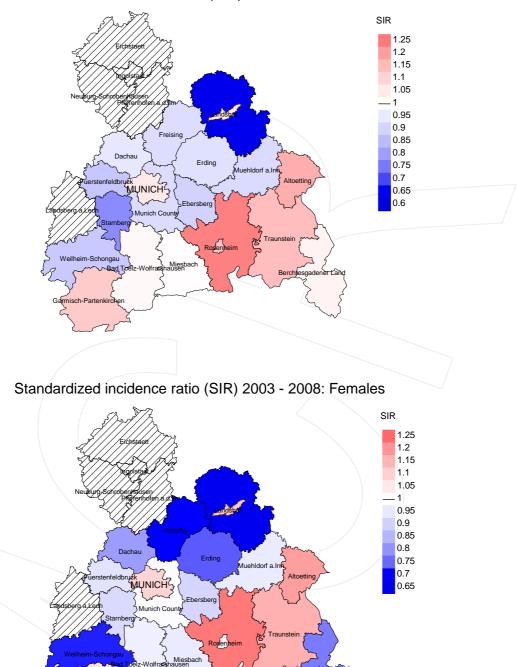
Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=2,499, females N=974). 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 25 women were identified with newly diagnosed bladder cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.91. Though, the value of this parameter may vary with an underlying probability of 99% between 0.51 and 1.50, 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	309	98.7	6.8	241	78.0	93.4
1999	286	99.0	7.0	221	77.3	95.9
2000	290	98.6	10.0	222	76.6	96.8
2001	304	98.4	6.9	215	70.7	94.4
2002	616	98.4	12.7	474	76.9	97.3
2003	607	97.7	12.0	441	72.7	97.5
2004	573	98.4	11.3	414	72.3	99.0
2005	549	97.1	9.7	352	64.1	97.2
2006	626	94.9	7.7	430	68.7	99.5
2007	630	87.1	7.1	381	60.5	98.7
2008	648	78.2	9.3	402	62.0	99.0
2009	645	79.4	8.4	401	62.2	99.3
2010	633	75.0	9.2	350	55.3	98.6
2011	643	75.6	7.5	310	48.2	95.5
2012	562	97.0	9.1	205	36.5	97.1
1998-2012	7921	90.1	9.1	5059	63.9	97.6

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	309	252	91.7	68	22.0
1999	286	221	94.6	65	22.7
2000	290	231	95.2	64	22.1
2001	304	221	95.9	52	17.1
2002	616	340	96.2	151	24.5
2003	607	419	97.4	148	24.4
2004	573	411	97.3	136	23.7
2005	549	426	97.7	115	20.9
2006	626	432	97.2	132	21.1
2007	630	503	97.6	134	21.3
2008	648	483	98.6	142	21.9
2009	645	540	99.3	172	26.7
2010	633	560	98.8	153	24.2
2011	643	511	98.8	143	22.2
2012	562	539	99.3	137	24.4
1998–2012	7921	6089	97.5	1812	22.9

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	252	63.1	36.9	83.5
1999	221	64.3	35.7	80.9
2000	231	66.7	33.3	85.0
2001	221	65.6	34.4	84.4
2002	340	71.5	28.5	85.9
2003	419	67.3	32.7	83.3
2004	411	70.8	29.2	86.0
2005	426	69.2	30.8	83.7
2006	432	70.8	29.2	83.1
2007	503	73.0	27.0	84.1
2008	483	71.4	28.6	83.0
2009	540	71.3	28.7	85.6
2010	560	68.9	31.1	83.4
2011	511	68.5	31.5	84.2
2012	539	67.5	32.5	81.5
1998-2012	6089	69.2	30.8	83.8

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	168	78.4	77.6	79.7	78.8
1999	156	78.0	76.5	80.3	77.2
2000	164	77.3	75.7	79.9	77.1
2001	146	77.6	76.4	79.9	77.0
2002	236	77.1	75.5	80.9	76.3
2003	314	76.9	75.4	79.8	76.3
2004	288	77.9	76.9	80.1	77.2
2005	302	77.2	76.0	79.7	76.5
2006	289	77.0	75.7	80.3	76.6
2007	354	77.2	76.4	79.1	76.8
2008	350	77.8	76.6	80.8	76.8
2009	390	78.3	76.4	82.7	77.4
2010	391	78.2	76.4	82.3	77.4
2011	359	77.4	76.1	80.3	76.7
2012	399	78.7	77.1	82.0	77.9
1998-2012	4306	77.7	76.3	80.7	77.0

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.
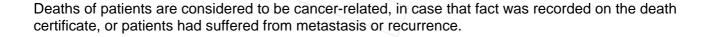
Table 11b

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	84	80.6	79.8	82.9	80.9
1999	65	79.5	79.3	80.1	79.8
2000	67	79.3	78.8	81.0	79.4
2001	75	82.5	81.1	85.4	82.1
2002	104	80.0	78.6	84.2	80.2
2003	105	80.6	80.4	81.2	80.1
2004	123	81.2	79.8	85.8	80.7
2005	124	81.2	80.6	83.1	81.2
2006	143	80.8	78.6	86.3	79.8
2007	149	80.1	78.7	84.0	79.6
2008	133	80.2	78.4	84.9	79.5
2009	150	79.0	77.7	82.7	78.3
2010	169	81.5	80.1	84.3	81.1
2011	152	80.3	76.6	87.3	78.2
2012	140	81.1	78.2	88.2	80.1
1998-2012	1783	80.6	79.0	84.6	80.0

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	98	8.8	0.45	4.7	0.41	8.3	0.46	12.7	0.51
1999	94	8.4	0.43	4.6	0.40	7.8	0.44	11.8	0.49
2000	102	9.0	0.52	4.8	0.50	8.1	0.53	12.3	0.56
2001	95	8.2	0.47	4.3	0.42	7.4	0.47	11.2	0.55
2002	165	8.9	0.37	4.4	0.36	7.4	0.37	10.9	0.39
2003	206	11.0	0.46	5.5	0.43	9.0	0.46	13.1	0.48
2004	198	10.5	0.48	5.0	0.45	8.5	0.48	12.5	0.52
2005	204	10.8	0.53	4.9	0.49	8.3	0.52	12.6	0.57
2006	204	10.7	0.45	4.9	0.42	8.2	0.44	11.8	0.47
2007	256	11.6	0.58	5.1	0.53	8.7	0.57	12.7	0.62
2008	249	11.2	0.53	4.7	0.48	8.0	0.51	12.0	0.55
2009	274	12.3	0.58	5.2	0.53	8.6	0.56	12.4	0.58
2010	274	12.2	0.62	5.0	0.55	8.4	0.59	12.2	0.64
2011	250	10.9	0.54	4.5	0.48	7.4	0.51	10.4	0.54
2012	265	11.6	0.65	4.7	0.61	7.9	0.64	11.3	0.65
1998-2012	2934	10.7	0.52	4.8	0.47	8.1	0.51	11.9	0.54

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	61	5.2	0.66	1.6	0.52	2.7	0.56	4.1	0.65
1999	48	4.0	0.73	1.3	0.57	2.1	0.61	3.1	0.65
2000	52	4.3	0.55	1.3	0.50	2.2	0.52	3.2	0.53
2001	50	4.1	0.49	1.2	0.38	2.0	0.41	3.1	0.47
2002	78	4.0	0.45	1.3	0.39	2.1	0.41	2.9	0.43
2003	76	3.9	0.48	1.2	0.41	2.0	0.44	2.7	0.45
2004	93	4.7	0.57	1.4	0.52	2.4	0.52	3.3	0.53
2005	91	4.6	0.56	1.2	0.42	2.1	0.47	3.2	0.53
2006	102	5.1	0.59	1.6	0.48	2.6	0.52	3.6	0.55
2007	111	4.8	0.59	1.4	0.49	2.4	0.51	3.4	0.54
2008	96	4.1	0.54	1.3	0.46	2.1	0.49	3.0	0.52
2009	111	4.8	0.64	1.5	0.59	2.4	0.61	3.4	0.63
2010	112	4.8	0.60	1.3	0.55	2.2	0.56	3.2	0.58
2011	100	4.2	0.56	1.4	0.49	2.2	0.52	3.1	0.57
2012	99	4.2	0.65	1.3	0.59	2.1	0.60	2.9	0.62
1998-2012	1280	4.5	0.57	1.3	0.49	2.2	0.51	3.2	0.54

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.%
35-39	3	0.1	0.1			0.0	3	0.2	0.2
40-44	11	0.3	0.3	7	0.2	0.2	4	0.3	0.5
45-49	37	0.9	1.2	24	0.8	1.1	13	1.0	1.6
50-54	84	2.0	3.2	57	1.9	3.0	27	2.1	3.7
55-59	155	3.7	6.9	118	4.0	7.0	37	2.9	6.6
60-64	261	6.2	13.0	211	7.2	14.2	50	3.9	10.5
65-69	432	10.2	23.3	328	11.1	25.3	104	8.1	18.6
70-74	610	14.4	37.7	458	15.6	40.9	152	11.9	30.5
75-79	766	18.1	55.8	563	19.1	60.0	203	15.9	46.3
80-84	853	20.2	76.0	586	19.9	79.9	267	20.9	67.2
85+	1012	24.0	100.0	592	20.1	100.0	420	32.8	100.0
All ages	4224	100.0		2944	100.0		1280	100.0	

Included in the statistics are 54.6% multiple primaries in males and 38.1% 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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34			0.0		0.0			
35-39		3	0.0		0.1	0.33		0.6
40-44	7	4	0.3	0.16	0.2	0.27	0.9	0.4
45-49	24	13	1.1	0.23	0.6	0.34	1.4	0.7
50-54	57	27	3.1	0.27	1.4	0.42	1.9	0.9
55-59	118	37	6.9	0.33	2.1	0.30	2.1	0.8
60-64	211	50	12.8	0.33	2.9	0.34	2.5	0.8
65-69	328	104	22.4	0.38	6.5	0.48	2.9	1.4
70-74	458	152	39.5	0.49	11.0	0.49	3.7	1.7
75-79	563	203	74.7	0.56	18.6	0.60	4.7	2.1
80-84	586	267	129.0	0.74	30.9	0.67	5.9	2.6
85+	592	420	190.9	0.83	51.3	0.73	7.4	3.3
All ages	2944	1280					4.0	1.9
Mortality								
Raw			10.7	0.52	4.5	0.57		
WS			4.8	0.48	1.3	0.49		
ES			8.1	0.51	2.2	0.51		
BRD-S			11.9	0.54	3.2	0.54		
PYLL-70								
per 100,000			22.6		8.4			
ES			19.7		7.1			
AYLL-70			7.5		8.7			

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	51	2.5	15	29.4	3	5.9	33	64.7
C18	Colon	118	5.9	71	60.2	10	8.5	37	31.4
C19-C20	Rectum	72	3.6	39	54.2	5	6.9	28	38.9
C22	Liver	20	1.0	7	35.0	2	10.0	11	55.0
C25	Pancreas	39	1.9	4	10.3	3	7.7	32	82.1
C32	Larynx	21	1.0	15	71.4			6	28.6
C33-C34	Lung	248	12.3	33	13.3	14	5.6	201	81.0
C43	Malign. melanoma	44	2.2	27	61.4	1	2.3	16	36.4
C44	Skin others	68	3.4	31	45.6	5	7.4	32	47.1
C61	Prostate	703	34.9	219	31.2	189	26.9	295	42.0
C64	Kidney	81	4.0	34	42.0	14	17.3	33	40.7
C65	Renal pelvis	92	4.6	24	26.1	12	13.0	56	60.9
C66	Ureter	80	4.0	30	37.5	13	16.3	37	46.3
C67	Bladder	101	5.0					101	100.0
C68	Urethra	30	1.5	5	16.7	10	33.3	15	50.0
C76-C79	CUP	25	1.2	7	28.0	2	8.0	16	64.0
C82-C85	NHL	35	1.7	19	54.3	3	8.6	13	37.1
C91-C96	Leukaemia	26	1.3	3	11.5	2	7.7	21	80.8
Other primaries		161	8.0	59	36.6	10	6.2	92	57.1
All mult. primaries		2015	100.0	642	31.9	298	14.8	1075	53.3

Multiple primaries with number of cases n<20 are pooled in category "Other primaries".

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

Table 15b

Multiple primaries in deaths in period 1998-2012
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	12	2.0	5	41.7	1	8.3	6	50.0
C18	Colon	52	8.6	29	55.8	2	3.8	21	40.4
C19-C20	Rectum	21	3.5	13	61.9	1	4.8	7	33.3
C25	Pancreas	18	3.0	1	5.6	1	5.6	16	88.9
C33-C34	Lung	41	6.8	4	9.8	5	12.2	32	78.0
C43	Malign. melanoma	9	1.5	6	66.7			3	33.3
C44	Skin others	13	2.1	4	30.8			9	69.2
C50	Breast	105	17.3	69	65.7	6	5.7	30	28.6
C51	Vulva	8	1.3	6	75.0	1	12.5	1	12.5
C53	Cervix uteri	49	8.1	40	81.6	5	10.2	4	8.2
C54	Corpus uteri	36	5.9	27	75.0	6	16.7	3	8.3
C56	Ovary	17	2.8	6	35.3	1	5.9	10	58.8
C64	Kidney	26	4.3	11	42.3	6	23.1	9	34.6
C65	Renal pelvis	42	6.9	18	42.9	5	11.9	19	45.2
C66	Ureter	29	4.8	15	51.7	4	13.8	10	34.5
C67	Bladder	32	5.3					32	100.0
C73	Thyroid	6	1.0	5	83.3			1	16.7
C76-C79	CUP	12	2.0	1	8.3			11	91.7
C82-C85	NHL	12	2.0	5	41.7	2	16.7	5	41.7
C91-C96	Leukaemia	12	2.0			2	16.7	10	83.3
Other primaries		55	9.1	21	38.2	7	12.7	27	49.1
All mult. primaries		607	100.0	286	47.1	55	9.1	266	43.8

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 1998-2012
(**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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34			0.0		0.0			
35-39		3	0.0		0.1	0.38		0.7
40-44	6	2	0.2	0.16	0.1	0.18	0.8	0.2
45-49	20	11	0.9	0.20	0.5	0.37	1.3	0.7
50-54	46	21	2.5	0.26	1.1	0.38	1.7	0.9
55-59	96	31	5.6	0.32	1.7	0.32	2.0	0.8
60-64	172	33	10.4	0.33	1.9	0.29	2.4	0.7
65-69	233	77	15.9	0.38	4.8	0.46	2.6	1.2
70-74	297	107	25.6	0.46	7.8	0.46	3.0	1.5
75-79	392	149	52.0	0.58	13.6	0.60	4.2	1.9
80-84	393	202	86.5	0.77	23.4	0.68	5.3	2.4
85+	409	326	131.9	0.85	39.8	0.72	6.7	3.2
All ages	2064	962					3.5	1.8

Mortality					
Raw	7.5	0.51	3.4	0.56
WS	3.4	0.46	1.0	0.47
ES	5.7	0.50	1.7	0.50
BRD-S	8.3	0.54	2.4	0.53

PYLL-70		
per 100,000	18.1	6.5
ES	15.8	5.5
AYLL-70	7.8	9.0

* 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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34			0.0		0.0			
35-39		3	0.0		0.1	0.38		0.7
40-44	6	1	0.2	0.18	0.0	0.13	0.8	0.1
45-49	18	10	0.8	0.20	0.5	0.37	1.3	0.7
50-54	38	19	2.1	0.28	1.0	0.39	1.6	0.9
55-59	70	27	4.1	0.30	1.5	0.30	1.6	0.8
60-64	124	29	7.5	0.31	1.7	0.31	2.0	0.7
65-69	156	63	10.6	0.34	3.9	0.41	2.0	1.2
70-74	192	87	16.6	0.38	6.3	0.42	2.3	1.4
75-79	262	115	34.8	0.48	10.5	0.52	3.5	1.7
80-84	269	169	59.2	0.62	19.6	0.61	4.6	2.4
85+	303	288	97.7	0.70	35.2	0.66	6.1	3.3
All ages	1438	811					2.9	1.7

Mortality						
Raw			5.2	0.44	2.8	0.51
WS			2.4	0.40	0.8	0.44
ES			4.0	0.43	1.4	0.46
BRD-S			5.8	0.46	2.0	0.49

PYLL-70		
per 100,000	13.8	5.7
ES	12.1	4.9
AYLL-70	8.3	9.2

* See corresponding tables with multiple primaries.

C67: Malignant neoplasm of bladder (invasive)
Age distribution and age-specific mortality 1998 - 2012 (Males: 2934, Females: 1280)
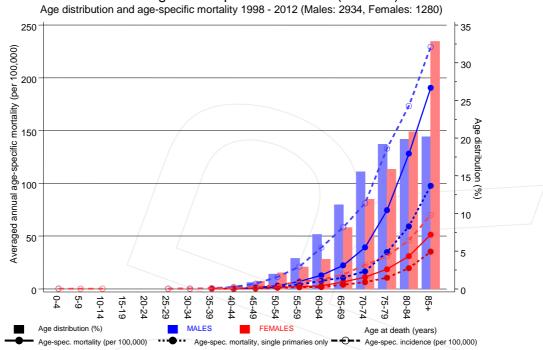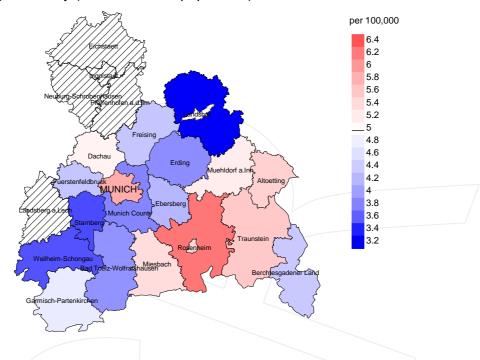
Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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

Average mortality (world standard population) 2003 - 2008: Females
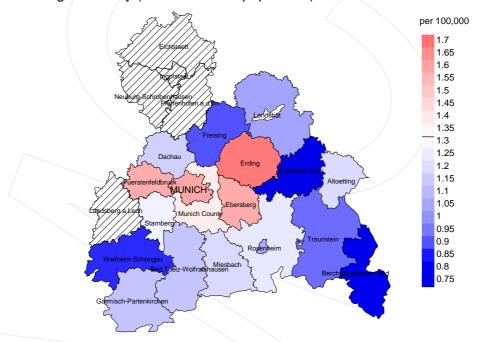
Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 5.0/100,000 WS N=1,256, females 1.3/100,000 WS N=538). 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 16 women died from bladder cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.7 and 3.2/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males

Standardized mortality ratio (SMR) 2003 - 2008: Females
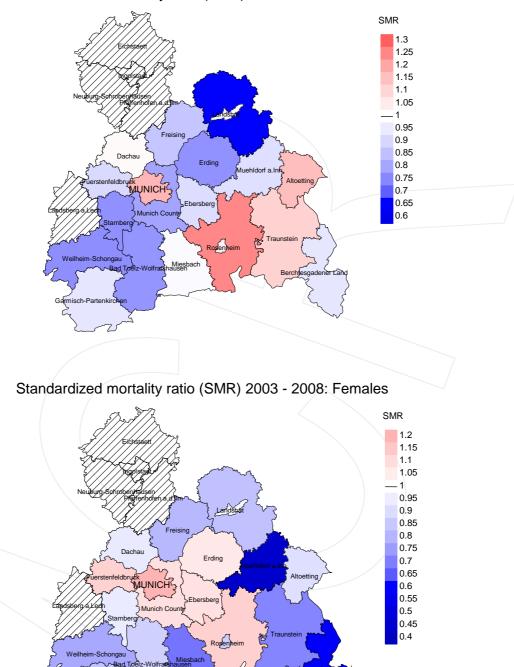
Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,256, females N=538). 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 16 women died from bladder cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.08. Though, the value of this parameter may vary with an underlying probability of 99% between 0.51 and 2.00, 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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