Munich Cancer Registry

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

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

Cancer statistics: Baseline statistics

C60-C68: Urologic cancer

Year of diagnosis	1998-2013
Patients	64,323
Diseases	67,056
Creation date	05/19/2015
Export date	12/30/2014
Population	4.64 m

http://www.tumorregister-muenchen.de/en/facts/base/base_C6068E.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 4.64 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, May 2015

[#] 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 2014 are incorporated into these analyses.

[##] Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

[###] DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate. A high proportion of DCO cases (≥5%) in particular cancer types indicate insufficient participation of specific cancer specializations.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C60.-	Malignant neoplasm of penis
C61	Malignant neoplasm of prostate
C62.-	Malignant neoplasm of testis
C63.-	Malignant neoplasm of other and unspecified male genital organs
C64	Malignant neoplasm of kidney, except renal pelvis
C65	Malignant neoplasm of renal pelvis
C66	Malignant neoplasm of ureter
C67.-	Malignant neoplasm of bladder
C68.-	Malignant neoplasm of other and unspecified urinary organs

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	2465	207	8.4	27.7	63.6	98.1	
1999	2373	162	6.8	27.9	60.1	98.2	
2000	2532	208	8.2	26.5	56.8	97.8	
2001	2629	177	6.7	27.1	52.5	97.6	
2002	4934	492	10.0	27.9	53.5	97.3	#
2003	4838	379	7.8	27.4	48.8	96.9	
2004	4769	371	7.8	27.3	44.5	96.8	
2005	4716	300	6.4	26.4	40.8	95.4	
2006	4655	283	6.1	27.1	40.6	91.5	
2007	5386	364	6.8	26.0	36.8	77.8	# ##
2008	5053	331	6.6	27.0	35.6	61.1	
2009	4795	297	6.2	28.5	33.6	60.7	
2010	4697	317	6.7	26.6	30.6	59.6	
2011	4857	298	6.1	25.0	26.3	58.6	
2012	4902	275	5.6	23.4	19.9	60.0	
2013	3455	262	7.6	24.0	16.5	98.5	###
1998-2013	67056	4723	7.0	26.6	39.4	81.8	

\# 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	2465	2197	268	89.1
1999	2373	2134	239	89.9
2000	2532	2292	240	90.5
2001	2629	2353	276	89.5
2002	4934	4471	463	90.6
2003	4838	4412	426	91.2
2004	4769	4332	437	90.8
2005	4716	4269	447	90.5
2006	4655	4191	464	90.0
2007	5386	4891	495	90.8
2008	5053	4544	509	89.9
2009	4795	4283	512	89.3
2010	4697	4186	511	89.1
2011	4857	4370	487	90.0
2012	4902	4443	459	90.6
2013	3455	3058	397	88.5
1998-2013	67056	60426	6630	90.1

Table 2

Incidence measures by year of diagnosis and gender including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 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	2197	268	198.3	22.8	121.4	10.3	180.9	15.1	239.6	19.2
1999	2134	239	190.7	20.1	114.5	9.6	169.7	13.8	219.9	17.3
2000	2292	240	201.3	20.0	119.8	8.3	177.8	12.6	232.8	16.5
2001	2353	276	203.0	22.7	119.6	9.6	177.3	14.6	229.7	18.9
2002	4471	463	240.0	23.6	134.5	10.0	201.1	14.8	261.6	19.2
2003	4412	426	235.4	21.6	131.3	8.8	193.9	13.2	249.6	17.2
2004	4332	437	230.3	22.1	126.6	9.0	185.2	13.5	237.1	17.8
2005	4269	447	225.4	22.5	121.3	9.4	177.9	13.8	227.5	17.9
2006	4191	464	218.8	23.1	116.2	10.2	170.2	14.6	218.1	18.5
2007	4891	495	220.8	21.4	118.1	8.8	171.7	12.9	217.2	16.9
2008	4544	509	204.2	21.9	104.9	9.3	154.1	13.5	197.3	17.5
2009	4283	512	191.9	22.0	99.1	8.9	144.0	13.1	182.3	17.2
2010	4186	511	185.7	21.8	95.1	7.9	138.3	12.2	174.8	16.2
2011	4370	487	191.3	20.6	95.9	8.9	139.8	12.6	178.2	15.8
2012	4443	459	194.5	19.5	97.5	7.4	142.3	11.2	182.3	15.1
2013	3058	397	133.8	16.8	68.2	7.0	98.9	10.1	125.6	12.8
1998-2013	60426	6630	203.2	21.3	108.6	8.8	159.0	13.0	203.3	16.9

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	2465	68.2	13.4	1.3	99.8	53.2	61.5	69.5	77.3	84.2
1999	2373	67.7	12.8	1.1	99.5	54.4	60.8	68.8	76.1	83.5
2000	2532	68.3	12.8	0.3	99.7	54.9	61.8	69.3	76.7	83.4
2001	2629	68.1	12.6	1.9	100	54.4	61.7	68.9	76.5	82.4
2002	4934	69.2	12.4	2.4	102	55.9	62.7	69.8	77.3	83.9
2003	4838	68.8	12.3	0.4	103	55.4	62.9	69.1	76.5	83.0
2004	4769	68.5	12.5	0.0	100	55.3	62.6	68.9	76.6	82.9
2005	4716	68.6	12.3	0.7	101	55.1	62.8	69.1	76.5	83.0
2006	4655	68.9	12.4	0.2	101	55.4	63.6	69.4	76.5	83.4
2007	5386	68.6	12.8	0.1	101	54.3	63.3	69.4	76.4	83.3
2008	5053	69.4	12.1	0.6	101	55.2	64.1	70.1	76.9	83.4
2009	4795	68.9	12.5	0.5	105	53.8	63.2	70.0	76.6	83.4
2010	4697	69.4	12.7	5.4	102	54.3	63.2	70.6	77.3	84.2
2011	4857	69.6	12.7	0.5	109	53.9	64.0	71.0	77.0	84.0
2012	4902	69.7	12.2	1.4	103	55.4	64.1	71.2	77.1	83.2
2013	3455	68.9	13.5	0.3	103	52.2	62.6	71.0	77.1	83.9
1998-2013	67056	68.9	12.6	0.0	109	54.7	62.9	69.9	76.8	83.5

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	2197	68.0	13.3	1.3	99.8	52.9	61.4	69.2	76.9	83.9
1999	2134	67.6	12.7	2.3	99.5	54.5	60.8	68.6	75.6	83.1
2000	2292	67.9	12.8	0.3	99.7	54.2	61.5	68.9	76.2	82.5
2001	2353	67.7	12.4	1.9	100	54.5	61.6	68.4	75.8	81.5
2002	4471	68.9	12.3	4.8	102	55.7	62.6	69.4	76.6	83.1
2003	4412	68.3	12.2	0.4	101	55.3	62.7	68.7	75.9	82.3
2004	4332	68.1	12.4	0.0	100	55.2	62.4	68.4	76.1	82.1
2005	4269	68.2	12.0	0.7	101	55.1	62.7	68.7	75.8	82.3
2006	4191	68.6	12.0	0.8	101	55.7	63.5	69.0	76.1	82.7
2007	4891	68.2	12.6	0.1	101	54.2	63.1	69.0	75.9	82.3
2008	4544	69.1	11.9	1.8	101	55.2	64.0	69.9	76.3	82.8
2009	4283	68.5	12.3	0.5	105	53.7	62.9	69.7	75.9	82.6
2010	4186	68.7	12.5	5.4	102	53.9	62.8	70.1	76.4	83.1
2011	4370	69.3	12.3	1.5	109	54.0	63.9	70.7	76.4	83.5
2012	4443	69.3	12.2	1.4	103	55.1	63.8	71.0	76.5	82.6
2013	3058	68.5	13.3	2.0	103	52.0	62.5	70.7	76.5	83.3
1998-2013	60426	68.5	12.4	0.0	109	54.6	62.7	69.5	76.2	82.7

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	268	70.5	13.7	2.8	99.7	55.0	62.6	72.4	79.3	86.2
1999	239	69.4	13.5	1.1	94.3	52.6	60.8	71.5	78.7	85.6
2000	240	72.4	11.9	37.2	94.5	58.7	63.6	73.9	81.0	87.4
2001	276	72.0	13.4	30.6	96.4	54.2	64.2	73.7	81.2	88.2
2002	463	72.8	12.8	2.4	99.5	57.9	65.3	74.1	81.9	87.7
2003	426	73.2	13.0	2.5	103	56.8	65.6	75.1	82.6	87.9
2004	437	72.9	13.1	18.5	99.0	56.5	65.0	74.8	82.2	88.3
2005	447	72.3	14.6	4.2	98.8	54.0	64.3	74.9	82.1	88.7
2006	464	71.3	15.1	0.2	96.7	52.5	64.6	74.0	81.7	87.5
2007	495	72.4	14.6	1.2	99.1	55.6	67.0	74.7	82.3	87.1
2008	509	71.9	13.6	0.6	97.0	56.0	64.7	73.7	81.9	86.9
2009	512	72.4	13.7	2.5	103	55.5	66.2	74.3	82.1	87.0
2010	511	74.6	12.8	5.4	100	56.5	68.3	75.7	84.3	89.4
2011	487	71.5	15.7	0.5	97.6	53.6	65.2	74.1	81.6	88.0
2012	459	73.5	11.9	9.7	96.4	58.0	67.3	75.2	82.0	87.1
2013	397	72.0	14.8	0.3	101	52.6	65.2	73.6	81.6	88.2
1998-2013	6630	72.4	13.8	0.2	103	55.6	65.2	74.2	81.9	87.7

Table 4

Age distribution by 5-year age group and gender for period 1998-2013 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	80	0.1	0.1	47	0.1	0.1	33	0.5	0.5
5-9	21	0.0	0.2	11	0.0	0.1	10	0.2	0.6
10-14	9	0.0	0.2	7	0.0	0.1	2	0.0	0.7
15-19	82	0.1	0.3	79	0.1	0.2	3	0.0	0.7
20-24	263	0.4	0.7	256	0.4	0.7	7	0.1	0.8
25-29	441	0.7	1.3	433	0.7	1.4	8	0.1	1.0
30-34	622	0.9	2.3	592	1.0	2.4	30	0.5	1.4
35-39	836	1.2	3.5	769	1.3	3.6	67	1.0	2.4
40-44	843	1.3	4.8	762	1.3	4.9	81	1.2	3.6
45-49	1319	2.0	6.7	1177	1.9	6.8	142	2.1	5.8
50-54	2410	3.6	10.3	2171	3.6	10.4	239	3.6	9.4
55-59	5111	7.6	18.0	4693	7.8	18.2	418	6.3	15.7
60-64	9111	13.6	31.5	8513	14.1	32.3	598	9.0	24.7
65-69	12794	19.1	50.6	11945	19.8	52.1	849	12.8	37.5
70-74	12581	18.8	69.4	11582	19.2	71.2	999	15.1	52.6
75-79	9298	13.9	83.2	8205	13.6	84.8	1093	16.5	69.1
80-84	6081	9.1	92.3	5105	8.4	93.2	976	14.7	83.8
85+	5154	7.7	100.0	4079	6.8	100.0	1075	16.2	100.0
All ages	67056	100.0		60426	100.0		6630	100.0	

Included in the statistics are 28.7% multiple primaries in males and 36.1% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 1998-2013

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=3821 %	Females DCO rate n=804 %	Males Prop.all cancers n=158258 %	Females Prop.all cancers n=153136 %
0- 4	45	32	3.0	2.3	2.2		13.9	13.1
5- 9	11	9	0.7	0.6			6.3	7.2
10-14	7	2	0.5	0.1			4.2	1.2
15-19	79	3	5.1	0.2			22.3	1.0
20-24	253	7	14.3	0.4			41.2	1.3
25-29	429	8	21.4	0.4			44.4	0.7
30-34	584	30	25.7	1.4	0.2		39.0	1.5
35-39	762	65	30.6	2.7	0.1		33.9	1.7
40-44	751	80	28.6	3.2	0.7		23.4	1.3
45-49	1166	140	49.4	6.1	0.6	0.7	21.8	1.6
50-54	2121	237	105.0	11.5	0.7	0.4	24.6	2.1
55-59	4612	415	251.4	21.6	0.7	2.2	31.9	3.0
60-64	8358	592	471.5	31.6	1.1	1.4	38.4	3.4
65-69	11694	831	740.8	48.2	1.6	3.4	42.6	4.4
70-74	11307	982	882.7	64.7	2.5	5.5	42.1	5.3
75-79	8001	1071	968.1	90.2	6.7	7.6	38.7	6.1
80-84	4944	956	988.1	102.5	17.3	18.1	36.2	6.1
85+	3996	1066	1171.8	119.3	45.3	42.1	40.2	6.2
All ages	59120	6526			6.5	12.3	37.4	4.3
Incidence								
Raw			198.8	21.0				
WS			106.4	8.7				
ES			155.7	12.8				
BRD-S			198.8	16.6				

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 1998-2013
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	30	25.9	1.2	0.8	1.7		0.2	3.3
C07-C08	Salivary gland	16	7.8	2.0	1.2	3.3	#	0.4	18.8
C09-C10	Oropharynx	40	31.0	1.3	0.9	1.8		0.5	
C12-C13	Hypopharynx	22	17.4	1.3	0.8	1.9		0.2	4.5
C15	Oesophagus	101	59.4	1.7	1.4	2.1	#	2.2	9.9
C16	Stomach	235	152.9	1.5	1.3	1.7	#	4.4	7.2
C17	Small intestine	56	16.9	3.3	2.5	4.3	#	2.1	1.8
C18	Colon	599	364.7	1.6	1.5	1.8	#	12.6	4.2
C19-C20	Rectum	294	195.4	1.5	1.3	1.7	#	5.3	4.1
C21	Anus/canal	15	6.8	2.2	1.2	3.6	#	0.4	6.7
C22	Liver	128	97.7	1.3	1.1	1.6	#	1.6	16.4
C23-C24	Bile	47	35.2	1.3	1.0	1.8		0.6	17.0
C25	Pancreas	251	128.4	2.0	1.7	2.2	#	6.6	25.5
C32	Larynx	57	34.0	1.7	1.3	2.2	#	1.2	7.0
C33-C34	Lung	698	417.9	1.7	1.5	1.8	#	15.0	10.0
C38,C45	Mesothelioma	40	23.9	1.7	1.2	2.3	#	0.9	7.5
C40-C41	Bone	11	2.5	4.3	2.2	7.8	#	0.5	
C43	Malign. melanoma	318	134.8	2.4	2.1	2.6	#	9.8	1.6
C46,C49	Soft tissue	34	18.5	1.8	1.3	2.6	#	0.8	
C48	Peritoneal	11	2.4	4.5	2.3	8.1	#	0.5	9.1
C50	Breast	15	9.2	1.6	0.9	2.7		0.3	6.7
C60	Penis	18	8.0	2.2	1.3	3.6	#	0.5	
C61	Prostate	777	1083.1	0.7	0.7	0.8	#	-16.4	5.5
C62	Testis	65	7.1	9.1	7.1	11.7	#	3.1	1.5
C64	Kidney	385	122.2	3.1	2.8	3.5	#	14.1	6.2
C65	Renal pelvis	79	15.2	5.2	4.1	6.5	#	3.4	
C66	Ureter	54	8.5	6.3	4.8	8.3	#	2.4	
C67	Bladder	440	165.4	2.7	2.4	2.9	#	14.7	5.7
C68	Urethra	34	2.2	15.3	10.6	21.3	#	1.7	
C69	Eye melanoma	11	3.9	2.8	1.4	5.1	#	0.4	
C70-C72	CNS cancer	83	44.9	1.9	1.5	2.3	#	2.0	7.2
C73	Thyroid	42	19.9	2.1	1.5	2.8	#	1.2	
C76-C79	CUP	105	60.9	1.7	1.4	2.1	#	2.4	4.8
C81	Hodgkin lymphoma	11	6.7	1.6	0.8	2.9		0.2	
C82-C85	NHL	265	143.2	1.9	1.6	2.1	#	6.5	4.5
C90	Mult. myeloma	100	46.7	2.1	1.7	2.6	#	2.9	8.0
C91-C96	Leukaemia	118	59.5	2.0	1.6	2.4	#	3.1	33.9
Other primaries		50	33.8	1.5	1.1	2.0	#	0.9	26.0
Not observed		0	2.1	0.0	0.0	1.7		-0.1	

Patients	38231
Median age at second malignancy (years)	73.8
Person-years	186630
Mean observation time (years)	4.9
Median observation time (years)	4.1

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 to 10 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 1998-2013
FEMALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	2	1.1	1.8	0.2	6.4		0.6	
C15	Oesophagus	3	1.1	2.7	0.6	7.9		1.2	
C16	Stomach	16	8.2	1.9	1.1	3.2	#	5.0	6.3
C17	Small intestine	3	0.9	3.4	0.7	9.8		1.3	
C18	Colon	42	22.3	1.9	1.4	2.5	#	12.6	4.8
C19-C20	Rectum	20	9.3	2.2	1.3	3.3	#	6.8	10.0
C21	Anus/canal	2	1.0	1.9	0.2	7.0		0.6	
C22	Liver	3	2.5	1.2	0.3	3.6		0.3	33.3
C23-C24	Bile	12	3.3	3.6	1.9	6.4	#	5.5	25.0
C25	Pancreas	25	9.6	2.6	1.7	3.8	#	9.8	32.0
C26	GI cancer	2	0.4	4.6	0.6	16.6		1.0	
C33-C34	Lung	53	13.8	3.9	2.9	5.0	#	25.0	13.2
C43	Malign. melanoma	7	6.6	1.1	0.4	2.2		0.3	28.6
C46,C49	Soft tissue	2	1.1	1.8	0.2	6.4		0.5	
C48	Peritoneal	2	0.7	2.9	0.3	10.4		0.8	
C50	Breast	103	56.4	1.8	1.5	2.2	#	29.6	8.7
C51	Vulva	2	2.1	0.9	0.1	3.4		-0.1	
C53	Cervix uteri	12	2.4	5.1	2.6	8.8	#	6.1	8.3
C54	Corpus uteri	18	11.0	1.6	1.0	2.6		4.5	11.1
C55,C57	Fem. genitals un	3	0.6	5.2	1.1	15.3	#	1.5	33.3
C56	Ovary	11	8.4	1.3	0.7	2.3		1.7	18.2
C64	Kidney	64	5.3	12.1	9.3	15.5	#	37.4	15.6
C65	Renal pelvis	25	0.7	37.9	24.5	55.9	#	15.5	
C66	Ureter	20	0.3	58.7	35.9	90.7	#	12.5	
C67	Bladder	47	4.2	11.1	8.1	14.7	#	27.2	4.3
C68	Urethra	2	0.1	30.8	3.7	111.4	#	1.2	
C70-C72	CNS cancer	2	2.8	0.7	0.1	2.6		-0.5	100.0
C73	Thyroid	16	2.9	5.5	3.2	9.0	#	8.3	
C76-C79	CUP	8	4.0	2.0	0.9	4.0		2.6	12.5
C82-C85	NHL	19	8.1	2.3	1.4	3.7	#	6.9	10.5
C90	Mult. myeloma	3	2.7	1.1	0.2	3.3		0.2	
C91-C96	Leukaemia	10	3.4	2.9	1.4	5.4	#	4.2	20.0
Other primaries		6	2.9	2.1	0.8	4.5		2.0	16.7
Not observed		0	2.1	0.0	0.0	1.8		-1.3	
All mult. primaries		565	202.1	2.8	2.6	3.0	#	231.0	10.8

Patients	4107
Median age at second malignancy (years)	74.6
Person-years	15706
Mean observation time (years)	3.8
Median observation time (years)	2.5

The occurrence of second malignancy is statistically significant.

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

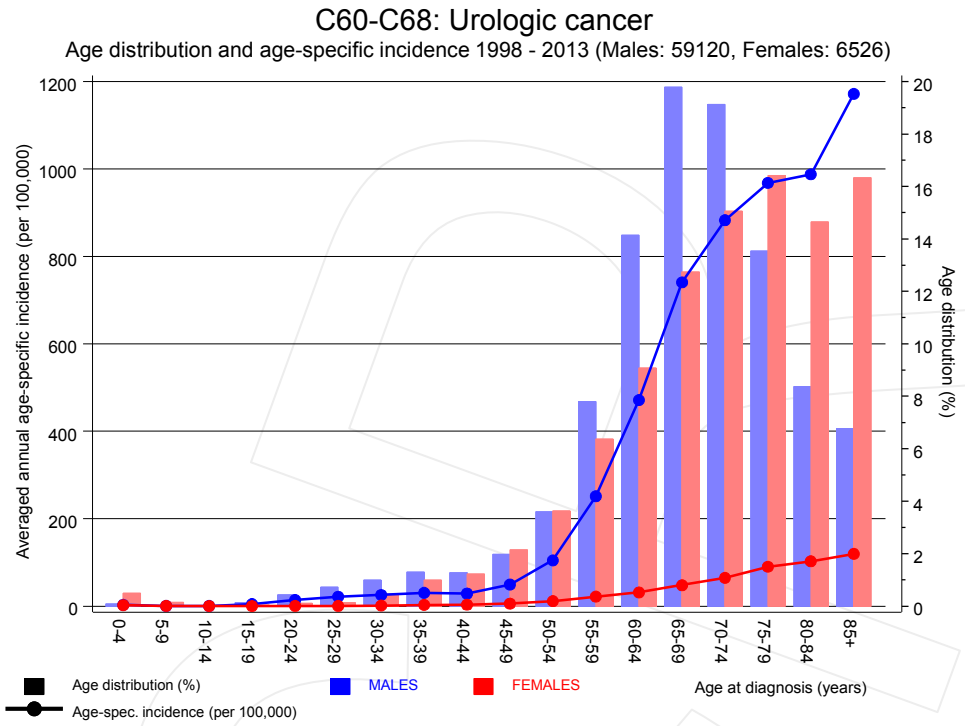


Figure 7. Age distribution and age-specific incidence

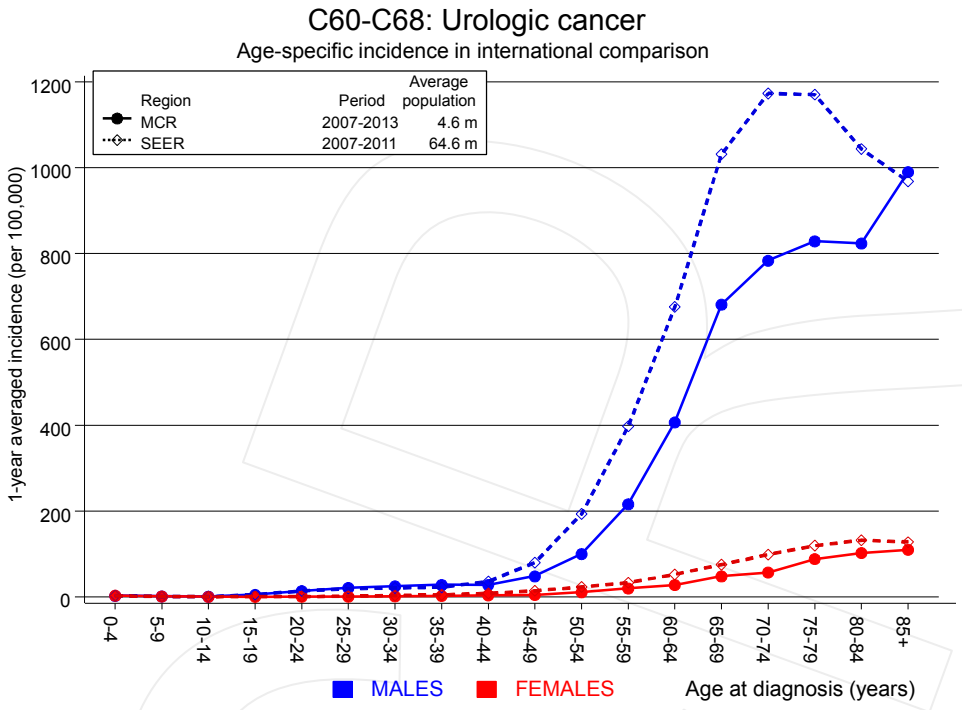


Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 submission. http://www.seer.cancer.gov.

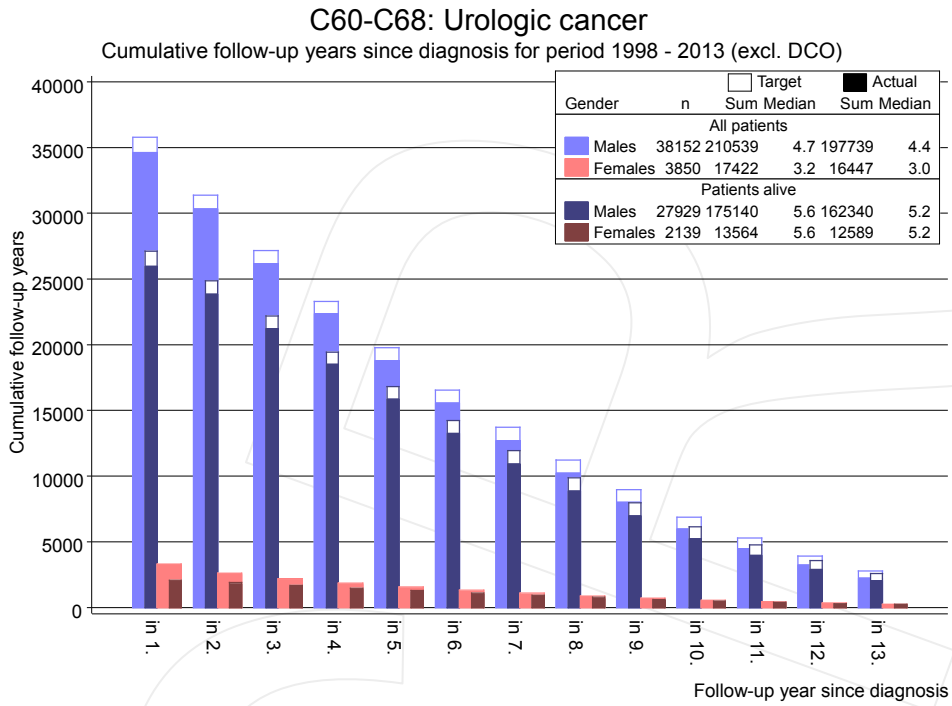
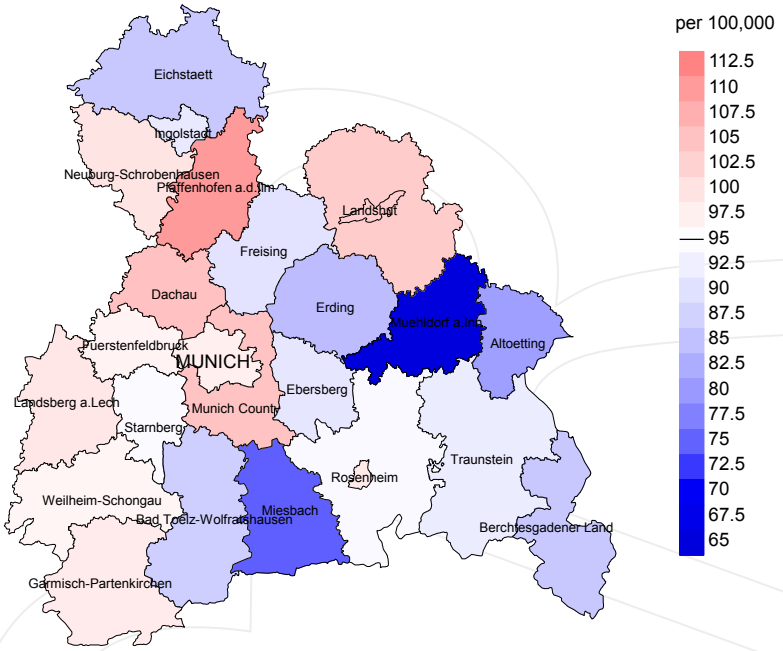


Figure 8. Cumulative follow-up years depending on time since diagnosis

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) 2007 - 2013: Males



Average incidence (world standard population) 2007 - 2013: Females

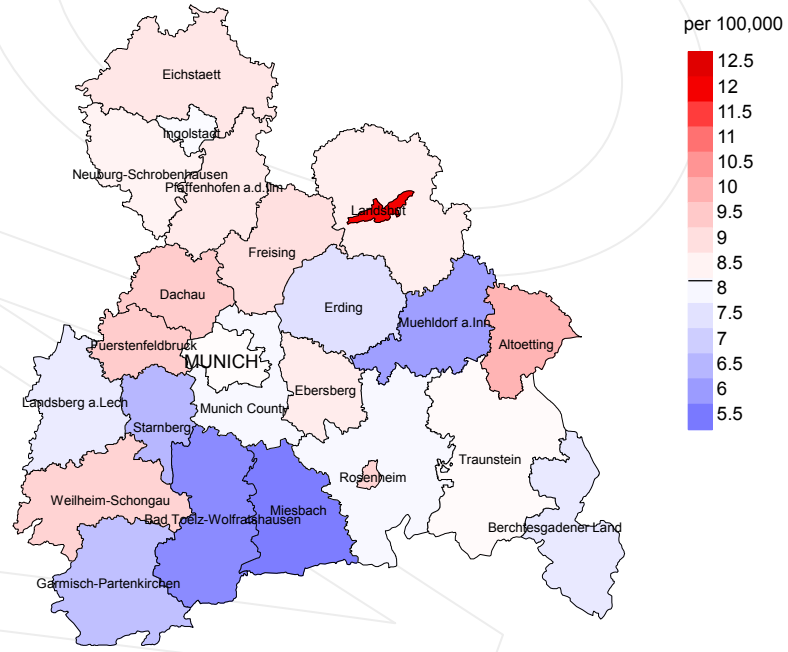
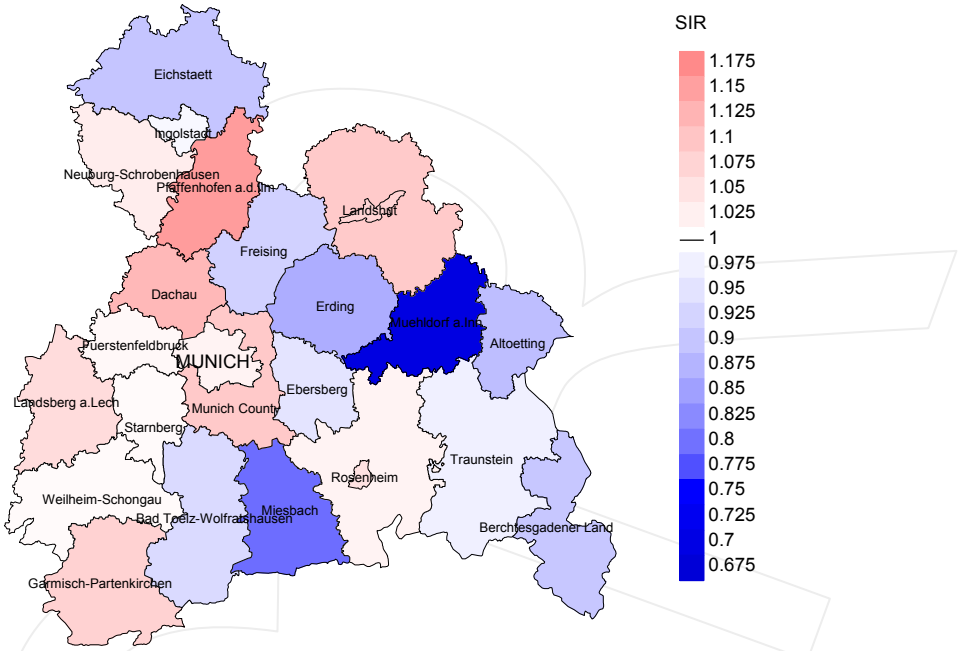


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2013. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 95.1/100,000 WS N=29,073, females 8.2/100,000 WS N=3,309).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,928 female residents (averaged) in the period from 2007 to 2013 a total of 98 women were identified with newly diagnosed urologic cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 6.3 and 12.0/100,000.

Standardized incidence ratio (SIR) 2007 - 2013: Males



Standardized incidence ratio (SIR) 2007 - 2013: Females

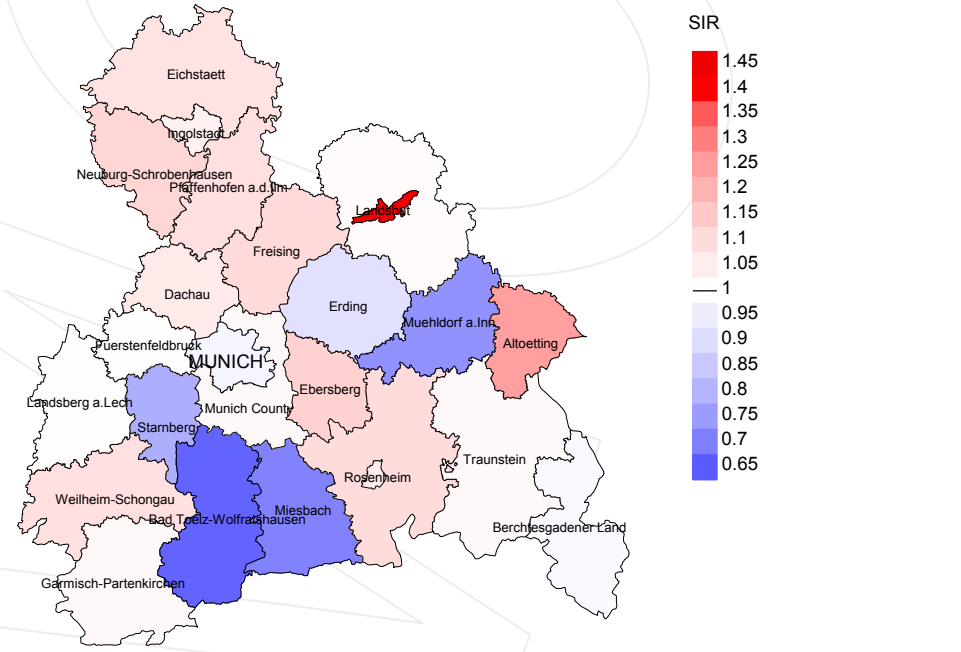


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2013. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=29,073, females N=3,309).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,642 female residents (averaged) in the period from 2007 to 2013 a total of 98 women were identified with newly diagnosed urologic cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.13. Though, the value of this parameter may vary with an underlying probability of 99% between 0.86 and 1.46, 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 4.64 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	2465	98.1	8.4	1567	63.6	94.8
1999	2373	98.2	6.8	1425	60.1	95.6
2000	2532	97.8	8.2	1439	56.8	95.4
2001	2629	97.6	6.7	1379	52.5	95.8
2002	4934	97.3	10.0	2640	53.5	97.0
2003	4838	96.9	7.8	2360	48.8	97.6
2004	4769	96.8	7.8	2120	44.5	97.4
2005	4716	95.4	6.4	1924	40.8	97.0
2006	4655	91.5	6.1	1889	40.6	98.1
2007	5386	77.8	6.8	1984	36.8	97.5
2008	5053	61.1	6.6	1800	35.6	98.3
2009	4795	60.7	6.2	1611	33.6	98.3
2010	4697	59.6	6.7	1439	30.6	97.7
2011	4857	58.6	6.1	1279	26.3	96.5
2012	4902	60.0	5.6	977	19.9	94.4
2013	3455	98.5	7.6	571	16.5	91.4
1998-2013	67056	81.8	7.0	26404	39.4	96.8

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 4.64 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	2465	1112	93.7	335	13.6
1999	2373	1054	94.1	287	12.1
2000	2532	1060	95.1	292	11.5
2001	2629	1119	93.7	281	10.7
2002	4934	1662	95.9	681	13.8
2003	4838	1802	97.1	575	11.9
2004	4769	1783	96.9	530	11.1
2005	4716	1905	96.5	466	9.9
2006	4655	2004	97.0	475	10.2
2007	5386	2272	97.4	583	10.8
2008	5053	2398	98.8	553	10.9
2009	4795	2478	98.6	563	11.7
2010	4697	2629	98.5	557	11.9
2011	4857	2687	98.6	554	11.4
2012	4902	2793	98.6	543	11.1
2013	3455	2719	98.7	427	12.4
1998-2013	67056	31477	97.4	7702	11.5

Table 10c

Annual cohorts of deaths, proportion of cancer-related and non-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 4.64 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	1112	59.7	40.3	80.8
1999	1054	63.8	36.2	79.5
2000	1060	62.9	37.1	80.2
2001	1119	60.2	39.8	79.4
2002	1662	65.0	35.0	81.2
2003	1802	66.4	33.6	79.4
2004	1783	63.8	36.2	78.4
2005	1905	65.2	34.8	77.1
2006	2004	65.0	35.0	77.4
2007	2272	66.8	33.2	77.2
2008	2398	63.7	36.3	74.5
2009	2478	62.5	37.5	74.4
2010	2629	63.0	37.0	74.7
2011	2687	61.8	38.2	73.6
2012	2793	60.5	39.5	71.8
2013	2719	57.7	42.3	69.6
1998-2013	31477	62.9	37.1	75.9

Table 11a

Medians 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 (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	947	79.1	77.3	82.2	78.9
1999	897	78.5	76.5	82.8	77.9
2000	899	79.7	78.0	82.3	79.6
2001	955	78.9	77.0	81.7	78.4
2002	1403	78.6	76.9	80.9	78.1
2003	1538	78.0	76.1	81.8	77.0
2004	1498	79.0	76.9	82.3	78.0
2005	1634	79.1	77.3	82.7	78.1
2006	1705	78.5	76.9	81.1	77.9
2007	1949	78.9	77.4	81.3	78.2
2008	2092	79.2	77.2	82.2	77.9
2009	2146	79.5	76.9	83.0	78.1
2010	2254	79.6	77.8	82.4	78.7
2011	2356	80.0	77.5	83.1	78.7
2012	2417	80.2	78.1	83.1	79.0
2013	2392	80.9	78.4	83.4	79.6
1998-2013	27082	79.4	77.3	82.4	78.3

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

Medians 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 (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	165	81.8	79.4	82.7	81.8
1999	157	78.9	78.5	80.0	79.2
2000	161	78.7	78.6	80.4	78.9
2001	164	80.7	79.0	87.3	80.3
2002	259	79.8	78.5	83.4	79.4
2003	264	80.2	79.3	80.9	80.0
2004	285	81.2	80.0	83.6	80.8
2005	271	81.3	79.1	83.4	80.4
2006	299	81.1	79.7	84.0	80.0
2007	323	80.8	79.7	84.0	80.6
2008	306	80.8	79.0	85.6	80.0
2009	332	80.9	78.7	84.3	79.6
2010	375	82.2	80.5	85.7	81.3
2011	331	82.2	79.5	87.7	80.5
2012	376	81.4	78.4	85.5	79.6
2013	327	80.9	78.1	85.2	78.9
1998-2013	4395	80.9	79.0	84.5	80.1

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	559	50.5	0.26	28.0	0.23	47.3	0.27	70.4	0.30
1999	556	49.7	0.26	27.3	0.24	45.7	0.27	67.5	0.31
2000	549	48.2	0.24	25.8	0.22	44.0	0.25	65.3	0.29
2001	562	48.5	0.24	25.9	0.22	43.9	0.25	64.2	0.28
2002	896	48.1	0.20	24.3	0.18	40.8	0.21	59.3	0.23
2003	1008	53.8	0.23	26.5	0.21	44.2	0.23	64.8	0.27
2004	939	49.9	0.22	23.7	0.19	39.7	0.22	58.8	0.25
2005	1043	55.1	0.25	25.1	0.21	42.3	0.24	63.6	0.28
2006	1097	57.3	0.27	26.0	0.23	43.6	0.26	63.7	0.30
2007	1291	58.3	0.27	25.8	0.22	43.5	0.26	63.7	0.30
2008	1306	58.7	0.29	24.9	0.24	41.8	0.28	62.1	0.32
2009	1312	58.8	0.31	24.8	0.26	41.0	0.29	59.5	0.33
2010	1403	62.2	0.34	25.2	0.27	42.2	0.31	62.0	0.36
2011	1449	63.4	0.34	25.2	0.27	42.2	0.31	61.4	0.35
2012	1451	63.5	0.33	24.4	0.26	41.6	0.30	61.6	0.35
2013	1374	60.1	0.46	23.5	0.35	39.7	0.41	58.4	0.48
1998-2013	16795	56.5	0.28	25.1	0.24	42.3	0.27	62.1	0.31

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	106	9.0	0.40	3.0	0.29	4.9	0.33	7.1	0.37
1999	116	9.8	0.49	3.5	0.36	5.6	0.41	7.9	0.46
2000	119	9.9	0.50	3.4	0.41	5.5	0.44	7.9	0.48
2001	112	9.2	0.41	3.1	0.32	5.0	0.35	7.3	0.39
2002	186	9.5	0.41	3.3	0.34	5.3	0.36	7.3	0.39
2003	189	9.6	0.45	3.2	0.37	5.2	0.40	7.3	0.42
2004	202	10.2	0.47	3.2	0.36	5.2	0.39	7.4	0.43
2005	203	10.2	0.46	3.3	0.37	5.3	0.39	7.5	0.43
2006	207	10.3	0.45	3.4	0.34	5.4	0.38	7.6	0.42
2007	228	9.9	0.46	3.0	0.34	5.0	0.39	7.4	0.44
2008	222	9.6	0.45	3.1	0.34	5.0	0.37	7.0	0.41
2009	240	10.3	0.48	3.4	0.39	5.4	0.42	7.6	0.45
2010	253	10.8	0.50	3.2	0.41	5.3	0.44	7.7	0.48
2011	212	9.0	0.45	2.9	0.33	4.6	0.38	6.5	0.42
2012	242	10.3	0.54	3.2	0.45	5.2	0.48	7.5	0.51
2013	199	8.4	0.51	2.7	0.39	4.3	0.43	6.0	0.47
1998-2013	3036	9.8	0.47	3.2	0.36	5.1	0.40	7.2	0.43

Table 13

Age distribution of age at death (cancer-related) for period 1998-2013
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.0	0.0	1	0.0	0.0			0.0
5-9	6	0.0	0.0	3	0.0	0.0	3	0.1	0.1
10-14	1	0.0	0.0			0.0	1	0.0	0.1
15-19	1	0.0	0.0	1	0.0	0.0			0.1
20-24	13	0.1	0.1	12	0.1	0.1	1	0.0	0.2
25-29	11	0.1	0.2	9	0.0	0.1	2	0.1	0.2
30-34	12	0.1	0.2	11	0.1	0.2	1	0.0	0.3
35-39	36	0.2	0.4	30	0.2	0.4	6	0.2	0.4
40-44	69	0.3	0.7	53	0.3	0.7	16	0.5	0.9
45-49	150	0.7	1.4	122	0.7	1.3	28	0.9	1.8
50-54	334	1.6	3.0	266	1.5	2.8	68	2.1	4.0
55-59	692	3.2	6.2	588	3.2	6.0	104	3.3	7.2
60-64	1342	6.3	12.5	1165	6.4	12.4	177	5.6	12.8
65-69	2388	11.1	23.6	2083	11.4	23.8	305	9.6	22.4
70-74	3572	16.7	40.3	3123	17.1	40.9	449	14.1	36.5
75-79	4182	19.5	59.8	3623	19.9	60.8	559	17.6	54.1
80-84	4219	19.7	79.5	3561	19.5	80.3	658	20.7	74.7
85+	4395	20.5	100.0	3591	19.7	100.0	804	25.3	100.0
All ages	21424	100.0		18242	100.0		3182	100.0	

Included in the statistics are 28.7% multiple primaries in males and 36.1% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2013
(**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		0.1	0.02	0.0		3.0	
5- 9	3	3	0.2	0.27	0.2	0.30	7.9	7.5
10-14		1	0.0		0.1	0.50		3.2
15-19	1		0.1	0.01	0.0		2.2	
20-24	12	1	0.7	0.05	0.1	0.14	13.3	2.0
25-29	9	2	0.4	0.02	0.1	0.25	8.3	1.7
30-34	11	1	0.5	0.02	0.0	0.03	5.9	0.4
35-39	30	6	1.2	0.04	0.3	0.09	7.5	1.2
40-44	53	16	2.0	0.07	0.6	0.20	6.2	1.4
45-49	122	28	5.2	0.10	1.2	0.20	6.8	1.4
50-54	266	68	13.2	0.12	3.3	0.28	8.1	2.2
55-59	588	104	32.1	0.13	5.4	0.25	9.9	2.2
60-64	1165	177	65.7	0.14	9.4	0.30	13.1	2.7
65-69	2083	305	132.0	0.17	17.7	0.36	17.4	3.7
70-74	3123	449	243.8	0.27	29.6	0.45	23.0	4.5
75-79	3623	559	438.4	0.44	47.1	0.51	27.5	5.2
80-84	3561	658	711.7	0.70	70.5	0.67	32.8	5.9
85+	3591	804	1053.0	0.88	90.0	0.75	40.4	5.9
All ages	18242	3182					22.8	4.4
Mortality								
Raw			61.4	0.30	10.2	0.48		
WS			27.3	0.25	3.3	0.38		
ES			45.9	0.29	5.3	0.41		
BRD-S			67.5	0.33	7.6	0.45		
PYLL-70								
per 100,000			122.5		23.6			
ES			106.6		20.4			
AYLL-70			7.6		8.8			

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

Table 15a

Multiple primaries in deaths in period 1998-2013
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C15	Oesophagus	146	1.7	24	16.4	10	6.8	112	76.7
C16	Stomach	377	4.3	92	24.4	31	8.2	254	67.4
C18	Colon	872	10.1	324	37.2	79	9.1	469	53.8
C19-C20	Rectum	478	5.5	182	38.1	50	10.5	246	51.5
C22	Liver	209	2.4	20	9.6	15	7.2	174	83.3
C23-C24	Bile	91	1.0	11	12.1	7	7.7	73	80.2
C25	Pancreas	396	4.6	25	6.3	24	6.1	347	87.6
C32	Larynx	107	1.2	59	55.1	6	5.6	42	39.3
C33-C34	Lung	1240	14.3	150	12.1	87	7.0	1003	80.9
C43	Malign. melanoma	336	3.9	165	49.1	13	3.9	158	47.0
C44	Skin others	443	5.1	137	30.9	24	5.4	282	63.7
C61	Prostate	769	8.9			139	18.1	630	81.9
C64	Kidney	283	3.3			59	20.8	224	79.2
C65	Renal pelvis	149	1.7			20	13.4	129	86.6
C66	Ureter	114	1.3			24	21.1	90	78.9
C67	Bladder	834	9.6			210	25.2	624	74.8
C70-C72	CNS cancer	192	2.2	34	17.7	11	5.7	147	76.6
C76-C79	CUP	190	2.2	33	17.4	20	10.5	137	72.1
C82-C85	NHL	342	3.9	106	31.0	47	13.7	189	55.3
C90	Mult. myeloma	153	1.8	31	20.3	13	8.5	109	71.2
C91-C96	Leukaemia	265	3.1	24	9.1	19	7.2	222	83.8
Other primaries		690	8.0	211	30.6	51	7.4	428	62.0
All mult. primaries		8676	100.0	1628	18.8	959	11.1	6089	70.2

Multiple primaries with number of cases 1 to 76 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 1998-2013
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	39	2.7	12	30.8	8	20.5	19	48.7
C18	Colon	109	7.7	47	43.1	13	11.9	49	45.0
C19-C20	Rectum	46	3.2	21	45.7	6	13.0	19	41.3
C22	Liver	12	0.8	2	16.7	4	33.3	6	50.0
C23-C24	Bile	16	1.1			3	18.8	13	81.3
C25	Pancreas	56	3.9	2	3.6	6	10.7	48	85.7
C33-C34	Lung	113	8.0	13	11.5	16	14.2	84	74.3
C43	Malign. melanoma	30	2.1	17	56.7	1	3.3	12	40.0
C44	Skin others	34	2.4	17	50.0	2	5.9	15	44.1
C50	Breast	267	18.8	162	60.7	17	6.4	88	33.0
C51	Vulva	13	0.9	9	69.2	1	7.7	3	23.1
C53	Cervix uteri	72	5.1	55	76.4	7	9.7	10	13.9
C54	Corpus uteri	67	4.7	46	68.7	10	14.9	11	16.4
C56	Ovary	51	3.6	20	39.2	8	15.7	23	45.1
C64	Kidney	60	4.2			12	20.0	48	80.0
C65	Renal pelvis	41	2.9			8	19.5	33	80.5
C66	Ureter	31	2.2			13	41.9	18	58.1
C67	Bladder	133	9.4			17	12.8	116	87.2
C70-C72	CNS cancer	27	1.9	7	25.9	5	18.5	15	55.6
C73	Thyroid	24	1.7	13	54.2	1	4.2	10	41.7
C76-C79	CUP	26	1.8	4	15.4	1	3.8	21	80.8
C82-C85	NHL	36	2.5	13	36.1	8	22.2	15	41.7
C91-C96	Leukaemia	29	2.0	3	10.3	4	13.8	22	75.9
Other primaries		88	6.2	26	29.5	15	17.0	47	53.4
All mult. primaries		1420	100.0	489	34.4	186	13.1	745	52.5

Multiple primaries with number of cases 1 to 10 are pooled in category "Other primaries".

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

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2013
(**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	2	1	0.1	0.18	0.1	0.13	5.6	2.7
10-14		1	0.0		0.1	0.50		3.4
15-19	1		0.1	0.01	0.0		2.4	
20-24	12	1	0.7	0.05	0.1	0.14	14.3	2.1
25-29	7	2	0.3	0.02	0.1	0.25	7.1	1.8
30-34	11	1	0.5	0.02	0.0	0.04	6.1	0.5
35-39	29	6	1.2	0.04	0.3	0.10	7.8	1.3
40-44	46	11	1.8	0.07	0.4	0.16	5.8	1.1
45-49	107	22	4.5	0.10	1.0	0.18	6.5	1.3
50-54	203	52	10.1	0.11	2.5	0.26	7.1	2.0
55-59	469	82	25.6	0.11	4.3	0.25	9.2	2.0
60-64	941	118	53.1	0.12	6.3	0.26	12.6	2.2
65-69	1631	245	103.3	0.16	14.2	0.38	16.8	3.7
70-74	2360	313	184.2	0.25	20.6	0.42	22.1	4.0
75-79	2811	424	340.1	0.44	35.7	0.51	28.2	4.9
80-84	2731	495	545.8	0.72	53.1	0.71	33.7	5.6
85+	2826	630	828.7	0.90	70.5	0.75	42.0	5.7
All ages	14187	2404					22.2	4.1
Mortality								
Raw			47.7	0.28	7.7	0.47		
WS			21.3	0.23	2.5	0.36		
ES			35.7	0.27	4.0	0.40		
BRD-S			52.4	0.31	5.7	0.44		
PYLL-70								
per 100,000			99.4		17.8			
ES			86.3		15.3			
AYLL-70			7.7		8.7			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2013
(**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	2	1	0.1	0.18	0.1	0.13	5.7	2.8
10-14		1	0.0		0.1	0.50		3.7
15-19	1		0.1	0.01	0.0		2.4	
20-24	11	1	0.6	0.05	0.1	0.14	13.9	2.3
25-29	6	2	0.3	0.02	0.1	0.25	6.5	1.9
30-34	11		0.5	0.02	0.0		6.3	
35-39	26	4	1.0	0.04	0.2	0.07	7.3	0.9
40-44	40	7	1.5	0.06	0.3	0.12	5.4	0.8
45-49	94	18	4.0	0.09	0.8	0.16	6.1	1.2
50-54	152	46	7.5	0.09	2.2	0.25	5.8	2.0
55-59	376	70	20.5	0.10	3.6	0.23	8.1	2.0
60-64	708	92	39.9	0.11	4.9	0.24	10.8	2.0
65-69	1175	202	74.4	0.13	11.7	0.35	14.0	3.6
70-74	1620	239	126.5	0.20	15.7	0.36	18.2	3.6
75-79	1848	335	223.6	0.34	28.2	0.45	23.1	4.7
80-84	1858	393	371.3	0.55	42.1	0.62	29.1	5.3
85+	2096	526	614.6	0.71	58.9	0.65	38.9	5.6
All ages	10024	1937					18.6	3.9
Mortality								
Raw			33.7	0.22	6.2	0.42		
WS			15.2	0.19	2.0	0.32		
ES			25.4	0.21	3.2	0.36		
BRD-S			36.8	0.25	4.6	0.39		
PYLL-70								
per 100,000			78.5		14.5			
ES			68.4		12.6			
AYLL-70			8.1		8.7			

* See corresponding tables with multiple primaries.

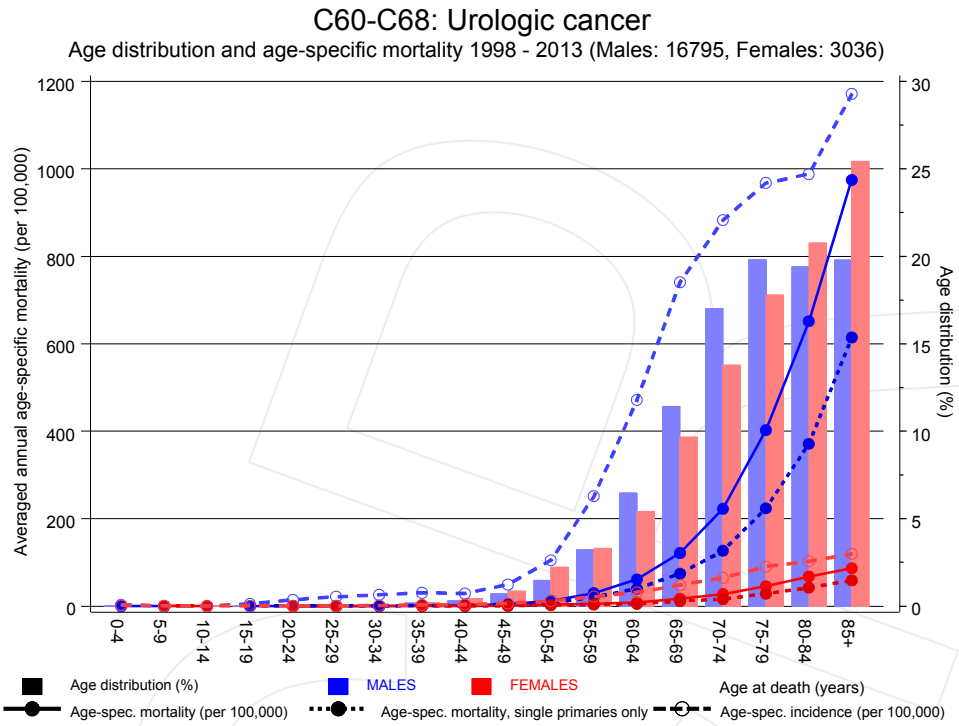
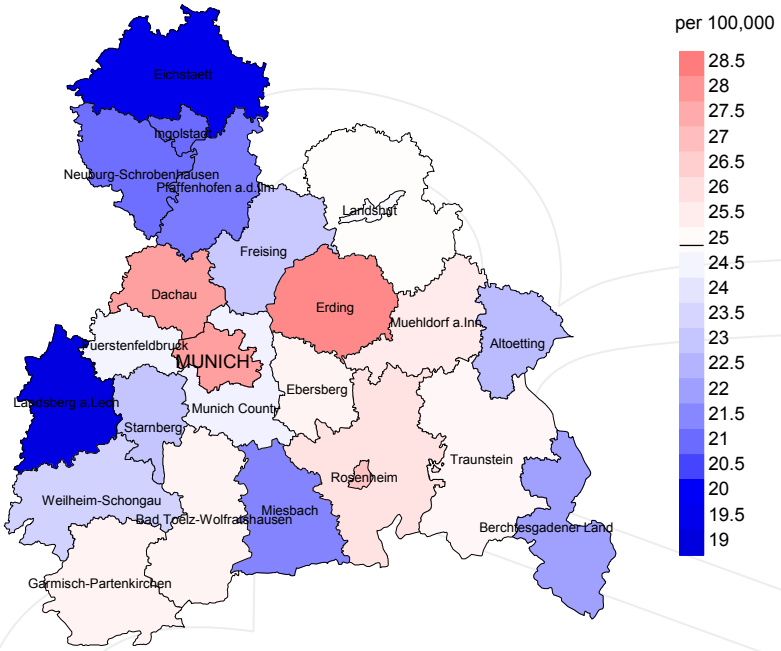


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2013: Males



Average mortality (world standard population) 2007 - 2013: Females

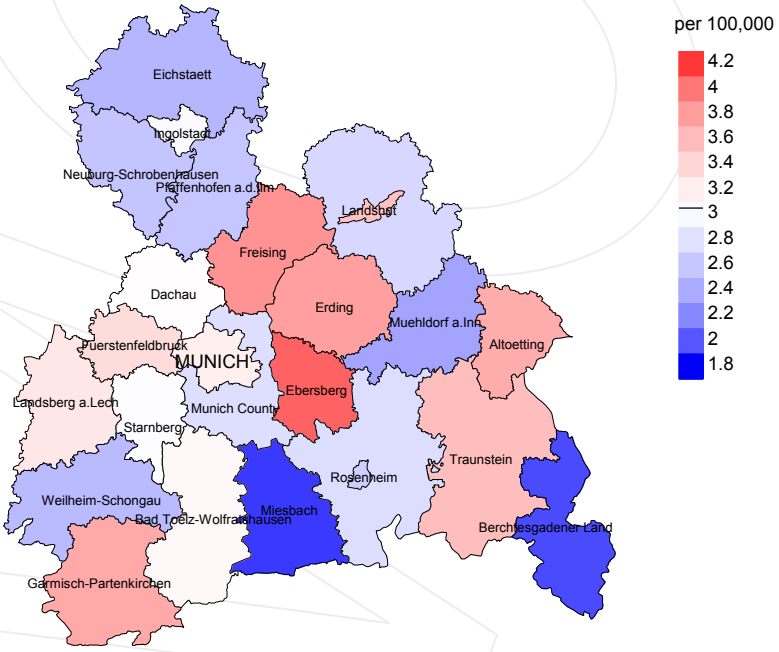
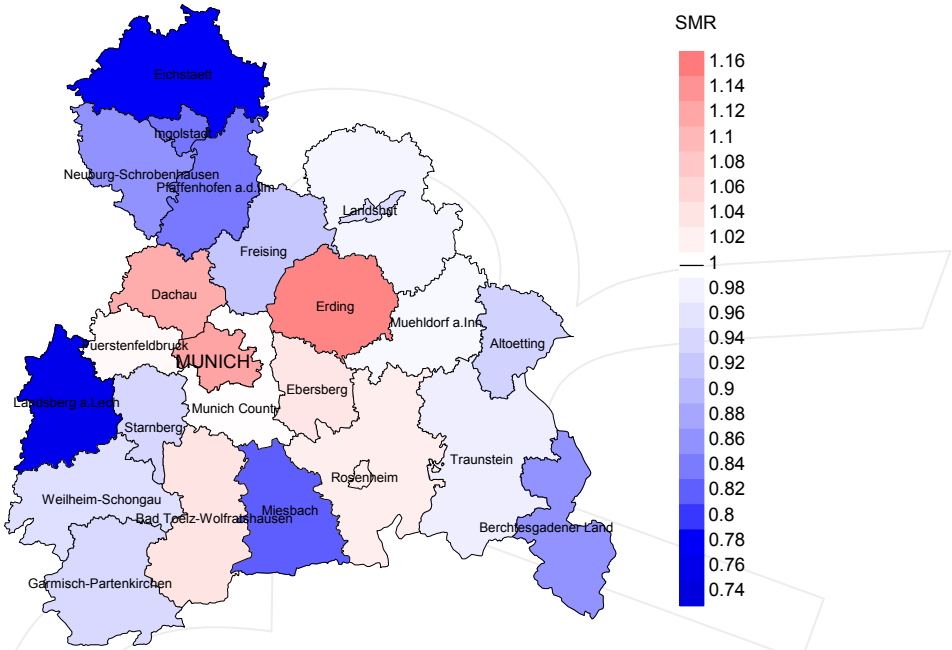


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2013. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 24.9/100,000 WS N=9,505, females 3.1/100,000 WS N=1,577).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,928 female residents (averaged) in the period from 2007 to 2013 a total of 57 women died from urologic cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 4.1/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.6 and 6.6/100,000.

Standardized mortality ratio (SMR) 2007 - 2013: Males



Standardized mortality ratio (SMR) 2007 - 2013: Females

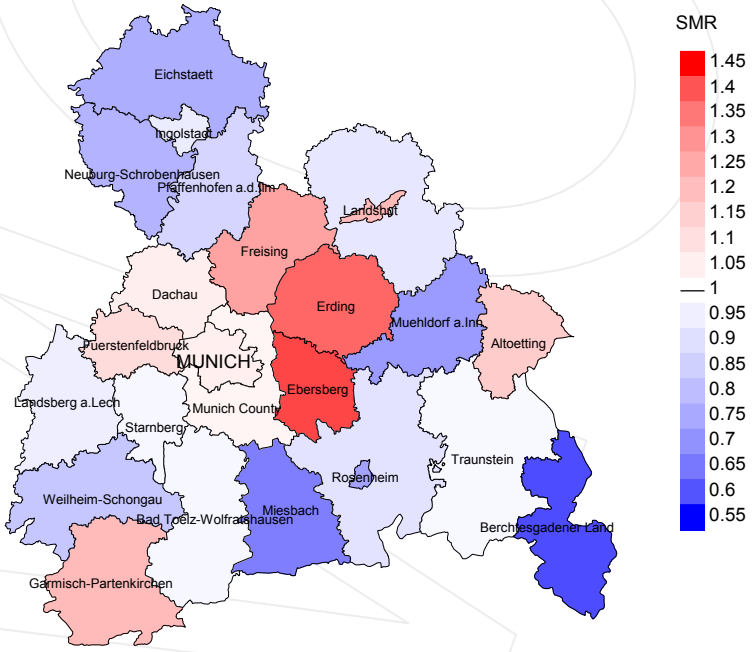


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2013. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=9,505, females N=1,577).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,642 female residents (averaged) in the period from 2007 to 2013 a total of 57 women died from urologic cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.41. Though, the value of this parameter may vary with an underlying probability of 99% between 0.98 and 1.97, 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 cancer-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

FRG	Federal Republic of Germany
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
MCR	Munich Cancer Registry (Tumorregister München)
SEER	Surveillance, Epidemiology, and End Results (USA)
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)
LCL	Lower confidence limit
MI-index	Ratio between mortality and incidence
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
SIR	Standardized incidence ratio
SMR	Standardized mortality ratio
UCL	Upper confidence limit
WS	World standard population

Recommended Citation

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