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

C60-C68: Urologic cancer

Year of diagnosis	1998-2012
Patients	59,494
Diseases	61,927
Creation date	03/20/2014
Export date	02/12/2014
Population	4.5 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 4.5 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	2460	205	8.3	27.4	61.8	98.0	
1999	2364	158	6.7	27.1	58.7	98.2	
2000	2523	204	8.1	26.0	55.2	97.9	
2001	2618	175	6.7	26.5	50.2	97.5	
2002	4904	478	9.7	27.2	51.5	97.2	#
2003	4800	372	7.8	26.8	46.7	96.7	#
2004	4744	365	7.7	26.7	42.3	96.7	#
2005	4680	295	6.3	25.6	38.8	95.2	#
2006	4615	281	6.1	26.2	38.6	91.4	#
2007	5321	358	6.7	25.0	34.7	76.4	# ##
2008	4970	323	6.5	26.1	33.1	59.9	
2009	4711	297	6.3	27.6	31.4	60.0	
2010	4573	311	6.8	25.6	27.4	59.1	
2011	4689	287	6.1	23.8	22.2	61.9	
2012	3955	269	6.8	24.1	16.5	97.5	###
1998-2012	61927	4378	7.1	26.0	38.6	83.6	

\# 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	2460	2192	268	89.1
1999	2364	2128	236	90.0
2000	2523	2286	237	90.6
2001	2618	2343	275	89.5
2002	4904	4445	459	90.6
2003	4800	4379	421	91.2
2004	4744	4310	434	90.9
2005	4680	4238	442	90.6
2006	4615	4157	458	90.1
2007	5321	4833	488	90.8
2008	4970	4471	499	90.0
2009	4711	4202	509	89.2
2010	4573	4075	498	89.1
2011	4689	4223	466	90.1
2012	3955	3558	397	90.0
1998-2012	61927	55840	6087	90.2

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	2192	268	197.8	22.8	121.1	10.3	180.5	15.1	239.0	19.2
1999	2128	236	190.1	19.9	114.2	9.5	169.3	13.7	219.3	17.1
2000	2286	237	200.7	19.7	119.4	8.3	177.2	12.5	232.1	16.4
2001	2343	275	202.2	22.6	119.1	9.6	176.5	14.5	228.7	18.8
2002	4445	459	238.6	23.4	133.7	9.9	200.0	14.7	259.9	19.1
2003	4379	421	233.6	21.4	130.5	8.8	192.5	13.1	247.5	17.1
2004	4310	434	229.1	22.0	126.0	9.0	184.3	13.5	235.8	17.6
2005	4238	442	223.7	22.2	120.5	9.3	176.7	13.7	225.6	17.8
2006	4157	458	217.1	22.8	115.3	10.1	168.8	14.5	216.3	18.3
2007	4833	488	218.2	21.1	117.1	8.7	169.8	12.7	214.4	16.7
2008	4471	499	200.9	21.5	103.3	9.1	151.7	13.3	194.1	17.2
2009	4202	509	188.3	21.9	97.3	8.8	141.3	13.0	178.8	17.1
2010	4075	498	180.8	21.3	92.7	7.7	134.7	11.9	170.1	15.8
2011	4223	466	184.8	19.7	92.9	8.5	135.3	12.1	172.1	15.2
2012	3558	397	155.7	16.8	78.1	6.5	114.2	9.8	145.7	13.0
1998-2012	55840	6087	203.4	21.2	109.3	8.8	160.1	13.0	204.6	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	2460	68.2	13.4	1.3	99.8	53.2	61.5	69.4	77.3	84.2
1999	2364	67.7	12.8	1.1	99.5	54.3	60.7	68.8	76.1	83.5
2000	2523	68.3	12.8	0.3	99.7	55.0	61.8	69.2	76.6	83.3
2001	2618	68.1	12.6	1.9	100	54.2	61.7	68.9	76.6	82.4
2002	4904	69.2	12.3	2.4	102	55.9	62.7	69.8	77.2	83.8
2003	4800	68.7	12.3	0.4	103	55.3	62.8	69.1	76.4	83.0
2004	4744	68.5	12.5	0.0	100	55.3	62.6	68.8	76.6	83.0
2005	4680	68.6	12.3	0.7	101	55.0	62.8	69.0	76.5	82.9
2006	4615	68.9	12.4	0.2	101	55.4	63.6	69.4	76.6	83.4
2007	5321	68.5	12.9	0.1	101	54.2	63.2	69.3	76.3	83.3
2008	4970	69.3	12.1	0.6	101	55.1	64.0	70.0	76.9	83.4
2009	4711	68.9	12.6	0.5	105	53.7	63.1	70.0	76.6	83.4
2010	4573	69.3	12.7	5.4	102	54.2	63.2	70.5	77.3	84.2
2011	4689	69.5	12.7	0.5	109	53.9	63.9	70.9	76.9	83.9
2012	3955	69.7	12.3	2.6	100	55.1	63.9	71.2	77.2	83.5
1998-2012	61927	68.8	12.6	0.0	109	54.7	62.9	69.7	76.7	83.4

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	2192	68.0	13.3	1.3	99.8	52.9	61.4	69.2	77.0	83.9
1999	2128	67.6	12.8	2.3	99.5	54.5	60.7	68.6	75.6	83.1
2000	2286	67.9	12.8	0.3	99.7	54.2	61.5	68.9	76.2	82.5
2001	2343	67.7	12.4	1.9	100	54.4	61.6	68.4	75.9	81.5
2002	4445	68.9	12.2	19.1	102	55.6	62.6	69.4	76.6	83.1
2003	4379	68.3	12.2	0.4	101	55.2	62.7	68.7	75.8	82.3
2004	4310	68.1	12.4	0.0	100	55.2	62.4	68.4	76.0	82.1
2005	4238	68.2	12.0	0.7	101	55.1	62.7	68.7	75.8	82.3
2006	4157	68.6	12.1	0.8	101	55.7	63.4	69.0	76.2	82.7
2007	4833	68.1	12.6	0.1	101	54.1	63.0	68.9	75.8	82.4
2008	4471	69.0	11.9	1.8	101	55.0	63.9	69.8	76.2	82.8
2009	4202	68.4	12.4	0.5	105	53.6	62.8	69.7	75.9	82.6
2010	4075	68.7	12.6	5.4	102	53.7	62.7	70.1	76.3	83.1
2011	4223	69.2	12.4	1.5	109	53.9	63.9	70.7	76.4	83.3
2012	3558	69.2	12.3	2.6	100	54.7	63.6	70.9	76.6	83.1
1998-2012	55840	68.5	12.4	0.0	109	54.6	62.7	69.4	76.1	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	70.4	13.7	2.8	99.7	55.0	62.5	72.2	79.1	86.2
1999	236	69.2	13.5	1.1	94.3	52.6	60.2	71.3	78.6	85.5
2000	237	72.3	11.9	37.2	94.5	58.7	63.4	73.9	80.9	87.4
2001	275	72.0	13.4	30.6	96.4	54.2	64.1	73.7	81.2	88.2
2002	459	72.7	12.8	2.4	99.5	57.6	65.3	74.1	81.9	87.7
2003	421	73.1	13.0	2.5	103	56.8	65.6	74.9	82.2	87.9
2004	434	72.8	13.1	18.5	99.0	56.5	64.9	74.7	82.2	88.3
2005	442	72.1	14.6	4.2	98.8	54.0	64.2	74.8	81.8	88.3
2006	458	71.3	15.0	0.2	96.7	52.5	64.6	74.0	81.8	87.5
2007	488	72.3	14.6	1.2	99.1	55.6	67.0	74.6	82.1	87.1
2008	499	71.8	13.6	0.6	97.0	55.8	64.6	73.7	81.9	86.8
2009	509	72.4	13.7	2.5	103	55.5	66.3	74.3	82.1	87.2
2010	498	74.6	12.9	5.4	100	56.0	68.3	75.9	84.3	89.6
2011	466	71.5	15.7	0.5	97.6	53.6	65.0	74.1	81.6	88.3
2012	397	73.5	11.9	9.7	96.4	58.0	67.2	75.0	81.6	87.2
1998-2012	6087	72.3	13.7	0.2	103	55.6	65.0	74.2	81.8	87.6

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	72	0.1	0.1	43	0.1	0.1	29	0.5	0.5
5-9	19	0.0	0.1	10	0.0	0.1	9	0.1	0.6
10-14	7	0.0	0.2	5	0.0	0.1	2	0.0	0.7
15-19	74	0.1	0.3	71	0.1	0.2	3	0.0	0.7
20-24	235	0.4	0.7	228	0.4	0.6	7	0.1	0.8
25-29	404	0.7	1.3	396	0.7	1.3	8	0.1	1.0
30-34	580	0.9	2.2	553	1.0	2.3	27	0.4	1.4
35-39	778	1.3	3.5	719	1.3	3.6	59	1.0	2.4
40-44	785	1.3	4.8	710	1.3	4.9	75	1.2	3.6
45-49	1200	1.9	6.7	1065	1.9	6.8	135	2.2	5.8
50-54	2217	3.6	10.3	2002	3.6	10.4	215	3.5	9.3
55-59	4773	7.7	18.0	4377	7.8	18.2	396	6.5	15.9
60-64	8539	13.8	31.8	7987	14.3	32.5	552	9.1	24.9
65-69	11984	19.4	51.1	11197	20.1	52.6	787	12.9	37.9
70-74	11460	18.5	69.6	10555	18.9	71.5	905	14.9	52.7
75-79	8480	13.7	83.3	7470	13.4	84.9	1010	16.6	69.3
80-84	5572	9.0	92.3	4678	8.4	93.2	894	14.7	84.0
85+	4748	7.7	100.0	3774	6.8	100.0	974	16.0	100.0
All ages	61927	100.0		55840	100.0		6087	100.0	

Included in the statistics are 27.9% multiple primaries in males and 35.5% 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=3571 %	Females DCO rate n=717 %	Males Prop.all cancers n=146755 %	Females Prop.all cancers n=142297 %
0- 4	41	28	3.0	2.1	2.4		13.4	12.4
5- 9	10	8	0.7	0.6			6.1	7.1
10-14	5	2	0.4	0.1			3.4	1.2
15-19	71	3	5.0	0.2			22.2	1.1
20-24	225	7	13.8	0.4			40.7	1.4
25-29	393	8	21.3	0.4			44.4	0.8
30-34	546	27	25.8	1.3	0.2		38.7	1.4
35-39	713	57	30.5	2.6	0.1		33.7	1.6
40-44	700	74	28.9	3.2	0.7		23.4	1.3
45-49	1055	133	49.0	6.3	0.6	0.8	21.4	1.7
50-54	1957	213	105.9	11.3	0.7	0.5	24.4	2.1
55-59	4300	393	253.0	22.1	0.6	2.0	31.8	3.1
60-64	7844	547	476.0	31.4	1.1	0.9	38.3	3.4
65-69	10963	770	747.2	48.0	1.7	3.5	42.6	4.3
70-74	10302	888	889.1	64.4	2.5	5.5	42.0	5.3
75-79	7292	992	967.8	90.7	7.1	7.5	38.6	6.1
80-84	4536	876	998.9	101.4	17.6	18.0	36.1	5.9
85+	3698	965	1192.4	117.8	45.4	40.8	40.3	6.0
All ages	54651	5991			6.5	12.0	37.2	4.2
Incidence								
Raw			199.1	20.9				
WS			107.1	8.7				
ES			156.7	12.8				
BRD-S			200.1	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 1998-2012
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	27	23.5	1.1	0.8	1.7		0.2	3.7
C07-C08	Salivary gland	15	7.1	2.1	1.2	3.5	#	0.5	20.0
C09-C10	Oropharynx	36	28.5	1.3	0.9	1.7		0.4	
C12-C13	Hypopharynx	20	16.2	1.2	0.8	1.9		0.2	5.0
C15	Oesophagus	91	53.8	1.7	1.4	2.1	#	2.2	11.0
C16	Stomach	211	140.9	1.5	1.3	1.7	#	4.1	8.1
C17	Small intestine	46	14.9	3.1	2.3	4.1	#	1.8	2.2
C18	Colon	560	332.9	1.7	1.5	1.8	#	13.4	4.3
C19-C20	Rectum	286	179.8	1.6	1.4	1.8	#	6.3	4.2
C21	Anus/canal	13	6.1	2.1	1.1	3.7	#	0.4	7.7
C22	Liver	114	88.9	1.3	1.1	1.5	#	1.5	15.8
C23-C24	Bile	40	31.5	1.3	0.9	1.7		0.5	17.5
C25	Pancreas	232	115.2	2.0	1.8	2.3	#	6.9	25.4
C32	Larynx	52	31.2	1.7	1.2	2.2	#	1.2	5.8
C33-C34	Lung	632	381.6	1.7	1.5	1.8	#	14.7	10.3
C38,C45	Mesothelioma	34	21.6	1.6	1.1	2.2	#	0.7	8.8
C40-C41	Bone	10	2.3	4.3	2.1	8.0	#	0.5	
C43	Malign. melanoma	277	118.9	2.3	2.1	2.6	#	9.3	1.4
C46,C49	Soft tissue	28	16.6	1.7	1.1	2.4	#	0.7	
C48	Peritoneal	11	2.2	5.0	2.5	8.9	#	0.5	9.1
C50	Breast	12	8.2	1.5	0.8	2.6		0.2	8.3
C60	Penis	15	7.3	2.1	1.1	3.4	#	0.5	
C61	Prostate	724	987.1	0.7	0.7	0.8	#	-15.5	5.4
C62	Testis	62	6.7	9.3	7.1	11.9	#	3.3	1.6
C64	Kidney	354	111.0	3.2	2.9	3.5	#	14.3	6.5
C65	Renal pelvis	68	13.4	5.1	3.9	6.4	#	3.2	
C66	Ureter	46	7.5	6.1	4.5	8.1	#	2.3	
C67	Bladder	400	148.3	2.7	2.4	3.0	#	14.8	4.3
C68	Urethra	26	1.7	15.5	10.1	22.7	#	1.4	
C69	Eye melanoma	11	3.5	3.2	1.6	5.7	#	0.4	
C70-C72	CNS cancer	75	41.2	1.8	1.4	2.3	#	2.0	4.0
C73	Thyroid	41	18.2	2.3	1.6	3.1	#	1.3	
C76-C79	CUP	94	55.5	1.7	1.4	2.1	#	2.3	5.3
C81	Hodgkin lymphoma	10	6.0	1.7	0.8	3.0		0.2	
C82-C85	NHL	235	128.5	1.8	1.6	2.1	#	6.3	5.1
C90	Mult. myeloma	87	41.9	2.1	1.7	2.6	#	2.7	9.2
C91-C96	Leukaemia	109	53.1	2.1	1.7	2.5	#	3.3	34.9
Other primaries		47	30.6	1.5	1.1	2.0	#	1.0	23.4
Not observed		0	1.3	0.0	0.0	2.9		-0.1	
All mult. primaries		5151	3284.8	1.6	1.5	1.6	#	109.8	7.5

Patients	36749
Mean age at second malignancy (years)	72.8
Person-years	169892
Mean observation time (years)	4.6
Median observation time (years)	4.0

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 to 9 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 %
C03-C06	Oral cavity	2	1.0	1.9	0.2	7.0		0.7	
C15	Oesophagus	2	1.0	2.0	0.2	7.4		0.7	
C16	Stomach	14	7.5	1.9	1.0	3.1	#	4.5	7.1
C17	Small intestine	3	0.8	3.8	0.8	11.0		1.5	
C18	Colon	35	20.4	1.7	1.2	2.4	#	10.2	5.7
C19-C20	Rectum	20	8.6	2.3	1.4	3.6	#	8.0	10.0
C21	Anus/canal	2	0.9	2.1	0.3	7.7		0.7	
C22	Liver	2	2.2	0.9	0.1	3.3		-0.1	50.0
C23-C24	Bile	11	3.0	3.7	1.8	6.6	#	5.6	27.3
C25	Pancreas	24	8.7	2.8	1.8	4.1	#	10.7	29.2
C26	GI cancer	2	0.4	5.1	0.6	18.6		1.1	
C33-C34	Lung	51	12.4	4.1	3.1	5.4	#	26.9	13.7
C43	Malign. melanoma	5	5.9	0.8	0.3	2.0		-0.6	20.0
C46,C49	Soft tissue	2	1.0	2.0	0.2	7.2		0.7	
C48	Peritoneal	2	0.6	3.4	0.4	12.3		1.0	
C50	Breast	97	51.5	1.9	1.5	2.3	#	31.8	9.3
C51	Vulva	2	1.9	1.0	0.1	3.8		0.1	
C53	Cervix uteri	12	2.2	5.4	2.8	9.5	#	6.8	8.3
C54	Corpus uteri	18	10.0	1.8	1.1	2.8	#	5.6	11.1
C56	Ovary	10	7.7	1.3	0.6	2.4		1.6	20.0
C64	Kidney	61	4.8	12.8	9.8	16.4	#	39.3	16.4
C65	Renal pelvis	24	0.6	40.3	25.8	60.0	#	16.3	
C66	Ureter	18	0.3	61.5	36.4	97.2	#	12.4	
C67	Bladder	42	3.8	11.0	7.9	14.8	#	26.7	2.4
C68	Urethra	2	0.1	33.2	4.0	119.9	#	1.4	
C70-C72	CNS cancer	2	2.6	0.8	0.1	2.8		-0.4	100.0
C73	Thyroid	15	2.7	5.6	3.1	9.2	#	8.6	
C76-C79	CUP	7	3.6	2.0	0.8	4.0		2.4	14.3
C82-C85	NHL	17	7.4	2.3	1.3	3.7	#	6.7	11.8
C90	Mult. myeloma	3	2.4	1.2	0.3	3.6		0.4	
C91-C96	Leukaemia	9	3.1	2.9	1.3	5.6	#	4.1	22.2
Other primaries		6	3.1	1.9	0.7	4.2		2.0	
Not observed		0	2.0	0.0	0.0	1.9		-1.4	
All mult. primaries		522	184.2	2.8	2.6	3.1	#	235.8	10.7

Patients	3935
Mean age at second malignancy (years)	73.3
Person-years	14322
Mean observation time (years)	3.6
Median observation time (years)	2.4

The occurrence of second malignancy is statistically significant.

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

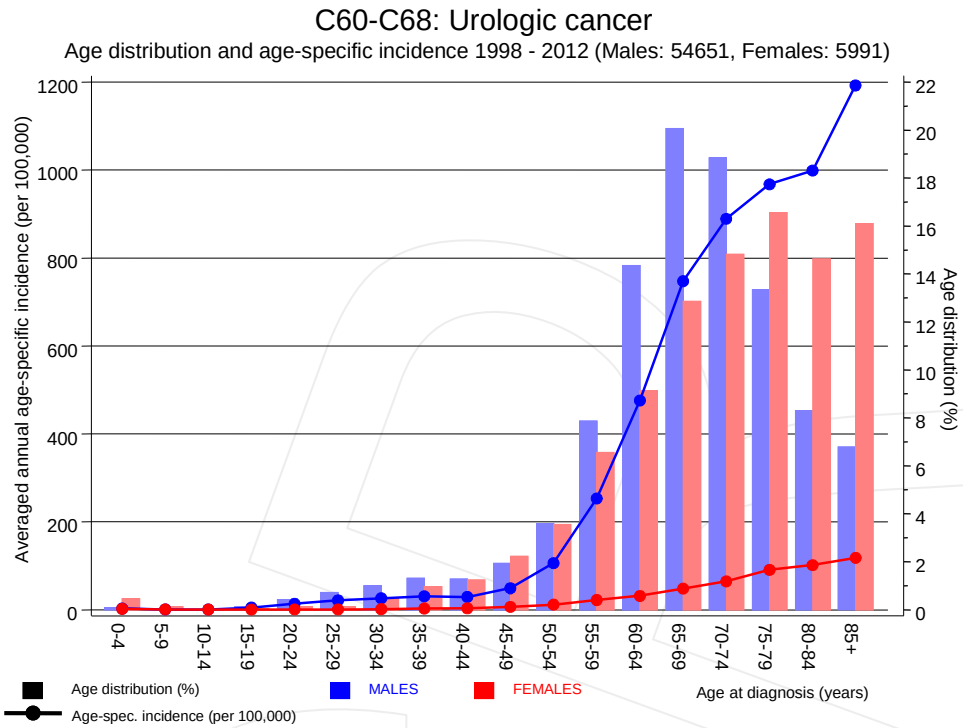


Figure 7. Age distribution and age-specific incidence

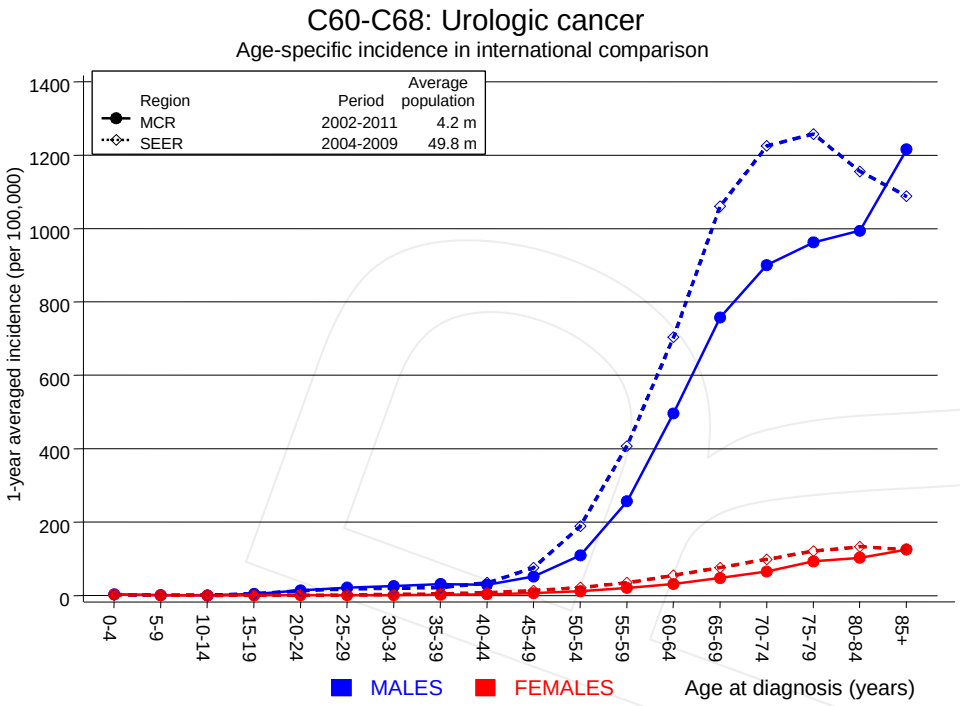


Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2012, based on the November 2011 submission. http://www.seer.cancer.gov.

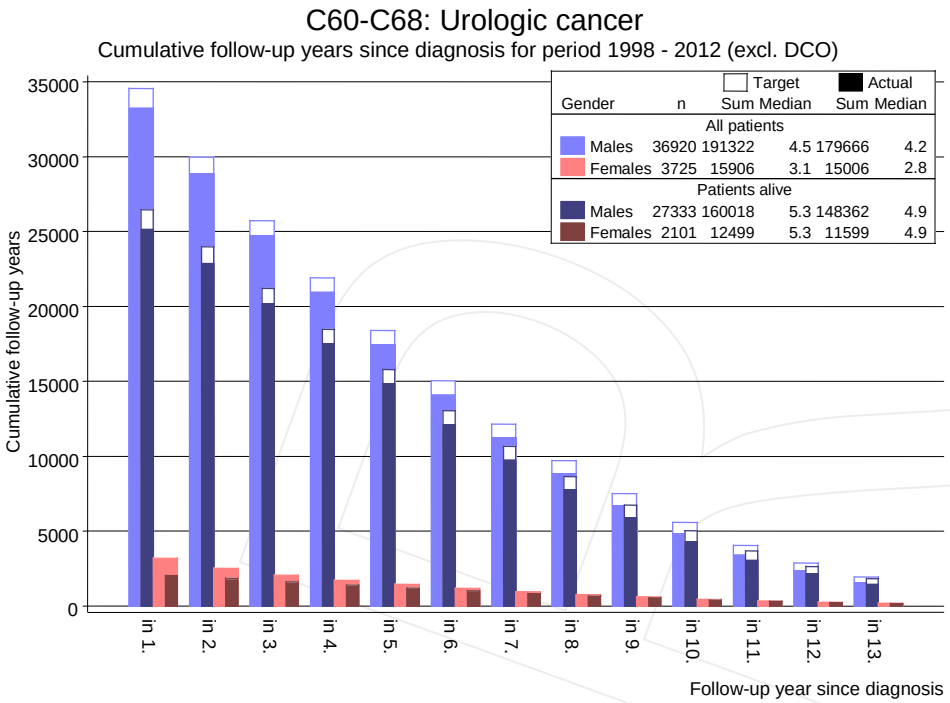
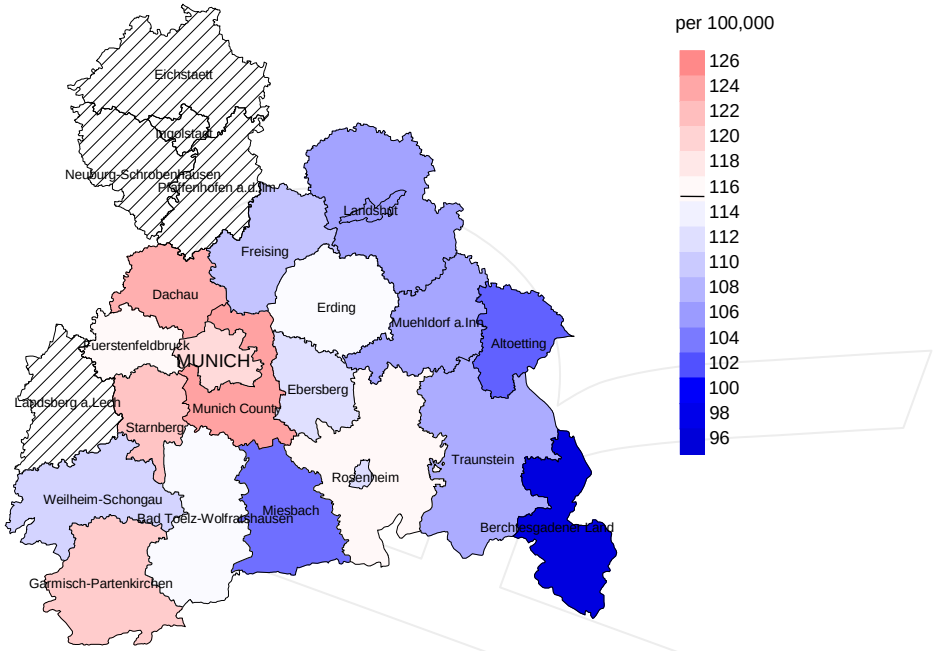


Figure 8. Cumulative follow-up years depending on time since diagnosis

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

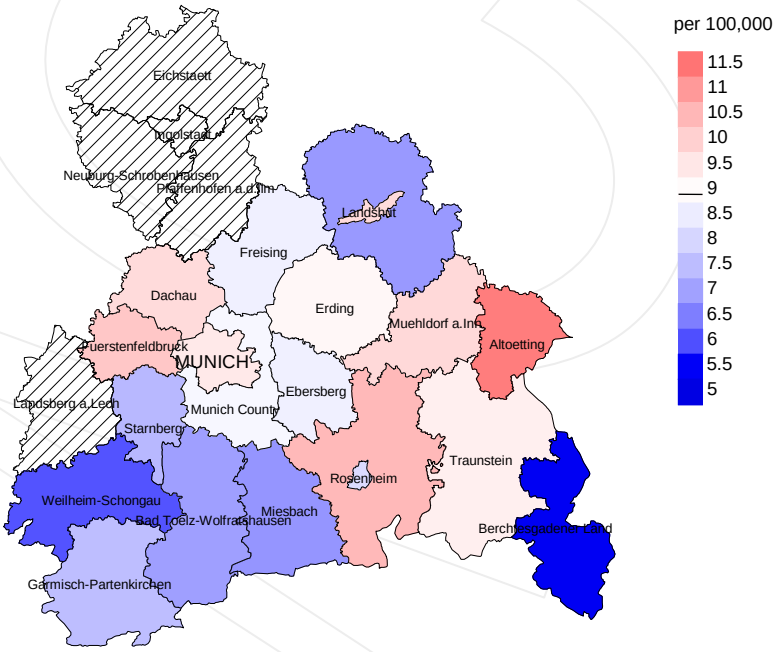
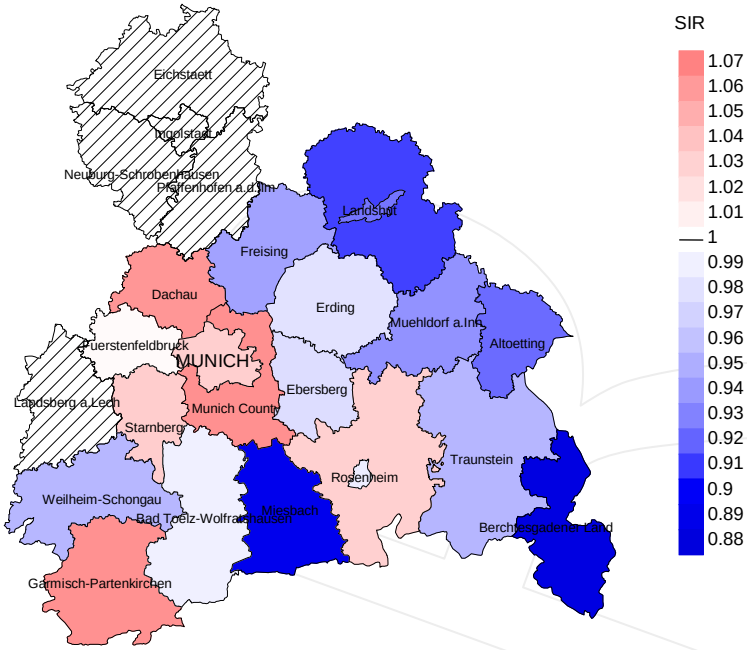


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 115.5/100,000 WS N=24,654, females 8.9/100,000 WS N=2,569). 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 69 women were identified with newly diagnosed urologic cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 5.7 and 13.3/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males



Standardized incidence ratio (SIR) 2003 - 2008: Females

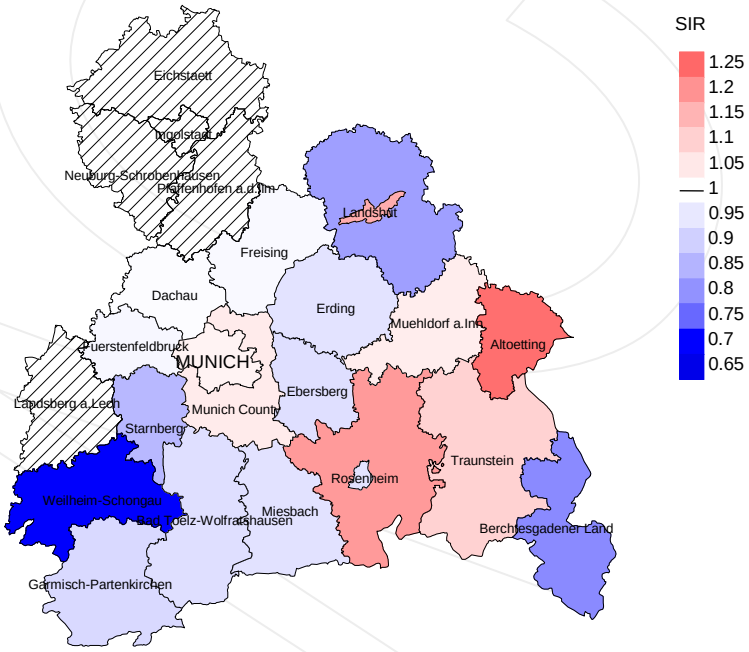


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=24,654, females N=2,569). 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 69 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 0.93. Though, the value of this parameter may vary with an underlying probability of 99% between 0.67 and 1.26, 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	2460	98.0	8.3	1521	61.8	95.3
1999	2364	98.2	6.7	1387	58.7	95.7
2000	2523	97.9	8.1	1392	55.2	95.5
2001	2618	97.5	6.7	1313	50.2	96.1
2002	4904	97.2	9.7	2526	51.5	97.2
2003	4800	96.7	7.8	2242	46.7	97.6
2004	4744	96.7	7.7	2005	42.3	98.3
2005	4680	95.2	6.3	1815	38.8	97.5
2006	4615	91.4	6.1	1783	38.6	98.4
2007	5321	76.4	6.7	1845	34.7	98.4
2008	4970	59.9	6.5	1643	33.1	99.0
2009	4711	60.0	6.3	1480	31.4	98.9
2010	4573	59.1	6.8	1255	27.4	98.8
2011	4689	61.9	6.1	1042	22.2	96.8
2012	3955	97.5	6.8	651	16.5	95.5
1998-2012	61927	83.6	7.1	23900	38.6	97.4

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	2460	1109	93.7	334	13.6
1999	2364	1046	94.2	283	12.0
2000	2523	1057	95.1	289	11.5
2001	2618	1115	93.7	279	10.7
2002	4904	1654	95.9	669	13.6
2003	4800	1795	97.1	570	11.9
2004	4744	1779	96.9	526	11.1
2005	4680	1900	96.5	460	9.8
2006	4615	1999	97.0	473	10.2
2007	5321	2268	97.4	579	10.9
2008	4970	2388	98.8	541	10.9
2009	4711	2472	98.6	562	11.9
2010	4573	2623	98.6	554	12.1
2011	4689	2670	99.0	540	11.5
2012	3955	2708	99.0	493	12.5
1998-2012	61927	28583	97.3	7152	11.5

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	1109	59.5	40.5	80.8
1999	1046	63.6	36.4	79.4
2000	1057	62.7	37.3	80.1
2001	1115	60.3	39.7	79.3
2002	1654	65.0	35.0	81.1
2003	1795	66.4	33.6	79.3
2004	1779	63.7	36.3	78.3
2005	1900	65.3	34.7	77.0
2006	1999	65.0	35.0	77.4
2007	2268	66.8	33.2	77.2
2008	2388	63.6	36.4	74.4
2009	2472	62.6	37.4	74.4
2010	2623	63.0	37.0	74.7
2011	2670	61.7	38.3	73.5
2012	2708	60.3	39.7	71.6
1998-2012	28583	63.4	36.6	76.4

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	945	77.7	75.9	80.2	77.3
1999	892	77.3	75.2	80.7	76.9
2000	898	77.9	76.2	80.6	77.6
2001	953	77.7	75.7	80.6	77.3
2002	1398	77.6	76.0	80.4	77.0
2003	1534	77.4	75.6	80.9	76.6
2004	1498	77.9	75.8	81.2	77.1
2005	1631	77.9	75.8	81.4	76.7
2006	1704	77.6	76.0	80.5	77.0
2007	1947	77.8	76.3	80.6	77.0
2008	2087	78.3	76.2	81.6	77.1
2009	2142	78.2	76.0	81.8	77.1
2010	2248	78.5	76.7	81.5	77.6
2011	2341	78.8	76.9	81.8	77.6
2012	2346	79.3	77.6	82.0	78.3
1998-2012	24564	78.1	76.3	81.2	77.3

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

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	164	79.9	78.3	82.7	79.8
1999	154	77.6	76.4	81.2	77.5
2000	159	77.3	76.6	79.3	77.5
2001	162	80.0	78.0	84.4	79.1
2002	256	77.9	76.5	81.7	77.5
2003	261	78.1	77.2	80.1	77.6
2004	281	79.9	78.4	83.3	79.5
2005	269	79.0	77.5	83.4	78.1
2006	295	79.2	77.6	82.9	78.3
2007	321	79.4	78.1	82.6	79.1
2008	301	78.8	76.9	83.6	77.8
2009	330	78.6	76.6	83.8	77.4
2010	375	80.3	78.3	84.5	79.5
2011	329	80.1	76.6	86.3	78.1
2012	362	79.5	76.9	83.9	78.0
1998-2012	4019	79.1	77.3	83.3	78.3

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	556	50.2	0.26	27.9	0.23	47.1	0.27	70.0	0.30
1999	551	49.2	0.26	27.0	0.24	45.3	0.27	66.9	0.31
2000	546	47.9	0.24	25.7	0.22	43.8	0.25	65.0	0.29
2001	561	48.4	0.24	25.9	0.22	43.8	0.25	64.0	0.28
2002	892	47.9	0.21	24.2	0.18	40.6	0.21	59.0	0.23
2003	1005	53.6	0.23	26.4	0.21	44.1	0.23	64.7	0.27
2004	939	49.9	0.22	23.7	0.19	39.7	0.22	58.8	0.26
2005	1041	55.0	0.25	25.1	0.21	42.2	0.24	63.4	0.29
2006	1097	57.3	0.27	26.0	0.23	43.6	0.26	63.7	0.30
2007	1290	58.2	0.27	25.8	0.23	43.5	0.26	63.7	0.30
2008	1302	58.5	0.30	24.9	0.25	41.7	0.28	61.9	0.33
2009	1311	58.7	0.32	24.8	0.26	41.0	0.30	59.5	0.34
2010	1400	62.1	0.35	25.1	0.28	42.1	0.32	61.8	0.37
2011	1438	62.9	0.35	25.0	0.28	41.9	0.32	60.9	0.36
2012	1407	61.6	0.41	23.7	0.31	40.4	0.36	59.7	0.42
1998-2012	15336	55.9	0.28	25.1	0.23	42.2	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	105	8.9	0.39	2.9	0.29	4.9	0.32	7.1	0.37
1999	114	9.6	0.49	3.4	0.36	5.5	0.40	7.7	0.46
2000	117	9.7	0.49	3.4	0.41	5.5	0.44	7.8	0.48
2001	111	9.1	0.41	3.0	0.32	5.0	0.35	7.3	0.39
2002	184	9.4	0.41	3.3	0.33	5.2	0.36	7.3	0.39
2003	187	9.5	0.45	3.2	0.37	5.1	0.40	7.2	0.42
2004	198	10.0	0.47	3.2	0.36	5.1	0.39	7.3	0.42
2005	202	10.2	0.47	3.3	0.37	5.3	0.40	7.4	0.43
2006	204	10.2	0.45	3.3	0.33	5.3	0.37	7.5	0.42
2007	226	9.8	0.47	3.0	0.35	5.0	0.39	7.3	0.44
2008	218	9.4	0.45	3.1	0.34	4.9	0.37	6.8	0.41
2009	239	10.3	0.48	3.4	0.39	5.4	0.42	7.5	0.45
2010	253	10.8	0.52	3.2	0.42	5.3	0.45	7.7	0.50
2011	210	8.9	0.46	2.9	0.35	4.6	0.39	6.5	0.44
2012	230	9.7	0.60	3.1	0.49	5.0	0.52	7.1	0.56
1998-2012	2798	9.7	0.47	3.2	0.36	5.1	0.40	7.2	0.44

Table 13

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	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	0	0.0	0.0			0.0			0.1
15-19	1	0.0	0.0	1	0.0	0.0			0.1
20-24	12	0.1	0.1	11	0.1	0.1	1	0.0	0.1
25-29	9	0.0	0.1	7	0.0	0.1	2	0.1	0.2
30-34	10	0.1	0.2	9	0.1	0.2	1	0.0	0.2
35-39	35	0.2	0.4	29	0.2	0.4	6	0.2	0.4
40-44	66	0.3	0.7	52	0.3	0.7	14	0.5	0.9
45-49	139	0.7	1.4	112	0.7	1.4	27	0.9	1.8
50-54	295	1.5	2.9	235	1.4	2.8	60	2.1	3.9
55-59	636	3.3	6.2	537	3.2	6.0	99	3.4	7.3
60-64	1236	6.3	12.5	1073	6.5	12.5	163	5.6	12.9
65-69	2242	11.5	24.0	1959	11.8	24.3	283	9.7	22.6
70-74	3211	16.4	40.4	2818	17.0	41.2	393	13.5	36.0
75-79	3832	19.6	60.1	3312	19.9	61.2	520	17.8	53.9
80-84	3833	19.6	79.7	3221	19.4	80.5	612	21.0	74.8
85+	3966	20.3	100.0	3231	19.5	100.0	735	25.2	100.0
All ages	19530	100.0		16611	100.0		2919	100.0	

Included in the statistics are 27.9% multiple primaries in males and 35.5% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2012
(**incl. multiple primaries**)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1		0.1	0.02	0.0		3.2	
5- 9	3	3	0.2	0.30	0.2	0.33	8.6	7.7
10-14			0.0		0.0			
15-19	1		0.1	0.01	0.0		2.4	
20-24	11	1	0.7	0.05	0.1	0.14	13.3	2.1
25-29	7	2	0.4	0.02	0.1	0.25	7.3	1.8
30-34	9	1	0.4	0.02	0.0	0.04	5.1	0.5
35-39	29	6	1.2	0.04	0.3	0.10	7.6	1.2
40-44	52	14	2.1	0.07	0.6	0.19	6.4	1.3
45-49	112	27	5.2	0.11	1.3	0.20	6.6	1.4
50-54	235	60	12.7	0.12	3.2	0.28	7.7	2.1
55-59	537	99	31.6	0.12	5.6	0.25	9.7	2.2
60-64	1073	163	65.1	0.13	9.4	0.30	12.9	2.7
65-69	1959	283	133.5	0.17	17.6	0.36	17.4	3.7
70-74	2818	393	243.2	0.27	28.5	0.43	22.8	4.4
75-79	3312	520	439.6	0.44	47.5	0.51	27.4	5.3
80-84	3221	612	709.3	0.69	70.9	0.68	32.5	5.9
85+	3231	735	1041.8	0.86	89.7	0.75	40.2	5.8
All ages	16611	2919					22.5	4.4
Mortality								
Raw			60.5	0.30	10.2	0.48		
WS			27.2	0.25	3.3	0.38		
ES			45.7	0.29	5.3	0.41		
BRD-S			67.3	0.33	7.6	0.45		
PYLL-70								
per 100,000			121.6		23.5			
ES			105.7		20.2			
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 ←%
C15	Oesophagus	133	1.7	23	17.3	10	7.5	100	75.2
C16	Stomach	349	4.5	86	24.6	30	8.6	233	66.8
C18	Colon	775	10.1	288	37.2	74	9.5	413	53.3
C19-C20	Rectum	442	5.7	169	38.2	47	10.6	226	51.1
C22	Liver	184	2.4	18	9.8	13	7.1	153	83.2
C23-C24	Bile	82	1.1	11	13.4	5	6.1	66	80.5
C25	Pancreas	356	4.6	23	6.5	24	6.7	309	86.8
C32	Larynx	94	1.2	51	54.3	6	6.4	37	39.4
C33-C34	Lung	1105	14.3	142	12.9	80	7.2	883	79.9
C43	Malign. melanoma	296	3.8	149	50.3	11	3.7	136	45.9
C44	Skin others	372	4.8	122	32.8	23	6.2	227	61.0
C61	Prostate	701	9.1			123	17.5	578	82.5
C64	Kidney	258	3.3			55	21.3	203	78.7
C65	Renal pelvis	135	1.8			19	14.1	116	85.9
C66	Ureter	93	1.2			19	20.4	74	79.6
C67	Bladder	728	9.5			186	25.5	542	74.5
C70-C72	CNS cancer	168	2.2	29	17.3	8	4.8	131	78.0
C76-C79	CUP	174	2.3	33	19.0	20	11.5	121	69.5
C82-C85	NHL	294	3.8	91	31.0	43	14.6	160	54.4
C90	Mult. myeloma	129	1.7	26	20.2	13	10.1	90	69.8
C91-C96	Leukaemia	238	3.1	22	9.2	19	8.0	197	82.8
Other primaries		596	7.7	187	31.4	53	8.9	356	59.7
All mult. primaries		7702	100.0	1470	19.1	881	11.4	5351	69.5

Multiple primaries with number of cases n<70 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	37	2.8	11	29.7	8	21.6	18	48.6
C18	Colon	102	7.8	45	44.1	11	10.8	46	45.1
C19-C20	Rectum	44	3.4	19	43.2	6	13.6	19	43.2
C22	Liver	12	0.9	2	16.7	4	33.3	6	50.0
C23-C24	Bile	16	1.2			3	18.8	13	81.3
C25	Pancreas	52	4.0	2	3.8	6	11.5	44	84.6
C33-C34	Lung	106	8.1	13	12.3	12	11.3	81	76.4
C43	Malign. melanoma	25	1.9	15	60.0	1	4.0	9	36.0
C44	Skin others	32	2.4	16	50.0	2	6.3	14	43.8
C50	Breast	249	19.0	150	60.2	17	6.8	82	32.9
C51	Vulva	13	1.0	9	69.2	1	7.7	3	23.1
C53	Cervix uteri	69	5.3	53	76.8	6	8.7	10	14.5
C54	Corpus uteri	61	4.7	41	67.2	10	16.4	10	16.4
C56	Ovary	42	3.2	16	38.1	7	16.7	19	45.2
C64	Kidney	53	4.0			12	22.6	41	77.4
C65	Renal pelvis	38	2.9			8	21.1	30	78.9
C66	Ureter	27	2.1			12	44.4	15	55.6
C67	Bladder	117	8.9			13	11.1	104	88.9
C68	Urinary org.	10	0.8	4	40.0	1	10.0	5	50.0
C70-C72	CNS cancer	23	1.8	6	26.1	5	21.7	12	52.2
C73	Thyroid	24	1.8	13	54.2	1	4.2	10	41.7
C76-C79	CUP	25	1.9	4	16.0	1	4.0	20	80.0
C82-C85	NHL	34	2.6	12	35.3	8	23.5	14	41.2
C91-C96	Leukaemia	28	2.1	3	10.7	4	14.3	21	75.0
Other primaries		72	5.5	25	34.7	12	16.7	35	48.6
All mult. primaries		1311	100.0	459	35.0	171	13.0	681	51.9

Multiple primaries with number of cases n<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 1998-2012
(**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	2	1	0.1	0.20	0.1	0.14	6.1	2.8
10-14			0.0		0.0			
15-19	1		0.1	0.01	0.0		2.6	
20-24	11	1	0.7	0.05	0.1	0.14	14.1	2.3
25-29	6	2	0.3	0.02	0.1	0.25	6.7	1.9
30-34	9	1	0.4	0.02	0.0	0.04	5.2	0.5
35-39	28	6	1.2	0.04	0.3	0.12	7.8	1.3
40-44	45	9	1.9	0.07	0.4	0.15	6.0	1.0
45-49	98	21	4.5	0.10	1.0	0.18	6.4	1.3
50-54	184	47	10.0	0.10	2.5	0.26	6.9	1.9
55-59	436	79	25.7	0.11	4.4	0.25	9.1	2.1
60-64	873	110	53.0	0.12	6.3	0.26	12.4	2.2
65-69	1529	227	104.2	0.16	14.2	0.37	16.8	3.6
70-74	2138	275	184.5	0.25	19.9	0.40	21.8	3.8
75-79	2585	393	343.1	0.44	35.9	0.51	28.0	5.0
80-84	2477	464	545.5	0.70	53.7	0.72	33.3	5.6
85+	2548	579	821.6	0.87	70.7	0.76	41.6	5.7
All ages	12970	2215					21.9	4.1
Mortality								
Raw			47.3	0.28	7.7	0.47		
WS			21.3	0.23	2.5	0.36		
ES			35.8	0.26	4.0	0.40		
BRD-S			52.5	0.31	5.7	0.44		
PYLL-70								
per 100,000			99.6		17.7			
ES			86.5		15.1			
AYLL-70			7.7		8.6			

* 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	2	1	0.1	0.20	0.1	0.14	6.3	2.9
10-14			0.0		0.0			
15-19	1		0.1	0.01	0.0		2.6	
20-24	10	1	0.6	0.05	0.1	0.14	13.7	2.5
25-29	5	2	0.3	0.01	0.1	0.25	6.0	2.1
30-34	9		0.4	0.02	0.0		5.4	
35-39	25	4	1.1	0.04	0.2	0.09	7.3	1.0
40-44	39	7	1.6	0.06	0.3	0.13	5.5	0.8
45-49	86	17	4.0	0.09	0.8	0.16	6.0	1.2
50-54	142	43	7.7	0.09	2.3	0.27	5.8	2.0
55-59	354	67	20.8	0.10	3.8	0.23	8.1	2.0
60-64	661	86	40.1	0.10	4.9	0.24	10.6	2.0
65-69	1108	187	75.5	0.13	11.7	0.35	14.1	3.5
70-74	1481	208	127.8	0.20	15.1	0.34	18.0	3.4
75-79	1726	307	229.1	0.34	28.1	0.44	23.1	4.6
80-84	1707	371	375.9	0.55	43.0	0.63	28.9	5.3
85+	1915	482	617.5	0.70	58.8	0.66	38.7	5.5
All ages	9271	1783					18.4	3.8
Mortality								
Raw			33.8	0.22	6.2	0.42		
WS			15.4	0.19	2.0	0.32		
ES			25.7	0.21	3.2	0.36		
BRD-S			37.3	0.25	4.6	0.39		
PYLL-70								
per 100,000			79.4		14.7			
ES			69.1		12.6			
AYLL-70			8.1		8.7			

* See corresponding tables with multiple primaries.

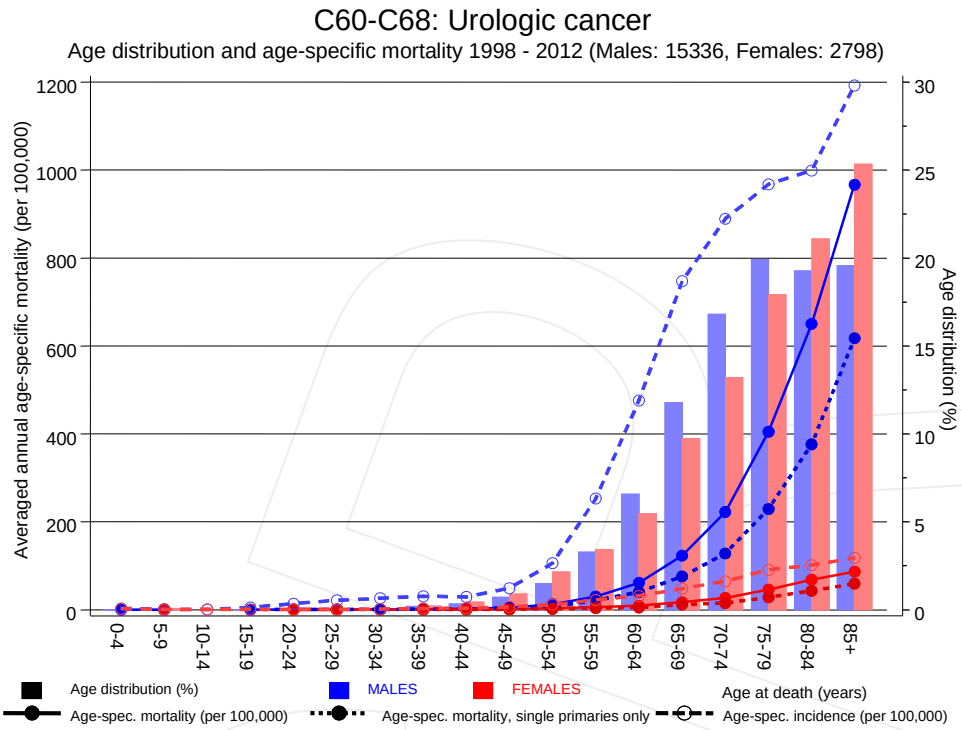
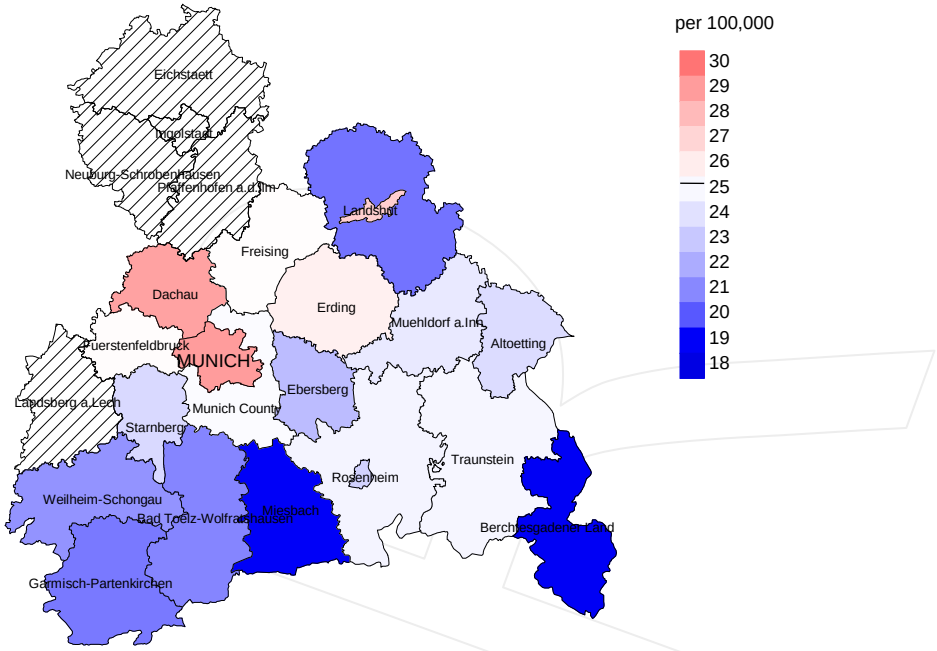


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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) 2003 - 2008: Males



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

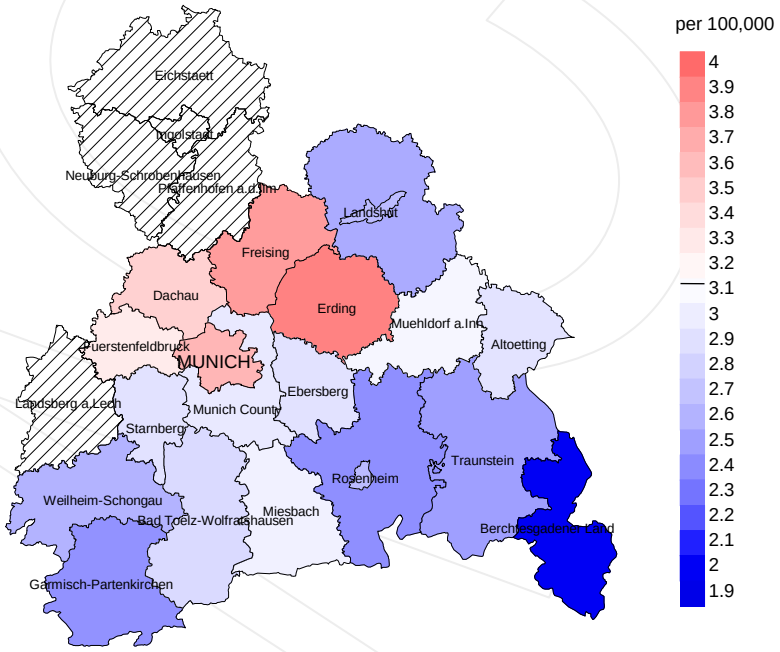
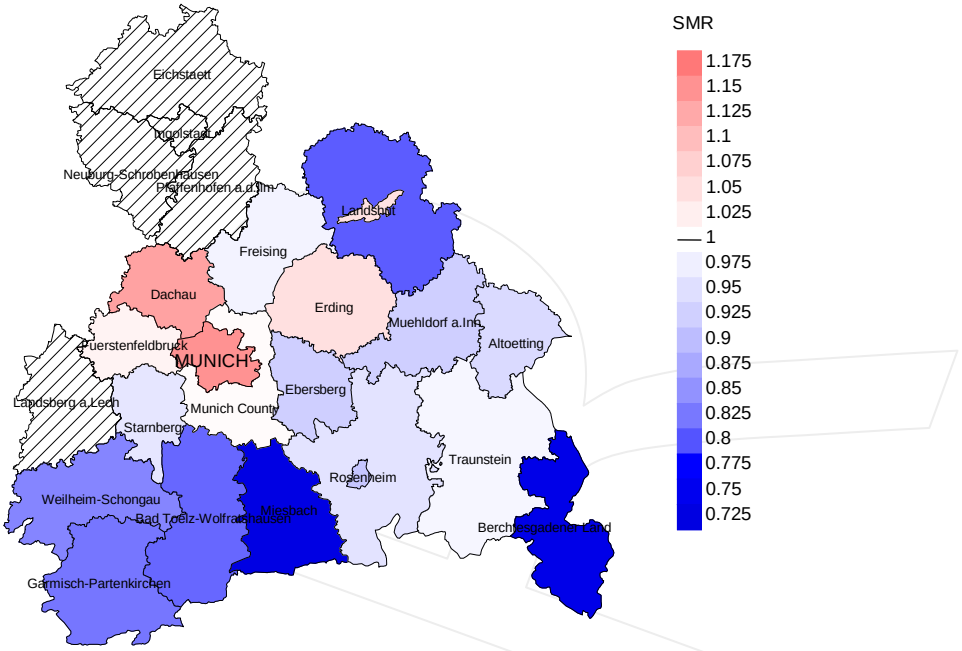


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 25.3/100,000 WS N=6,404, females 3.1/100,000 WS N=1,176). 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 30 women died from urologic cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.9/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.6 and 4.9/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males



Standardized mortality ratio (SMR) 2003 - 2008: Females

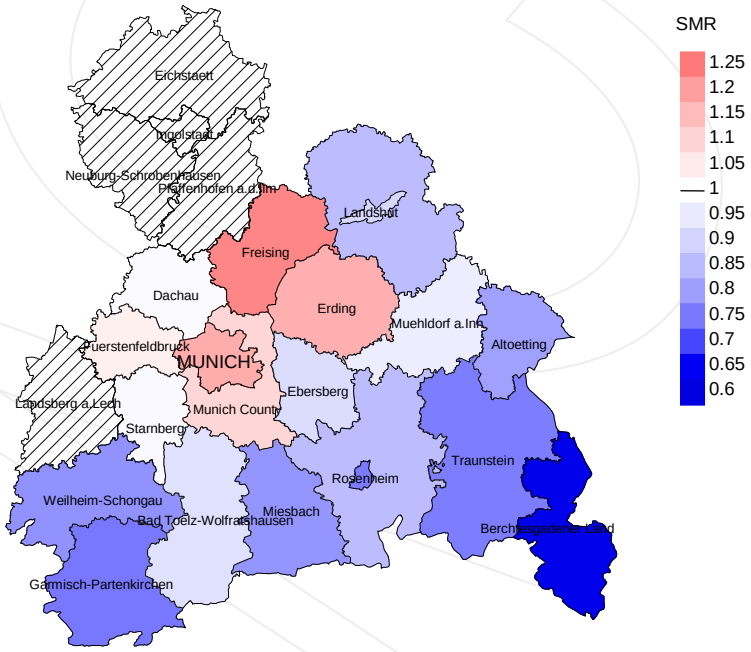


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=6,404, females N=1,176). 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 30 women died from urologic cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.92. Though, the value of this parameter may vary with an underlying probability of 99% between 0.54 and 1.45, 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 C60-C68: Urologic cancer [Internet]. 2014 [updated 2014 Mar 20; cited 2014 May 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/base_C6068E.pdf

Copyright

Disclaimer

Index of figures and tables