Munich Cancer Registry

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ICD-10 C60-C68: Urologic cancer

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	68,729
Diseases	71,746
Creation date	04/13/2016
Export date	12/23/2015
Population	4.64 m

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

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

http://www.tumorregister-muenchen.de/en/facts/base/bC6068E-ICD-10-C60-C68-Urologic-cancer-incidence-and-mortality.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.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, April 2016

[#] 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).

[##] 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.

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

All patients with invasive cancer by year of diagnosis, proportions of DCO, multiple primaries, deaths, and active follow-up (incl. DCO)

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	2467	207	8.4	28.1	64.5	97.9
1999	2374	162	6.8	28.3	61.3	97.9
2000	2537	208	8.2	27.0	58.3	97.6
2001	2638	177	6.7	28.1	53.7	97.2
2002	4943	494	10.0	28.5	55.1	96.8 #
2003	4850	380	7.8	28.2	50.5	96.4
2004	4783	375	7.8	28.0	46.4	96.1
2005	4746	299	6.3	27.4	42.6	94.4
2006	4673	283	6.1	28.0	42.2	89.5
2007	5418	364	6.7	26.8	38.8	69.9 #
2008	5093	330	6.5	27.7	37.5	63.7
2009	4874	299	6.1	29.1	36.0	63.4
2010	4763	317	6.7	27.5	32.8	62.5
2011	4915	296	6.0	25.9	28.8	61.4
2012	5031	276	5.5	25.0	23.7	63.8
2013	4341	269	6.2	25.0	20.9	99.1
2014	3300	262	7.9	22.1	13.8	97.4 ##
1998-2014	71746	4998	7.0	27.1	39.9	82.7

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be found in the respective headings.

Table 1a

All patients with invasive cancer
by year of diagnosis and gender
(incl. DCO)

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	2467	2199	268	89.1
1999	2374	2135	239	89.9
2000	2537	2297	240	90.5
2001	2638	2362	276	89.5
2002	4943	4480	463	90.6
2003	4850	4424	426	91.2
2004	4783	4346	437	90.9
2005	4746	4298	448	90.6
2006	4673	4209	464	90.1
2007	5418	4922	496	90.8
2008	5093	4582	511	90.0
2009	4874	4358	516	89.4
2010	4763	4243	520	89.1
2011	4915	4421	494	89.9
2012	5031	4562	469	90.7
2013	4341	3887	454	89.5
2014	3300	2923	377	88.6
1998-2014	71746	64648	7098	90.1

Table 2

Incidence measures by year of diagnosis 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	2199	268	198.5	22.8	121.5	10.2	181.0	15.1	239.8	19.2
1999	2135	239	190.8	20.1	114.5	9.6	169.8	13.8	220.0	17.3
2000	2297	240	201.7	20.0	120.1	8.3	178.1	12.6	233.4	16.5
2001	2362	276	203.8	22.7	120.0	9.6	178.0	14.6	230.6	18.9
2002	4480	463	240.5	23.6	134.9	10.0	201.6	14.8	262.1	19.2
2003	4424	426	236.0	21.6	131.6	8.8	194.4	13.2	250.4	17.2
2004	4346	437	231.0	22.1	126.9	9.0	185.7	13.5	238.0	17.8
2005	4298	448	226.9	22.5	122.0	9.4	179.1	13.8	229.2	18.0
2006	4209	464	219.8	23.1	116.6	10.2	170.9	14.6	219.0	18.5
2007	4922	496	222.2	21.5	118.8	8.8	172.7	12.8	218.7	17.0
2008	4582	511	205.9	22.0	105.7	9.4	155.4	13.7	199.1	17.6
2009	4358	516	195.3	22.2	100.6	9.1	146.3	13.2	185.7	17.4
2010	4243	520	188.3	22.2	96.3	8.1	140.1	12.4	177.1	16.5
2011	4421	494	193.5	20.9	96.9	9.2	141.3	12.9	180.2	16.1
2012	4562	469	199.7	19.9	99.9	7.5	146.0	11.4	187.3	15.5
2013	3887	454	170.1	19.2	85.5	7.8	124.8	11.4	160.2	14.7
2014	2923	377	127.9	16.0	66.0	6.4	95.7	9.6	120.4	12.5
1998-2014	64648	7098	201.9	21.2	107.4	8.8	157.3	12.9	201.1	16.8

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 patients)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	2467	68.2	13.4	1.3	99.8	53.2	61.5	69.5	77.3	84.2
1999	2374	67.7	12.8	1.1	99.5	54.4	60.8	68.8	76.1	83.5
2000	2537	68.3	12.8	0.3	99.7	54.9	61.8	69.3	76.7	83.4
2001	2638	68.1	12.6	1.9	100	54.5	61.7	68.9	76.5	82.4
2002	4943	69.2	12.4	0.1	102	55.9	62.7	69.8	77.3	83.9
2003	4850	68.8	12.3	0.4	103	55.4	62.9	69.1	76.5	83.0
2004	4783	68.5	12.5	0.0	100	55.3	62.7	68.9	76.6	83.0
2005	4746	68.6	12.3	0.7	101	55.1	62.9	69.1	76.5	82.9
2006	4673	68.9	12.4	0.2	101	55.4	63.6	69.4	76.6	83.4
2007	5418	68.6	12.8	0.1	101	54.4	63.3	69.4	76.5	83.3
2008	5093	69.3	12.2	0.2	101	55.2	64.1	70.1	76.9	83.4
2009	4874	68.9	12.6	0.5	105	53.9	63.3	70.1	76.7	83.4
2010	4763	69.4	12.7	5.4	102	54.4	63.2	70.6	77.3	84.2
2011	4915	69.6	12.8	0.5	109	54.0	64.0	71.0	77.1	84.0
2012	5031	69.7	12.2	1.4	103	55.5	64.1	71.3	77.2	83.2
2013	4341	69.3	13.2	0.3	103	53.1	63.2	71.3	77.3	83.8
2014	3300	68.9	13.1	1.2	107	53.2	62.4	70.5	76.9	84.0
1998-2014	71746	68.9	12.6	0.0	109	54.7	63.0	69.9	76.9	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	2199	67.9	13.3	1.3	99.8	52.6	61.4	69.2	76.9	83.9
1999	2135	67.6	12.7	2.3	99.5	54.5	60.8	68.6	75.6	83.1
2000	2297	67.9	12.8	0.3	99.7	54.2	61.5	68.9	76.3	82.5
2001	2362	67.7	12.4	1.9	100	54.5	61.6	68.5	75.8	81.5
2002	4480	68.9	12.3	0.1	102	55.6	62.6	69.4	76.6	83.1
2003	4424	68.3	12.2	0.4	101	55.3	62.7	68.7	75.9	82.3
2004	4346	68.1	12.4	0.0	100	55.2	62.5	68.4	76.1	82.1
2005	4298	68.3	12.0	0.7	101	55.1	62.7	68.8	75.9	82.3
2006	4209	68.6	12.0	0.8	101	55.7	63.5	69.0	76.2	82.7
2007	4922	68.2	12.5	0.1	101	54.2	63.1	69.0	75.9	82.3
2008	4582	69.1	11.9	0.2	101	55.1	64.0	69.9	76.3	82.9
2009	4358	68.5	12.4	0.5	105	53.8	63.0	69.7	76.0	82.7
2010	4243	68.8	12.5	5.4	102	53.9	62.9	70.1	76.4	83.1
2011	4421	69.4	12.3	1.5	109	54.0	63.9	70.8	76.5	83.5
2012	4562	69.3	12.2	1.4	103	55.1	63.8	71.0	76.6	82.7
2013	3887	68.9	13.0	0.9	103	53.0	63.0	71.0	76.8	83.1
2014	2923	68.5	13.2	1.2	104	53.0	62.1	70.2	76.5	83.5
1998-2014	64648	68.6	12.4	0.0	109	54.6	62.8	69.6	76.3	82.8

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	70.7	13.5	2.8	99.7	55.0	62.8	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	448	72.3	14.6	4.2	98.8	54.0	64.3	74.8	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	496	72.5	14.6	1.2	99.1	55.7	67.1	74.9	82.3	87.1
2008	511	71.8	13.9	0.6	97.0	55.7	64.5	73.7	81.9	86.8
2009	516	72.3	14.0	1.7	103	55.5	66.1	74.3	82.1	87.0
2010	520	74.6	12.9	5.4	100	56.2	68.3	75.7	84.3	89.5
2011	494	71.2	16.0	0.5	97.6	53.6	64.7	73.8	81.5	88.0
2012	469	73.6	11.8	9.7	96.4	58.2	67.4	75.3	82.0	86.7
2013	454	72.4	14.3	0.3	101	54.8	66.0	74.3	81.6	88.1
2014	377	72.3	12.4	25.7	107	55.6	64.7	74.3	81.0	87.6
1998-2014	7098	72.3	13.7	0.2	107	55.6	65.2	74.2	81.8	87.7

Table 4

Age distribution by 5-year age group and gender for period 2007-2014 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	48	0.1	0.1	26	0.1	0.1	22	0.6	0.6
5-9	16	0.0	0.2	8	0.0	0.1	8	0.2	0.8
10-14	5	0.0	0.2	3	0.0	0.1	2	0.1	0.8
15-19	48	0.1	0.3	47	0.1	0.2	1	0.0	0.9
20-24	160	0.4	0.7	156	0.5	0.7	4	0.1	1.0
25-29	265	0.7	1.4	260	0.8	1.5	5	0.1	1.1
30-34	332	0.9	2.3	317	0.9	2.4	15	0.4	1.5
35-39	392	1.0	3.4	363	1.1	3.5	29	0.8	2.2
40-44	502	1.3	4.7	447	1.3	4.8	55	1.4	3.7
45-49	833	2.2	6.9	765	2.3	7.1	68	1.8	5.4
50-54	1440	3.8	10.7	1297	3.8	10.9	143	3.7	9.2
55-59	2600	6.9	17.6	2373	7.0	17.9	227	5.9	15.1
60-64	4282	11.3	28.9	3988	11.8	29.6	294	7.7	22.8
65-69	7134	18.9	47.9	6622	19.5	49.2	512	13.3	36.1
70-74	7770	20.6	68.4	7173	21.2	70.3	597	15.6	51.7
75-79	5395	14.3	82.7	4742	14.0	84.3	653	17.0	68.7
80-84	3559	9.4	92.2	2981	8.8	93.1	578	15.1	83.7
85+	2954	7.8	100.0	2330	6.9	100.0	624	16.3	100.0
All ages	37735	100.0		33898	100.0		3837	100.0	

Included in the statistics are 29.0% multiple primaries in males and 38.0% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2014

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=1930 %	Females DCO rate n=423 %	Males Prop.all cancers n=91183 %	Females Prop.all cancers n=89596 %
0- 4	24	22	2.7	2.7	4.2		13.5	15.9
5- 9	8	8	0.9	1.0			8.3	10.3
10-14	3	2	0.3	0.2			3.0	2.2
15-19	47	1	4.9	0.1			21.8	0.6
20-24	154	4	13.8	0.4			41.3	1.3
25-29	257	5	21.3	0.4			46.0	0.8
30-34	310	15	24.8	1.2			40.1	1.3
35-39	361	29	27.7	2.3			31.3	1.5
40-44	439	54	27.0	3.5	0.5		24.0	1.4
45-49	756	68	47.8	4.5	0.3	1.5	23.5	1.2
50-54	1263	143	97.6	11.2	0.6	0.7	25.9	2.1
55-59	2320	224	218.5	19.9	0.7	1.8	31.7	3.0
60-64	3919	291	399.0	27.4	0.9	2.4	36.4	3.2
65-69	6472	498	672.7	47.7	1.1	2.4	41.4	4.4
70-74	6997	584	769.0	55.9	2.0	4.5	41.2	4.9
75-79	4601	639	835.5	89.6	5.4	6.1	36.9	6.4
80-84	2869	563	821.4	100.4	14.6	16.3	33.5	6.4
85+	2278	619	983.9	107.1	43.4	38.9	37.4	6.0
All ages	33078	3769			5.8	11.2	36.3	4.2
Incidence								
Raw			183.1	20.1				
WS			93.9	8.1				
ES			136.6	12.0				
BRD-S			173.6	15.6				

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).

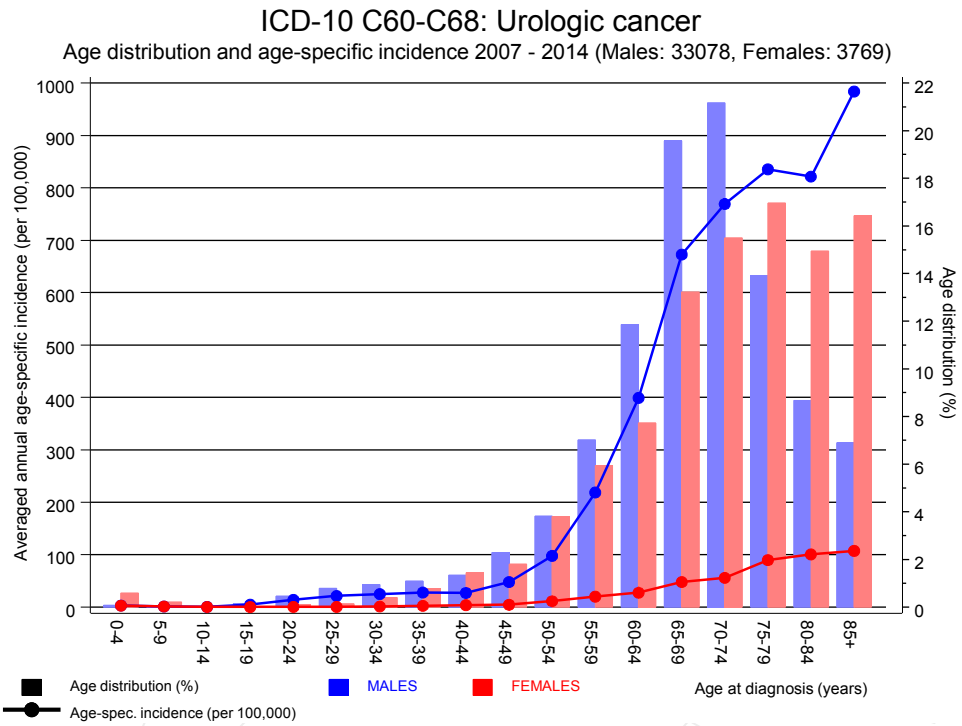


Figure 6. Age distribution and age-specific incidence

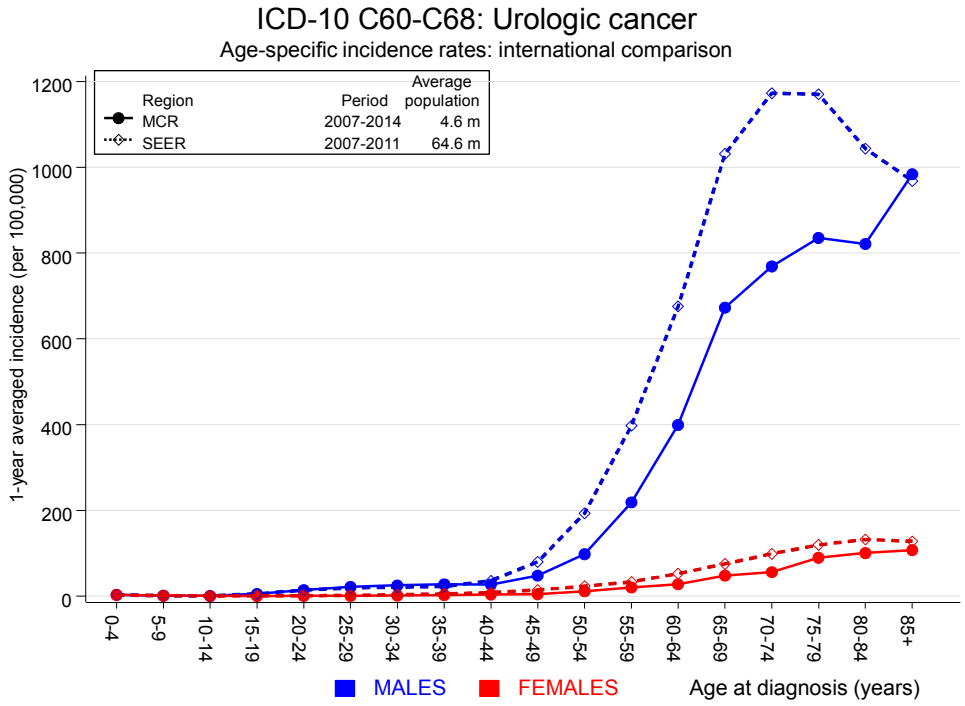


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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.

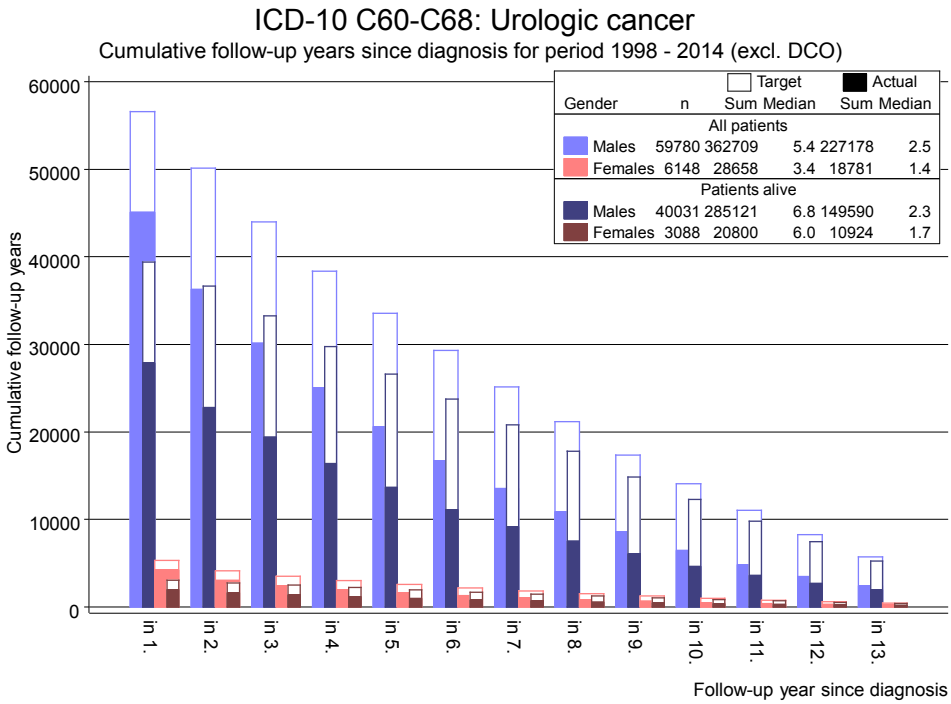


Figure 7. Cumulative follow-up years depending on time since diagnosis

The increase of the lost to follow-up rate can be interpreted as a consequence of a declining number of survivors over time.

Table 8a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	40	30.2	1.3	0.9	1.8		0.4	2.5
C07-C08	Salivary gland	18	9.4	1.9	1.1	3.0	#	0.4	16.7
C09-C10	Oropharynx	57	36.5	1.6	1.2	2.0	#	0.9	
C12-C13	Hypopharynx	32	20.2	1.6	1.1	2.2	#	0.5	3.1
C15	Oesophagus	134	71.6	1.9	1.6	2.2	#	2.8	9.0
C16	Stomach	298	177.8	1.7	1.5	1.9	#	5.4	7.0
C17	Small intestine	71	20.6	3.4	2.7	4.3	#	2.3	2.8
C18	Colon	815	427.1	1.9	1.8	2.0	#	17.6	5.3
C19-C20	Rectum	387	227.2	1.7	1.5	1.9	#	7.2	3.9
C21	Anus/canal	22	8.3	2.6	1.7	4.0	#	0.6	4.5
C22	Liver	160	115.5	1.4	1.2	1.6	#	2.0	15.6
C23-C24	Bile	56	41.8	1.3	1.0	1.7	#	0.6	16.1
C25	Pancreas	327	154.8	2.1	1.9	2.4	#	7.8	27.8
C30-C31	Sinuses	13	6.8	1.9	1.0	3.2	#	0.3	7.7
C32	Larynx	68	39.9	1.7	1.3	2.2	#	1.3	10.3
C33-C34	Lung	937	493.9	1.9	1.8	2.0	#	20.1	9.5
C38,C45	Mesothelioma	52	28.5	1.8	1.4	2.4	#	1.1	9.6
C40-C41	Bone	14	3.1	4.6	2.5	7.7	#	0.5	
C43	Malign. melanoma	414	168.8	2.5	2.2	2.7	#	11.1	1.2
C46,C49	Soft tissue	45	22.2	2.0	1.5	2.7	#	1.0	
C50	Breast	20	11.0	1.8	1.1	2.8	#	0.4	5.0
C60	Penis	24	9.6	2.5	1.6	3.7	#	0.7	
C61	Prostate	1185	1265.7	0.9	0.9	1.0	#	-3.7	4.9
C62	Testis	84	8.1	10.3	8.2	12.8	#	3.4	2.4
C64	Kidney	537	144.2	3.7	3.4	4.1	#	17.8	6.9
C65	Renal pelvis	110	18.3	6.0	4.9	7.2	#	4.2	
C66	Ureter	79	10.4	7.6	6.0	9.4	#	3.1	
C67	Bladder	592	197.8	3.0	2.8	3.2	#	17.8	6.4
C68	Urethra	59	3.1	19.1	14.5	24.6	#	2.5	
C70-C72	CNS cancer	120	53.1	2.3	1.9	2.7	#	3.0	10.8
C73	Thyroid	61	23.6	2.6	2.0	3.3	#	1.7	1.6
C76-C79	CUP	133	71.9	1.8	1.5	2.2	#	2.8	3.8
C81	Hodgkin lymphoma	16	8.4	1.9	1.1	3.1	#	0.3	
C82-C85	NHL	354	170.3	2.1	1.9	2.3	#	8.3	5.9
C90	Mult. myeloma	124	55.2	2.2	1.9	2.7	#	3.1	9.7
C91-C96	Leukaemia	155	71.5	2.2	1.8	2.5	#	3.8	34.8
Other primaries		86	40.9	2.1	1.7	2.6	#	2.0	23.3
Not observed		0	2.4	0.0	0.0	1.5		-0.1	
All mult. primaries		7699	4269.9	1.8	1.8	1.8	#	155.2	7.7

Table 8a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998–2014
MALES

Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%	EAR	DCO %
Patients		57619					
Median age at second malignancy (years)		73.7					
Person-years		220885					
Mean observation time (years)		3.8					
Median observation time (years)		2.6					

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 to 12 are pooled in category “Other primaries”

Table 8b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014
FEMALES

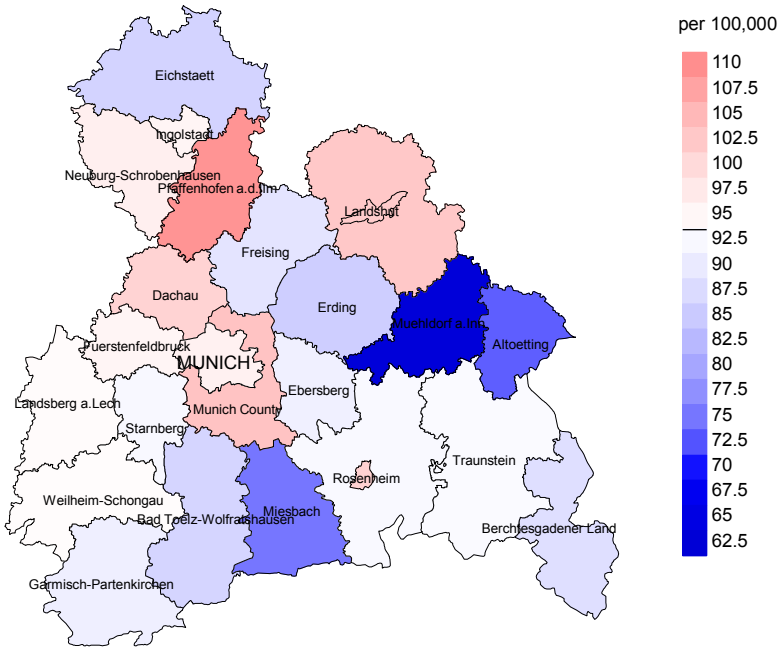
Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	2	1.3	1.5	0.2	5.5		0.4	
C15	Oesophagus	6	1.3	4.5	1.6	9.7	#	2.5	16.7
C16	Stomach	19	9.3	2.0	1.2	3.2	#	5.3	5.3
C17	Small intestine	5	1.1	4.7	1.5	11.0	#	2.1	
C18	Colon	53	25.7	2.1	1.5	2.7	#	14.9	3.8
C19-C20	Rectum	24	10.6	2.3	1.5	3.4	#	7.3	8.3
C21	Anus/canal	2	1.2	1.7	0.2	6.1		0.4	
C22	Liver	6	2.9	2.1	0.8	4.5		1.7	16.7
C23-C24	Bile	12	3.8	3.2	1.6	5.6	#	4.5	25.0
C25	Pancreas	34	11.4	3.0	2.1	4.2	#	12.3	32.4
C26	GI cancer	2	0.5	3.9	0.5	14.1		0.8	
C32	Larynx	2	0.4	5.2	0.6	18.6		0.9	
C33-C34	Lung	72	16.4	4.4	3.4	5.5	#	30.4	15.3
C43	Malign. melanoma	13	8.0	1.6	0.9	2.8		2.8	15.4
C46,C49	Soft tissue	2	1.3	1.5	0.2	5.4		0.4	
C48	Peritoneal	2	0.9	2.3	0.3	8.5		0.6	
C50	Breast	143	65.9	2.2	1.8	2.6	#	42.1	9.1
C51	Vulva	5	2.6	2.0	0.6	4.6		1.3	20.0
C52	Vagina	2	0.5	4.2	0.5	15.0		0.8	
C53	Cervix uteri	17	2.7	6.2	3.6	10.0	#	7.8	5.9
C54	Corpus uteri	23	12.8	1.8	1.1	2.7	#	5.6	8.7
C55,C57	Fem. genitals un	4	0.7	6.0	1.6	15.5	#	1.8	25.0
C56	Ovary	16	9.7	1.7	0.9	2.7		3.5	25.0
C64	Kidney	86	6.1	14.1	11.2	17.4	#	43.6	15.1
C65	Renal pelvis	36	0.8	45.5	31.9	63.0	#	19.2	
C66	Ureter	30	0.4	73.3	49.4	104.6	#	16.2	
C67	Bladder	78	5.0	15.7	12.4	19.5	#	39.9	11.5
C68	Urethra	3	0.1	39.6	8.2	115.7	#	1.6	
C68	Urinary org.	4	0.1	38.4	10.5	98.3	#	2.1	75.0
C70-C72	CNS cancer	5	3.2	1.6	0.5	3.6		1.0	40.0
C73	Thyroid	20	3.3	6.1	3.7	9.4	#	9.1	5.0
C76-C79	CUP	12	4.7	2.6	1.3	4.5	#	4.0	8.3
C82-C85	NHL	28	9.5	2.9	2.0	4.3	#	10.1	14.3
C90	Mult. myeloma	5	3.1	1.6	0.5	3.8		1.0	
C91-C96	Leukaemia	16	4.0	4.0	2.3	6.4	#	6.5	18.8
Other primaries		6	3.1	1.9	0.7	4.2		1.6	33.3
Not observed		0	1.7	0.0	0.0	2.2		-0.9	
All mult. primaries		795	236.0	3.4	3.1	3.6	#	305.3	11.8

Patients	6115
Median age at second malignancy (years)	74.8
Person-years	18307
Mean observation time (years)	3.0
Median observation time (years)	1.3

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category “Other primaries”

Average incidence (world standard population) 2007 - 2014: Males



Average incidence (world standard population) 2007 - 2014: Females

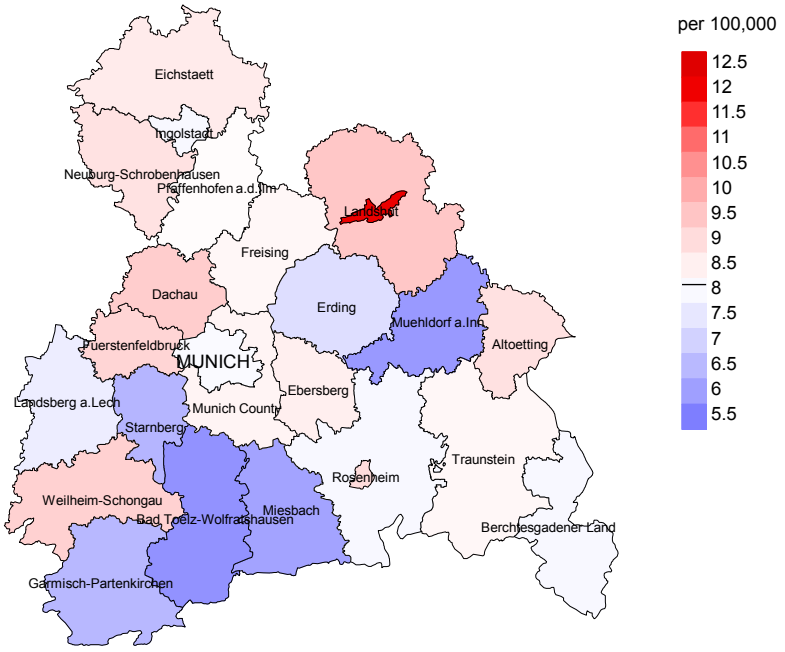
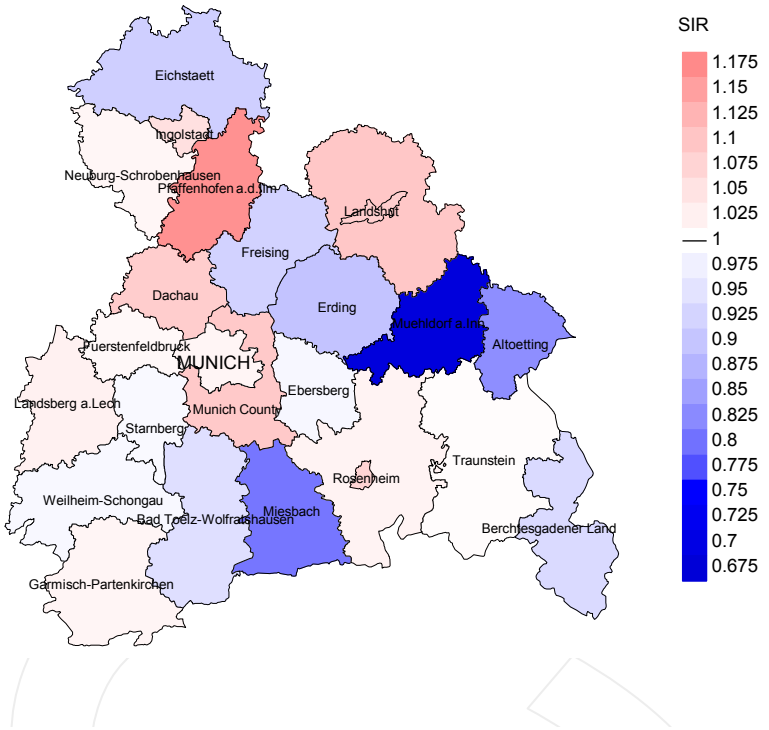


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 93.6/100,000 WS N=33,078, females 8.1/100,000 WS N=3,769).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 112 women were identified with newly diagnosed urologic cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 6.3 and 11.6/100,000.

Standardized incidence ratio (SIR) 2007 - 2014: Males



Standardized incidence ratio (SIR) 2007 - 2014: Females

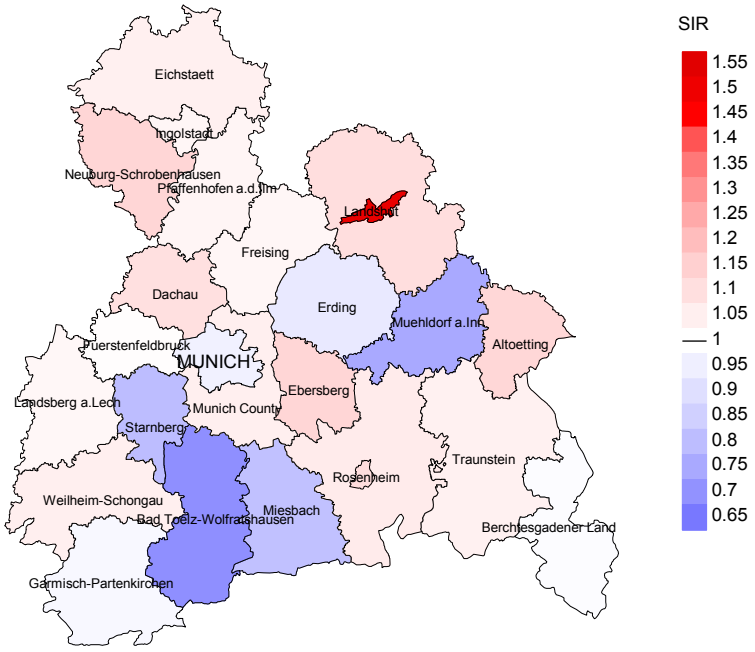


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=33,078, females N=3,769).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 112 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 0.87 and 1.43, 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	2467	97.9	8.4	1592	64.5	95.5
1999	2374	97.9	6.8	1456	61.3	95.9
2000	2537	97.6	8.2	1478	58.3	95.9
2001	2638	97.2	6.7	1416	53.7	96.7
2002	4943	96.8	10.0	2723	55.1	97.5
2003	4850	96.4	7.8	2450	50.5	98.1
2004	4783	96.1	7.8	2217	46.4	98.0
2005	4746	94.4	6.3	2022	42.6	97.9
2006	4673	89.5	6.1	1970	42.2	98.6
2007	5418	69.9	6.7	2101	38.8	98.3
2008	5093	63.7	6.5	1910	37.5	98.9
2009	4874	63.4	6.1	1756	36.0	98.6
2010	4763	62.5	6.7	1562	32.8	98.8
2011	4915	61.4	6.0	1414	28.8	97.8
2012	5031	63.8	5.5	1194	23.7	98.1
2013	4341	99.1	6.2	909	20.9	97.2
2014	3300	97.4	7.9	455	13.8	94.9
1998-2014	71746	82.7	7.0	28625	39.9	97.7

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	2467	1113	93.7	335	13.6
1999	2374	1054	94.1	287	12.1
2000	2537	1060	95.1	292	11.5
2001	2638	1123	93.8	281	10.7
2002	4943	1662	95.9	681	13.8
2003	4850	1804	97.1	575	11.9
2004	4783	1783	96.9	530	11.1
2005	4746	1905	96.5	466	9.8
2006	4673	2003	97.0	475	10.2
2007	5418	2272	97.4	583	10.8
2008	5093	2400	98.8	552	10.8
2009	4874	2480	98.6	562	11.5
2010	4763	2632	98.4	557	11.7
2011	4915	2692	98.6	550	11.2
2012	5031	2799	98.5	543	10.8
2013	4341	2861	98.5	508	11.7
2014	3300	2745	98.7	413	12.5
1998–2014	71746	34388	97.4	8190	11.4

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	1113	59.7	40.3	80.7
1999	1054	63.8	36.2	79.5
2000	1060	62.9	37.1	80.2
2001	1123	60.3	39.7	79.4
2002	1662	65.0	35.0	81.2
2003	1804	66.4	33.6	79.4
2004	1783	63.8	36.2	78.4
2005	1905	65.2	34.8	77.1
2006	2003	65.0	35.0	77.4
2007	2272	66.8	33.2	77.2
2008	2400	63.8	36.3	74.5
2009	2480	62.7	37.3	74.4
2010	2632	63.1	36.9	74.7
2011	2692	62.0	38.0	73.6
2012	2799	60.8	39.2	71.9
2013	2861	58.4	41.6	70.3
2014	2745	57.7	42.3	69.8
1998-2014	34388	62.6	37.4	75.4

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	959	78.9	77.0	81.7	78.4
2002	1403	78.6	76.9	80.9	78.1
2003	1540	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	1704	78.5	76.9	81.1	77.9
2007	1949	78.9	77.4	81.3	78.2
2008	2094	79.2	77.2	82.2	77.9
2009	2148	79.5	76.9	83.0	78.1
2010	2257	79.6	77.8	82.4	78.7
2011	2358	79.9	77.5	83.0	78.6
2012	2422	80.2	78.1	83.2	79.0
2013	2504	80.9	78.6	83.2	79.6
2014	2423	81.2	78.2	84.2	79.5
1998-2014	29636	79.5	77.4	82.6	78.4

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

Table 11b

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	166	81.7	79.4	82.6	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	334	82.2	79.5	87.7	80.5
2012	377	81.4	78.4	85.5	79.7
2013	357	80.6	78.4	84.8	79.4
2014	322	82.4	79.9	87.4	80.9
1998-2014	4752	81.0	79.1	84.8	80.1

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 years for girls.

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	565	48.8	0.24	26.1	0.22	44.1	0.25	64.6	0.28
2002	896	48.1	0.20	24.3	0.18	40.8	0.21	59.3	0.23
2003	1010	53.9	0.23	26.6	0.21	44.4	0.23	64.9	0.26
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	1096	57.2	0.27	26.0	0.23	43.5	0.26	63.6	0.30
2007	1291	58.3	0.27	25.8	0.22	43.5	0.26	63.7	0.30
2008	1309	58.8	0.29	25.0	0.24	41.9	0.28	62.2	0.32
2009	1317	59.0	0.31	24.9	0.25	41.2	0.29	59.8	0.33
2010	1410	62.6	0.34	25.3	0.27	42.4	0.31	62.3	0.36
2011	1456	63.7	0.34	25.3	0.27	42.4	0.31	61.7	0.35
2012	1463	64.0	0.33	24.6	0.25	42.0	0.29	62.1	0.34
2013	1450	63.5	0.38	24.8	0.30	42.0	0.35	61.7	0.40
2014	1370	60.0	0.48	23.4	0.36	39.8	0.43	58.3	0.50
1998-2014	18279	57.1	0.29	25.2	0.24	42.3	0.28	62.2	0.32

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	0.42
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	0.44	3.1	0.34	5.0	0.37	7.0	0.40
2009	240	10.3	0.47	3.4	0.38	5.4	0.41	7.6	0.44
2010	253	10.8	0.50	3.2	0.41	5.3	0.43	7.7	0.48
2011	214	9.1	0.44	2.9	0.33	4.7	0.37	6.5	0.41
2012	243	10.3	0.53	3.3	0.44	5.2	0.47	7.5	0.50
2013	226	9.6	0.50	3.0	0.39	4.8	0.43	6.8	0.47
2014	216	9.2	0.58	2.8	0.44	4.5	0.47	6.5	0.53
1998-2014	3282	9.8	0.47	3.2	0.37	5.1	0.40	7.2	0.44

Table 13

Age distribution of age at death (cancer-related) for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
5-9	2	0.0	0.0	2	0.0	0.0			0.0
10-14	1	0.0	0.0			0.0	1	0.1	0.1
15-19	1	0.0	0.0	1	0.0	0.0			0.1
20-24	6	0.0	0.1	5	0.0	0.1	1	0.1	0.1
25-29	6	0.0	0.1	5	0.0	0.1	1	0.1	0.2
30-34	9	0.1	0.2	9	0.1	0.2			0.2
35-39	17	0.1	0.3	11	0.1	0.3	6	0.3	0.5
40-44	37	0.3	0.6	26	0.2	0.5	11	0.6	1.0
45-49	103	0.7	1.3	81	0.7	1.2	22	1.1	2.2
50-54	216	1.5	2.8	172	1.4	2.6	44	2.3	4.4
55-59	407	2.9	5.7	342	2.8	5.4	65	3.3	7.7
60-64	756	5.4	11.1	657	5.4	10.8	99	5.1	12.8
65-69	1466	10.4	21.5	1278	10.6	21.4	188	9.6	22.5
70-74	2442	17.4	38.9	2171	17.9	39.3	271	13.9	36.3
75-79	2731	19.4	58.3	2388	19.7	59.0	343	17.6	53.9
80-84	2857	20.3	78.7	2443	20.2	79.2	414	21.2	75.1
85+	3000	21.3	100.0	2515	20.8	100.0	485	24.9	100.0
All ages	14057	100.0		12106	100.0		1951	100.0	

Included in the statistics are 29.0% multiple primaries in males and 38.0% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**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	2		0.2	0.25	0.0		9.5	
10-14		1	0.0		0.1	0.50		5.0
15-19	1		0.1	0.02	0.0		2.8	
20-24	5	1	0.4	0.03	0.1	0.25	10.4	3.6
25-29	5	1	0.4	0.02	0.1	0.20	8.1	1.6
30-34	9		0.7	0.03	0.0		10.2	
35-39	11	6	0.8	0.03	0.5	0.21	6.2	2.3
40-44	26	11	1.6	0.06	0.7	0.20	5.7	1.7
45-49	81	22	5.1	0.11	1.5	0.32	7.9	1.8
50-54	172	44	13.3	0.13	3.4	0.31	9.2	2.5
55-59	342	65	32.2	0.14	5.8	0.29	11.1	2.5
60-64	657	99	66.9	0.16	9.3	0.34	13.8	2.8
65-69	1278	188	132.8	0.19	18.0	0.37	17.9	3.6
70-74	2171	271	238.6	0.30	25.9	0.45	23.8	4.1
75-79	2388	343	433.6	0.50	48.1	0.53	28.0	5.5
80-84	2443	414	699.4	0.82	73.8	0.72	33.1	6.3
85+	2515	485	1086.3	1.08	83.9	0.78	41.6	5.6
All ages	12106	1951					24.3	4.5
Mortality								
Raw			67.0	0.36	10.4	0.51		
WS			27.2	0.28	3.3	0.40		
ES			45.9	0.33	5.3	0.44		
BRD-S			67.3	0.38	7.5	0.48		
PYLL-70								
per 100,000			120.2		24.8			
ES			105.2		21.1			
AYLL-70			7.4		9.0			

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

Table 15a

Multiple primaries in deaths in period 1998–2014
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C15	Oesophagus	164	1.7	27	16.5	10	6.1	127	77.4
C16	Stomach	409	4.2	97	23.7	32	7.8	280	68.5
C18	Colon	953	9.9	356	37.4	84	8.8	513	53.8
C19–C20	Rectum	520	5.4	197	37.9	52	10.0	271	52.1
C22	Liver	223	2.3	21	9.4	16	7.2	186	83.4
C23–C24	Bile	96	1.0	12	12.5	7	7.3	77	80.2
C25	Pancreas	436	4.5	27	6.2	25	5.7	384	88.1
C32	Larynx	116	1.2	63	54.3	6	5.2	47	40.5
C33–C34	Lung	1346	14.0	160	11.9	93	6.9	1093	81.2
C43	Malign. melanoma	384	4.0	190	49.5	16	4.2	178	46.4
C44	Skin others	518	5.4	166	32.0	24	4.6	328	63.3
C61	Prostate	864	9.0			159	18.4	705	81.6
C64	Kidney	304	3.2			62	20.4	242	79.6
C65	Renal pelvis	170	1.8			22	12.9	148	87.1
C66	Ureter	136	1.4			28	20.6	108	79.4
C67	Bladder	931	9.7			224	24.1	707	75.9
C70–C72	CNS cancer	221	2.3	40	18.1	14	6.3	167	75.6
C76–C79	CUP	200	2.1	33	16.5	21	10.5	146	73.0
C82–C85	NHL	379	3.9	115	30.3	48	12.7	216	57.0
C90	Mult. myeloma	174	1.8	40	23.0	14	8.0	120	69.0
C91–C96	Leukaemia	305	3.2	28	9.2	20	6.6	257	84.3
Other primaries		779	8.1	229	29.4	57	7.3	493	63.3
All mult. primaries		9628	100.0	1801	18.7	1034	10.7	6793	70.6

Multiple primaries with number of cases 1 to 88 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 1998-2014
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	42	2.7	13	31.0	9	21.4	20	47.6
C18	Colon	117	7.4	50	42.7	14	12.0	53	45.3
C19-C20	Rectum	52	3.3	24	46.2	6	11.5	22	42.3
C22	Liver	12	0.8	2	16.7	4	33.3	6	50.0
C23-C24	Bile	17	1.1			4	23.5	13	76.5
C25	Pancreas	59	3.7	2	3.4	6	10.2	51	86.4
C33-C34	Lung	127	8.0	14	11.0	19	15.0	94	74.0
C43	Malign. melanoma	37	2.3	22	59.5	2	5.4	13	35.1
C44	Skin others	41	2.6	20	48.8	2	4.9	19	46.3
C50	Breast	290	18.4	174	60.0	20	6.9	96	33.1
C51	Vulva	14	0.9	10	71.4	1	7.1	3	21.4
C53	Cervix uteri	81	5.1	61	75.3	8	9.9	12	14.8
C54	Corpus uteri	71	4.5	49	69.0	10	14.1	12	16.9
C56	Ovary	57	3.6	23	40.4	8	14.0	26	45.6
C64	Kidney	65	4.1			15	23.1	50	76.9
C65	Renal pelvis	50	3.2			12	24.0	38	76.0
C66	Ureter	42	2.7			18	42.9	24	57.1
C67	Bladder	148	9.4			18	12.2	130	87.8
C68	Urinary org.	11	0.7			1	9.1	10	90.9
C70-C72	CNS cancer	31	2.0	8	25.8	5	16.1	18	58.1
C73	Thyroid	27	1.7	13	48.1	1	3.7	13	48.1
C76-C79	CUP	28	1.8	4	14.3	2	7.1	22	78.6
C82-C85	NHL	41	2.6	15	36.6	9	22.0	17	41.5
C91-C96	Leukaemia	32	2.0	3	9.4	5	15.6	24	75.0
Other primaries		87	5.5	30	34.5	15	17.2	42	48.3
All mult. primaries		1579	100.0	537	34.0	214	13.6	828	52.4

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 2007-2014
(**First 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		0.2	0.25	0.0		10.0	
10-14		1	0.0		0.1	0.50		5.3
15-19	1		0.1	0.02	0.0		3.0	
20-24	5	1	0.4	0.03	0.1	0.25	11.6	3.8
25-29	3	1	0.2	0.01	0.1	0.20	5.5	1.7
30-34	9		0.7	0.03	0.0		10.5	
35-39	11	6	0.8	0.03	0.5	0.21	6.7	2.6
40-44	24	9	1.5	0.06	0.6	0.19	5.7	1.6
45-49	71	19	4.5	0.10	1.3	0.32	7.7	1.9
50-54	130	35	10.0	0.11	2.7	0.30	8.1	2.4
55-59	261	46	24.6	0.13	4.1	0.26	10.0	2.1
60-64	524	62	53.3	0.15	5.8	0.28	13.4	2.2
65-69	969	148	100.7	0.18	14.2	0.38	17.1	3.6
70-74	1637	180	179.9	0.28	17.2	0.43	23.5	3.5
75-79	1822	254	330.9	0.51	35.6	0.54	29.2	5.2
80-84	1848	285	529.1	0.88	50.8	0.73	34.6	5.7
85+	1945	373	840.1	1.14	64.5	0.78	44.1	5.5
All ages	9262	1420					24.1	4.1
Mortality								
Raw			51.3	0.34	7.6	0.50		
WS			20.9	0.26	2.4	0.38		
ES			35.2	0.31	3.9	0.42		
BRD-S			51.5	0.36	5.5	0.46		
PYLL-70								
per 100,000			96.0		19.2			
ES			84.0		16.4			
AYLL-70			7.7		9.3			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**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		0.2	0.25	0.0		10.0	
10-14		1	0.0		0.1	0.50		5.6
15-19	1		0.1	0.02	0.0		3.0	
20-24	5	1	0.4	0.03	0.1	0.25	12.8	4.2
25-29	3	1	0.2	0.01	0.1	0.20	5.9	1.8
30-34	9		0.7	0.03	0.0		10.6	
35-39	9	4	0.7	0.03	0.3	0.14	5.7	2.0
40-44	22	7	1.4	0.06	0.5	0.15	5.5	1.4
45-49	62	16	3.9	0.09	1.1	0.29	7.2	1.8
50-54	95	32	7.3	0.09	2.5	0.29	6.6	2.4
55-59	198	38	18.6	0.10	3.4	0.23	8.5	2.0
60-64	394	47	40.1	0.12	4.4	0.24	11.6	1.9
65-69	643	124	66.8	0.13	11.9	0.35	13.5	3.7
70-74	1063	132	116.8	0.21	12.6	0.35	18.8	3.2
75-79	1132	194	205.6	0.36	27.2	0.45	23.4	4.9
80-84	1187	226	339.8	0.63	40.3	0.63	29.2	5.5
85+	1392	301	601.2	0.87	52.1	0.65	40.8	5.4
All ages	6217	1124					19.7	3.9
Mortality								
Raw			34.4	0.25	6.0	0.43		
WS			14.3	0.19	1.9	0.32		
ES			23.9	0.23	3.1	0.36		
BRD-S			34.5	0.26	4.3	0.40		
PYLL-70								
per 100,000			74.1		16.0			
ES			65.1		13.7			
AYLL-70			8.2		9.3			

* See corresponding tables with multiple primaries.

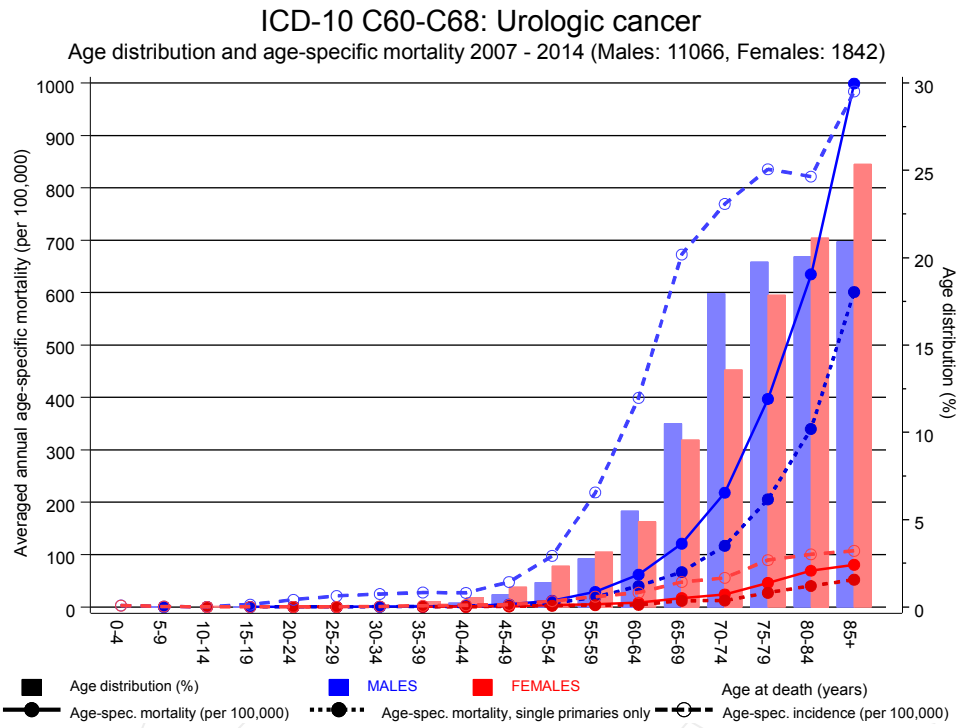
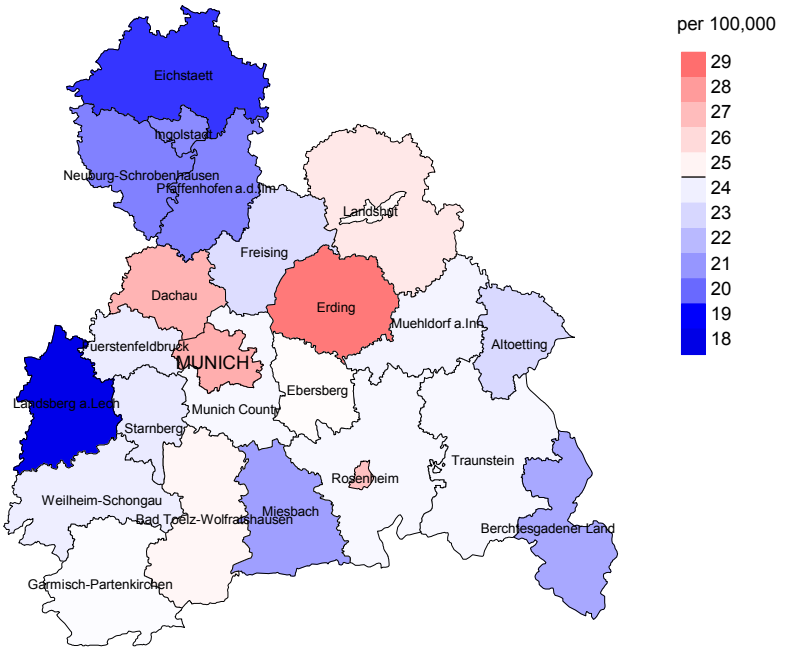


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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 - 2014: Males



Average mortality (world standard population) 2007 - 2014: Females

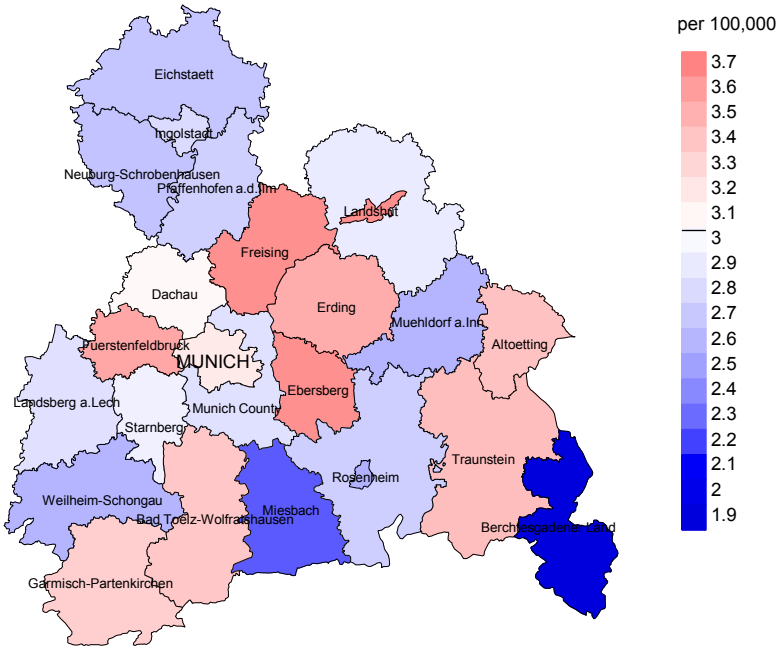
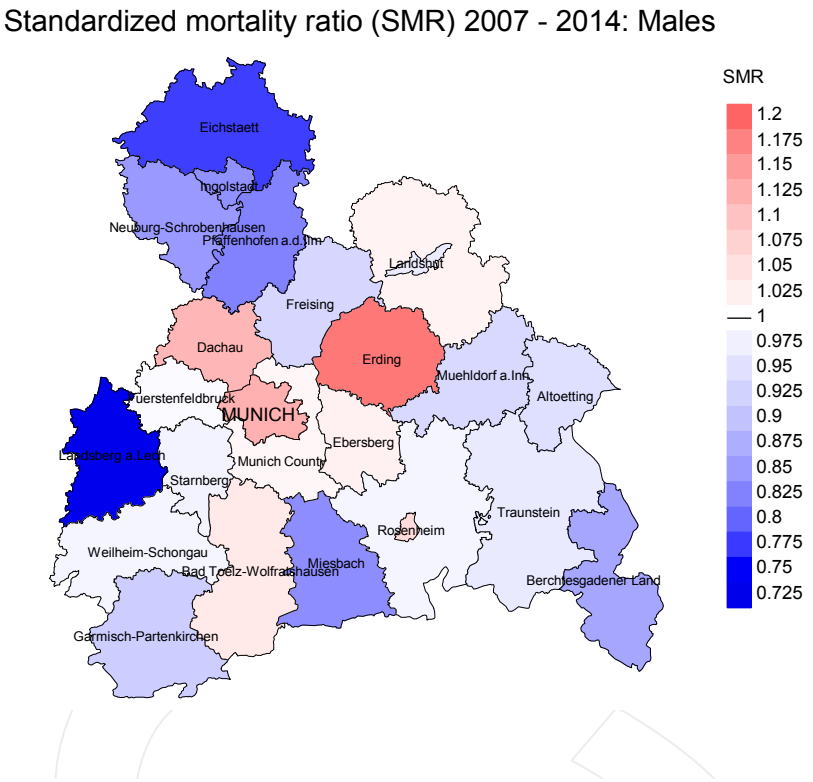


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 24.6/100,000 WS N=10,972, females 3.0/100,000 WS N=1,818).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 60 women died from urologic cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.3 and 5.9/100,000.



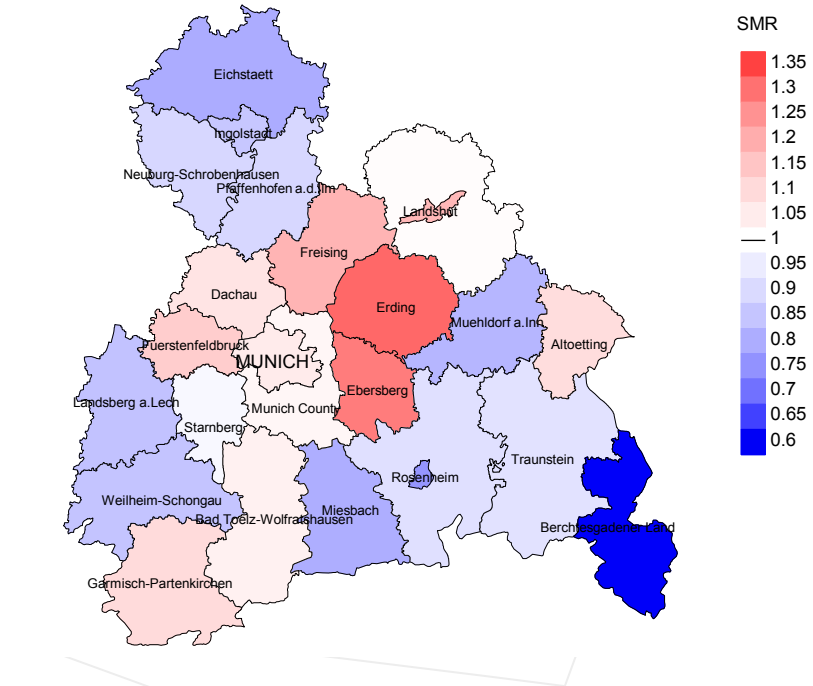


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=10,972, females N=1,818).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 60 women died from urologic cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.28. Though, the value of this parameter may vary with an underlying probability of 99% between 0.90 and 1.78, 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, where applicable. 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

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