

Munich Cancer Registry



- ▶ Survival
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- ▶ *Deutsch*

ICD-10 C60-C68: Urologic cancer

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	76,866
Diseases	80,434
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m




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<https://www.tumorregister-muenchen.de/en>

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

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**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 4.69 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, August 2018

[#] 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 2.65 million to 4.10 in 2002, and to 4.69 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

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (ALL PATIENTS) (incl. DCO)

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	2503	233	9.3	11.8	13.9	67.8	96.4
1999	2408	182	7.6	11.2	13.7	65.0	96.5
2000	2572	231	9.0	11.4	13.5	61.6	96.3
2001	2665	193	7.2	11.5	13.3	58.8	95.6
2002	4966	496	10.0	12.0	13.1	59.0	95.6 #
2003	4884	380	7.8	12.1	12.8	54.8	94.8
2004	4823	377	7.8	12.2	12.4	50.9	95.2
2005	4794	300	6.3	12.4	11.9	47.7	93.0
2006	4718	285	6.0	12.6	11.5	46.9	88.4
2007	5479	366	6.7	12.8	10.9	43.5	70.2 #
2008	5166	332	6.4	13.2	10.3	42.8	63.8
2009	4955	300	6.1	13.6	9.6	41.2	63.2
2010	4883	320	6.6	14.0	8.9	37.7	62.8
2011	5030	296	5.9	14.3	8.3	34.4	61.3
2012	5143	278	5.4	14.6	7.7	30.8	59.6
2013	4730	267	5.6	14.9	6.9	29.6	60.1
2014	4670	283	6.1	15.1	6.2	24.8	62.6
2015	3325	302	9.1	15.3	5.3	25.2	98.3
2016	2720	255	9.4	15.5	4.9	18.2	71.7 ##
1998-2016	80434	5676	7.1	15.5	13.9	43.1	78.1

80,434 cases diagnosed 1998-2016 are related to a total of 76,866 patients. Currently, in 19,642 (25.6 %) of these 76,866 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 15,438 / 3,219 / 985 (20.1 % / 4.2 % / 1.3 %) patients exist having 2 / 3 / 4+ malignancies.

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 retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 4,670 cases has been diagnosed, of which 15.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.2 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (MALES) (incl. DCO)

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	2226	88.9	199	8.9	11.3	14.1	67.3	96.6
1999	2164	89.9	162	7.5	10.7	13.9	64.1	96.6
2000	2327	90.5	199	8.6	10.8	13.7	60.4	96.0
2001	2386	89.5	156	6.5	10.9	13.5	56.7	95.5
2002	4502	90.7	416	9.2	11.3	13.3	57.2	95.4 #
2003	4458	91.3	318	7.1	11.5	12.9	53.1	94.7
2004	4385	90.9	305	7.0	11.6	12.5	49.4	95.0
2005	4343	90.6	248	5.7	11.7	12.0	45.9	92.9
2006	4254	90.2	230	5.4	11.9	11.5	44.8	88.0
2007	4978	90.9	305	6.1	12.2	11.0	41.6	68.9 #
2008	4650	90.0	269	5.8	12.5	10.3	40.7	62.3
2009	4436	89.5	251	5.7	13.0	9.6	39.3	62.0
2010	4360	89.3	252	5.8	13.3	8.9	35.5	61.8
2011	4530	90.1	259	5.7	13.6	8.1	32.6	60.1
2012	4659	90.6	223	4.8	13.9	7.5	28.7	58.6
2013	4249	89.8	211	5.0	14.2	6.8	27.5	58.9
2014	4192	89.8	232	5.5	14.4	6.1	22.8	62.1
2015	2928	88.1	247	8.4	14.6	5.3	22.4	98.3
2016	2405	88.4	205	8.5	14.8	4.9	16.5	69.9 ##
1998-2016	72432	90.1	4687	6.5	14.8	14.1	41.3	77.5

72,432 cases diagnosed 1998-2016 are related to a total of 69,149 patients. Currently, in 17,269 (25.0 %) of these 69,149 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 13,622 / 2,771 / 876 (19.7 % / 4.0 % / 1.3 %) patients exist having 2 / 3 / 4+ malignancies.

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 retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 4,192 cases has been diagnosed, of which 14.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (FEMALES) (incl. DCO)

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	277	11.1	34	12.3	15.9	12.1	71.8	95.3
1999	244	10.1	20	8.2	15.5	11.9	72.5	95.1
2000	245	9.5	32	13.1	16.4	11.7	73.5	98.8
2001	279	10.5	37	13.3	16.7	11.5	76.3	96.8
2002	464	9.3	80	17.2	17.8	11.4	76.5	97.6 #
2003	426	8.7	62	14.6	17.5	11.4	72.1	96.5
2004	438	9.1	72	16.4	18.2	11.2	66.4	97.3
2005	451	9.4	52	11.5	18.6	11.0	64.7	94.0
2006	464	9.8	55	11.9	18.6	10.7	66.4	91.8
2007	501	9.1	61	12.2	18.6	10.3	62.3	82.8 #
2008	516	10.0	63	12.2	19.0	10.1	61.4	77.5
2009	519	10.5	49	9.4	19.4	9.8	57.4	73.0
2010	523	10.7	68	13.0	20.2	9.1	56.2	71.3
2011	500	9.9	37	7.4	20.4	9.3	50.8	71.6
2012	484	9.4	55	11.4	20.7	8.7	51.9	69.0
2013	481	10.2	56	11.6	21.0	8.3	48.0	70.5
2014	478	10.2	51	10.7	21.3	7.0	42.5	66.9
2015	397	11.9	55	13.9	21.7	5.7	45.3	98.5
2016	315	11.6	50	15.9	21.9	5.0	31.4	85.4 ##
1998-2016	8002	9.9	989	12.4	21.9	12.1	59.5	84.1

8,002 cases diagnosed 1998-2016 are related to a total of 7,717 patients. Currently, in 2,373 (30.8 %) of these 7,717 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,816 / 448 / 109 (23.5 % / 5.8 % / 1.4 %) patients exist having 2 / 3 / 4+ malignancies.

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 retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 478 cases has been diagnosed, of which 21.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 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	2226	277	200.9	23.5	122.8	10.4	183.3	15.4	243.1	19.8
1999	2164	244	193.3	20.6	116.0	9.8	172.2	14.1	223.4	17.6
2000	2327	245	204.3	20.4	121.5	8.4	180.5	12.8	236.7	16.8
2001	2386	279	205.9	22.9	121.1	9.8	179.8	14.8	233.2	19.1
2002	4502	464	241.6	23.7	135.5	10.0	202.6	14.8	263.6	19.3
2003	4458	426	237.8	21.6	132.6	8.8	195.9	13.2	252.4	17.2
2004	4385	438	233.1	22.2	127.9	9.0	187.3	13.6	240.3	17.8
2005	4343	451	229.3	22.7	123.2	9.5	180.9	13.9	231.7	18.1
2006	4254	464	222.1	23.1	117.6	10.2	172.6	14.6	221.6	18.5
2007	4978	501	224.7	21.7	119.9	8.9	174.5	13.0	221.3	17.1
2008	4650	516	208.9	22.2	107.1	9.5	157.6	13.8	202.2	17.8
2009	4436	519	198.8	22.3	102.1	9.1	148.7	13.3	189.2	17.5
2010	4360	523	193.4	22.3	98.8	8.2	143.9	12.6	182.2	16.6
2011	4530	500	202.5	21.4	100.6	9.4	147.1	13.1	187.9	16.5
2012	4659	484	205.3	20.5	101.4	7.7	147.9	11.7	189.5	15.7
2013	4249	481	184.6	20.2	91.0	8.0	132.3	11.7	168.9	15.1
2014	4192	478	179.8	19.9	88.7	7.9	129.1	11.7	163.3	15.1
2015	2928	397	123.1	16.3	59.3	6.2	87.3	9.3	112.0	12.0
2016	2405	315	100.1	12.8	48.7	5.0	71.2	7.4	90.5	9.4
1998-2016	72432	8002	196.8	20.9	103.1	8.5	150.7	12.6	192.3	16.3

The computation of the incidence measures includes all cancers, irrespective of first or subsequent malignancy.

Table 3

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	2503	68.3	13.4	1.3	99.8	53.3	61.6	69.6	77.4	84.3
1999	2408	67.8	12.9	1.1	99.5	54.4	60.8	69.0	76.2	83.7
2000	2572	68.4	12.8	0.3	99.7	55.0	61.8	69.4	76.9	83.6
2001	2665	68.2	12.6	1.9	100	54.5	61.8	69.0	76.6	82.5
2002	4966	69.3	12.4	0.1	102	55.9	62.8	69.9	77.3	83.8
2003	4884	68.8	12.3	0.4	103	55.5	62.9	69.1	76.5	83.0
2004	4823	68.5	12.5	0.0	100	55.4	62.7	68.9	76.7	82.9
2005	4794	68.7	12.3	0.7	101	55.1	62.9	69.1	76.6	83.0
2006	4718	69.0	12.3	0.2	101	55.5	63.7	69.4	76.6	83.4
2007	5479	68.7	12.7	0.1	101	54.5	63.4	69.5	76.5	83.3
2008	5166	69.4	12.2	0.2	101	55.2	64.1	70.2	77.0	83.5
2009	4955	69.0	12.6	0.5	105	54.0	63.4	70.1	76.8	83.4
2010	4883	69.4	12.6	5.4	102	54.5	63.2	70.6	77.3	84.2
2011	5030	69.6	12.7	0.5	109	54.0	64.0	71.0	77.2	84.0
2012	5143	69.8	12.2	1.4	103	55.5	64.2	71.3	77.3	83.3
2013	4730	69.5	13.0	0.3	103	53.7	63.6	71.5	77.3	83.8
2014	4670	69.6	12.5	1.2	107	54.7	63.3	71.4	77.2	83.8
2015	3325	70.4	12.8	0.7	103	54.6	63.6	72.2	78.5	85.1
2016	2720	70.1	12.9	12.6	103	53.8	63.3	72.1	78.4	85.0
1998-2016	80434	69.1	12.6	0.0	109	54.8	63.1	70.2	77.1	83.6

Table 3a

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	2226	68.0	13.4	1.3	99.8	52.9	61.4	69.3	77.0	83.9
1999	2164	67.6	12.8	2.3	99.5	54.5	60.8	68.7	75.8	83.4
2000	2327	68.0	12.8	0.3	99.7	54.3	61.6	69.0	76.3	82.8
2001	2386	67.8	12.4	1.9	100	54.5	61.7	68.6	75.9	81.7
2002	4502	68.9	12.3	0.1	102	55.7	62.6	69.4	76.6	83.0
2003	4458	68.4	12.2	0.4	101	55.3	62.7	68.8	75.9	82.2
2004	4385	68.1	12.4	0.0	100	55.3	62.5	68.5	76.1	82.1
2005	4343	68.3	12.0	0.7	101	55.2	62.8	68.8	76.0	82.3
2006	4254	68.7	12.0	0.8	101	55.8	63.6	69.1	76.2	82.6
2007	4978	68.3	12.5	0.1	101	54.3	63.2	69.1	76.0	82.4
2008	4650	69.1	11.9	0.2	101	55.2	64.0	70.0	76.4	82.9
2009	4436	68.6	12.4	0.5	105	53.9	63.1	69.8	76.1	82.7
2010	4360	68.8	12.5	5.4	102	54.1	62.9	70.2	76.5	83.1
2011	4530	69.4	12.3	1.5	109	54.0	63.9	70.8	76.6	83.5
2012	4659	69.4	12.2	1.4	103	55.1	63.9	71.1	76.7	82.7
2013	4249	69.1	12.8	0.9	103	53.5	63.2	71.2	76.9	83.1
2014	4192	69.3	12.5	1.2	104	54.6	63.2	71.2	77.0	83.3
2015	2928	70.0	12.7	20.1	103	54.6	63.4	72.0	78.1	84.5
2016	2405	69.8	12.8	16.3	103	53.9	63.0	71.8	77.9	84.2
1998-2016	72432	68.8	12.4	0.0	109	54.7	62.9	69.9	76.5	82.9

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		
				Min.	Max.	10%	25%	50%	75%	90%
1998	277	71.0	13.5	2.8	99.7	56.2	63.0	72.6	80.1	86.3
1999	244	69.5	13.5	1.1	94.3	52.6	60.9	71.6	78.7	85.7
2000	245	72.6	11.9	37.2	94.5	58.8	63.8	74.5	81.5	87.6
2001	279	72.0	13.4	30.6	96.4	54.1	64.1	73.7	81.1	88.2
2002	464	72.8	12.8	2.4	99.5	57.9	65.3	74.2	81.9	87.7
2003	426	73.2	13.0	2.5	103	56.8	65.6	75.1	82.6	87.9
2004	438	72.9	13.1	18.5	99.0	56.5	64.9	74.7	82.2	88.3
2005	451	72.3	14.6	4.2	98.8	54.6	64.3	74.9	82.1	88.5
2006	464	71.4	15.1	0.2	96.7	52.5	64.7	74.0	81.9	87.5
2007	501	72.5	14.5	1.2	99.1	56.0	67.0	74.7	82.2	87.1
2008	516	71.8	13.9	0.6	97.0	55.7	64.5	73.7	81.9	86.9
2009	519	72.2	14.0	1.7	103	55.5	66.0	74.3	82.1	87.0
2010	523	74.5	12.9	5.4	100	56.4	68.1	75.7	84.3	89.5
2011	500	71.3	15.9	0.5	97.6	53.7	65.0	73.9	81.5	88.0
2012	484	73.7	11.8	9.7	96.4	58.4	67.6	75.2	82.2	87.2
2013	481	72.7	14.0	0.3	101	55.1	66.7	74.5	81.7	88.1
2014	478	72.3	12.5	2.5	107	55.6	65.1	74.3	80.8	87.4
2015	397	73.2	13.1	0.7	98.0	54.4	66.4	74.6	82.3	89.1
2016	315	72.7	13.4	12.6	96.0	53.3	65.4	74.6	82.8	88.6
1998-2016	8002	72.4	13.6	0.2	107	55.5	65.3	74.3	81.9	87.8

Table 4

Age distribution by 5-year age group and sex for period 2007-2016
(incl. DCO)

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	52	0.1	0.1	28	0.1	0.1	24	0.5	0.5
5-9	16	0.0	0.1	8	0.0	0.1	8	0.2	0.7
10-14	6	0.0	0.2	3	0.0	0.1	3	0.1	0.7
15-19	53	0.1	0.3	52	0.1	0.2	1	0.0	0.8
20-24	188	0.4	0.7	184	0.4	0.7	4	0.1	0.8
25-29	308	0.7	1.4	303	0.7	1.4	5	0.1	1.0
30-34	393	0.9	2.2	378	0.9	2.3	15	0.3	1.3
35-39	467	1.0	3.2	433	1.0	3.4	34	0.7	2.0
40-44	595	1.3	4.5	523	1.3	4.6	72	1.5	3.5
45-49	1004	2.2	6.7	910	2.2	6.8	94	2.0	5.5
50-54	1778	3.9	10.5	1597	3.9	10.7	181	3.8	9.4
55-59	3173	6.9	17.4	2903	7.0	17.7	270	5.7	15.1
60-64	5131	11.1	28.6	4770	11.5	29.2	361	7.7	22.7
65-69	8318	18.0	46.6	7704	18.6	47.8	614	13.0	35.8
70-74	9414	20.4	67.0	8667	20.9	68.8	747	15.8	51.6
75-79	7028	15.2	82.3	6222	15.0	83.8	806	17.1	68.7
80-84	4447	9.6	91.9	3753	9.1	92.9	694	14.7	83.4
85+	3730	8.1	100.0	2949	7.1	100.0	781	16.6	100.0
All ages	46101	100.0		41387	100.0		4714	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2016

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=2387 %	Females DCO rate n=532 %	Males	Females
							Prop.all cancers %	Prop.all cancers %
0- 4	26	24	2.3	2.3	3.8		13.3	16.1
5- 9	8	8	0.7	0.8			7.7	9.5
10-14	3	3	0.3	0.3		33.3	2.6	3.0
15-19	52	1	4.2	0.1			20.6	0.5
20-24	182	4	13.0	0.3			39.6	1.1
25-29	300	5	19.1	0.3			43.9	0.6
30-34	371	15	23.3	0.9			38.9	1.0
35-39	431	34	26.5	2.1			31.2	1.4
40-44	514	70	27.6	3.9	0.4		23.7	1.5
45-49	900	94	45.6	4.9	0.2	1.1	22.9	1.4
50-54	1559	179	90.2	10.5	0.7	0.6	25.3	2.1
55-59	2843	267	200.9	18.2	0.7	1.9	30.8	2.9
60-64	4682	358	382.2	26.9	0.9	2.5	35.6	3.2
65-69	7526	599	635.1	46.1	1.1	2.5	40.3	4.3
70-74	8456	731	764.3	57.8	2.1	4.7	40.2	4.9
75-79	6038	790	757.8	78.9	5.1	6.3	36.5	5.9
80-84	3608	676	784.5	95.5	14.1	16.9	32.8	6.2
85+	2881	773	940.9	105.3	42.7	39.1	36.4	6.1
All ages	40380	4631			5.9	11.5	35.4	4.1
Incidence								
Raw			176.7	19.6				
WS			89.1	7.8				
ES			129.6	11.5				
BRD-S			164.5	14.9				

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).

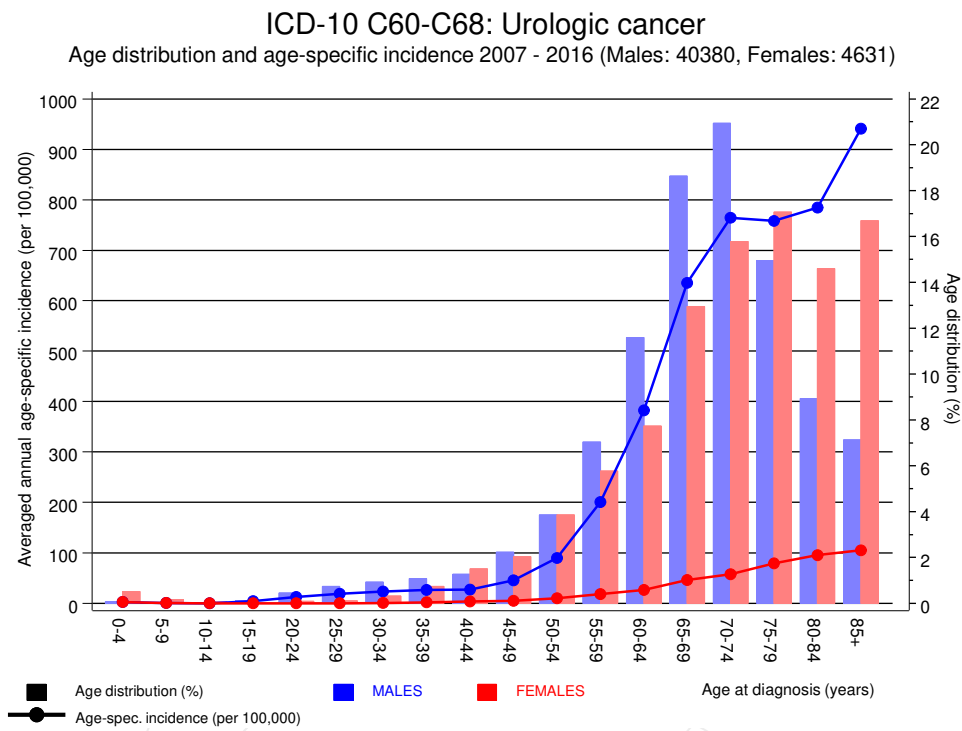


Figure 6. Age distribution (males: mean=69.1 yrs, median=70.5 yrs; females: mean=72.6 yrs, median=74.5 yrs) and age-specific incidence.

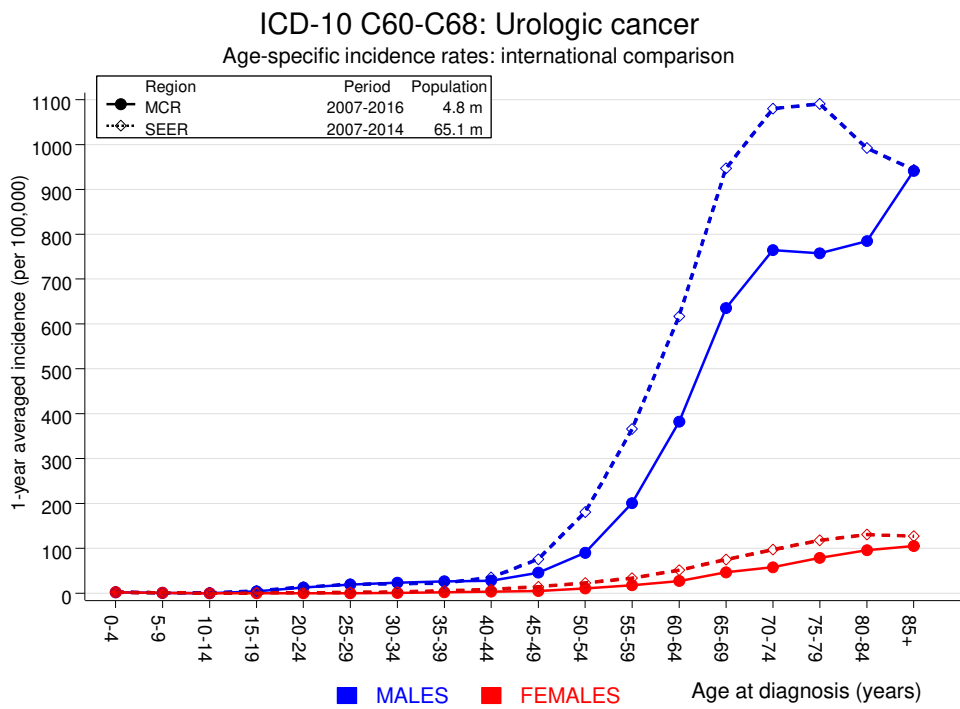


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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>.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2016

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	50	36.3	1.4	1.0	1.8 #	0.5	2.0
C07-C08 Salivary gland	25	11.9	2.1	1.4	3.1 #	0.5	16.0
C09-C10 Oropharynx	70	43.9	1.6	1.2	2.0 #	1.0	
C12-C13 Hypopharynx	42	24.3	1.7	1.2	2.3 #	0.7	4.8
C15 Oesophagus	168	89.6	1.9	1.6	2.2 #	3.0	7.7
C16 Stomach	359	213.3	1.7	1.5	1.9 #	5.5	7.2
C17 Small intestine	85	26.8	3.2	2.5	3.9 #	2.2	2.4
C18 Colon	961	510.9	1.9	1.8	2.0 #	17.0	5.1
C19-C20 Rectum	455	269.8	1.7	1.5	1.8 #	7.0	3.7
C21 Anus/canal	24	10.5	2.3	1.5	3.4 #	0.5	4.2
C22 Liver	223	144.0	1.5	1.4	1.8 #	3.0	16.1
C23-C24 Bile	76	51.5	1.5	1.2	1.8 #	0.9	14.5
C25 Pancreas	421	193.4	2.2	2.0	2.4 #	8.6	26.8
C32 Larynx	85	48.6	1.7	1.4	2.2 #	1.4	11.8
C33-C34 Lung	1151	599.3	1.9	1.8	2.0 #	20.8	11.0
C38,C45 Mesothelioma	78	35.5	2.2	1.7	2.7 #	1.6	7.7
C43 Malign. melanoma	512	210.7	2.4	2.2	2.6 #	11.4	1.4
C46,C49 Soft tissue	55	28.0	2.0	1.5	2.6 #	1.0	1.8
C50 Breast	23	13.0	1.8	1.1	2.6 #	0.4	4.3
C60 Penis	31	11.9	2.6	1.8	3.7 #	0.7	3.2
C61 Prostate	1342	1497.4	0.9	0.8	0.9 #	-5.9	5.3
C62 Testis	93	9.4	9.9	8.0	12.1 #	3.2	2.2
C64 Kidney	630	173.9	3.6	3.3	3.9 #	17.2	7.3
C65 Renal pelvis	134	22.8	5.9	4.9	6.9 #	4.2	
C66 Ureter	96	12.9	7.5	6.1	9.1 #	3.1	
C67 Bladder	702	242.1	2.9	2.7	3.1 #	17.3	8.0
C68 Urethra	69	4.0	17.3	13.5	21.9 #	2.5	
C68 Urinary org.	29	3.5	8.3	5.6	12.0 #	1.0	72.4
C70-C72 CNS cancer	138	63.5	2.2	1.8	2.6 #	2.8	10.9
C73 Thyroid	73	28.4	2.6	2.0	3.2 #	1.7	4.1
C76-C79 CUP	155	87.5	1.8	1.5	2.1 #	2.5	4.5
C81 Hodgkin lymphoma	20	10.7	1.9	1.1	2.9 #	0.4	
C82-C85 NHL	437	211.0	2.1	1.9	2.3 #	8.5	7.1
C90 Mult. myeloma	139	68.4	2.0	1.7	2.4 #	2.7	10.8
C91-C96 Leukaemia	176	87.2	2.0	1.7	2.3 #	3.3	32.4
Others, specified	117	58.5	2.0	1.7	2.4 #	2.2	13.7
Not observed	0	1.8	0.0	0.0	2.1	-0.1	
All further malignancies	9244	5156.1	1.8	1.8	1.8 #	154.1	8.3

Patients	62970
Median age at next malignancy (years)	74.2
Person-years	265203
Mean observation time (years)	4.2
Median observation time (years)	2.9

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 to 16 are pooled in category "Others, specified".

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2016

FEMALES

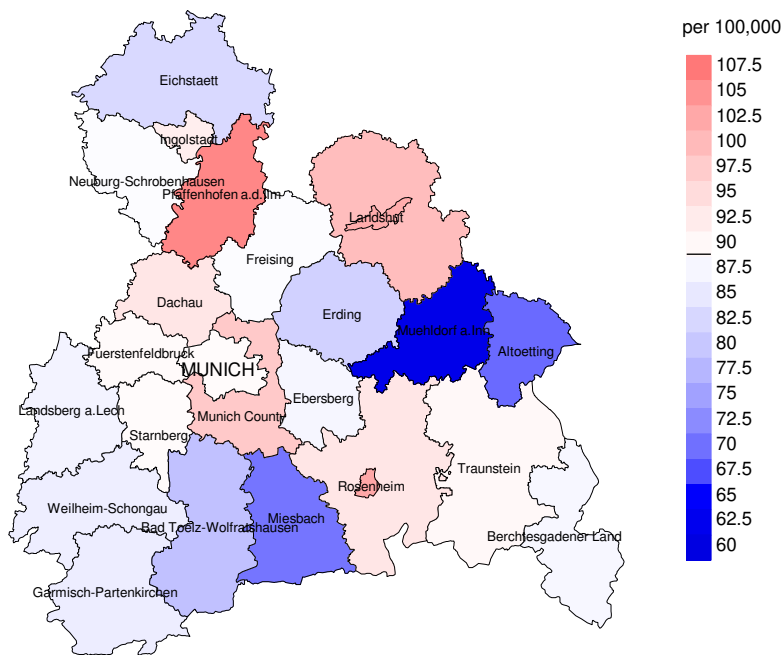
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	2	1.5	1.3	0.2	4.7	0.2	
C15 Oesophagus	8	1.7	4.7	2.0	9.3 #	2.9	25.0
C16 Stomach	25	11.0	2.3	1.5	3.4 #	6.5	4.0
C17 Small intestine	6	1.3	4.5	1.7	9.8 #	2.2	
C18 Colon	63	30.2	2.1	1.6	2.7 #	15.2	6.3
C19-C20 Rectum	28	12.2	2.3	1.5	3.3 #	7.3	7.1
C21 Anus/canal	2	1.4	1.4	0.2	5.0	0.3	
C22 Liver	7	3.6	1.9	0.8	4.0	1.6	28.6
C23-C24 Bile	17	4.5	3.8	2.2	6.1 #	5.8	17.6
C25 Pancreas	44	13.9	3.2	2.3	4.2 #	13.9	36.4
C26 GI cancer	2	0.6	3.3	0.4	11.9	0.6	
C32 Larynx	2	0.5	4.3	0.5	15.5	0.7	
C33-C34 Lung	88	20.0	4.4	3.5	5.4 #	31.5	17.0
C43 Malign. melanoma	17	9.7	1.8	1.0	2.8 #	3.4	11.8
C46,C49 Soft tissue	4	1.6	2.5	0.7	6.3	1.1	
C50 Breast	176	77.8	2.3	1.9	2.6 #	45.5	9.1
C51 Vulva	8	3.1	2.6	1.1	5.1 #	2.3	12.5
C52 Vagina	2	0.6	3.6	0.4	12.9	0.7	
C53 Cervix uteri	19	3.1	6.0	3.6	9.4 #	7.3	5.3
C54 Corpus uteri	27	15.0	1.8	1.2	2.6 #	5.5	7.4
C55,C57 Fem. genitals un	5	0.8	6.5	2.1	15.1 #	2.0	40.0
C56 Ovary	22	11.3	1.9	1.2	2.9 #	4.9	27.3
C64 Kidney	98	7.1	13.7	11.1	16.7 #	42.1	16.3
C65 Renal pelvis	39	0.9	41.2	29.3	56.4 #	17.6	
C66 Ureter	37	0.5	77.0	54.2	106.1 #	16.9	
C67 Bladder	91	6.0	15.3	12.3	18.7 #	39.4	12.1
C68 Urethra	5	0.1	61.7	20.0	143.9 #	2.3	
C68 Urinary org.	6	0.1	46.3	17.0	100.8 #	2.7	50.0
C70-C72 CNS cancer	8	3.8	2.1	0.9	4.2	2.0	37.5
C73 Thyroid	25	3.8	6.6	4.3	9.7 #	9.8	4.0
C76-C79 CUP	15	5.7	2.6	1.5	4.4 #	4.3	6.7
C82-C85 NHL	34	11.4	3.0	2.1	4.2 #	10.5	17.6
C90 Mult. myeloma	6	3.7	1.6	0.6	3.5	1.0	
C91-C96 Leukaemia	19	4.8	3.9	2.4	6.1 #	6.6	21.1
Others, specified	8	4.8	1.7	0.7	3.3	1.5	25.0
Not observed	0	2.0	0.0	0.0	1.9	-0.9	
All further malignancies	965	280.1	3.4	3.2	3.7 #	317.3	12.6

Patients	6716
Median age at next malignancy (years)	74.9
Person-years	21582
Mean observation time (years)	3.2
Median observation time (years)	1.4

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Average incidence (world standard population) 2007 - 2016: Males



Average incidence (world standard population) 2007 - 2016: Females

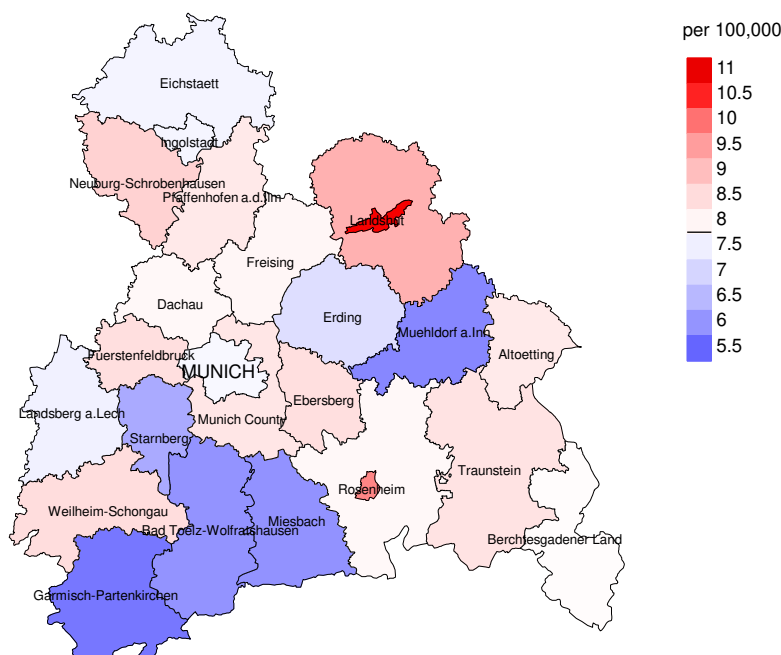
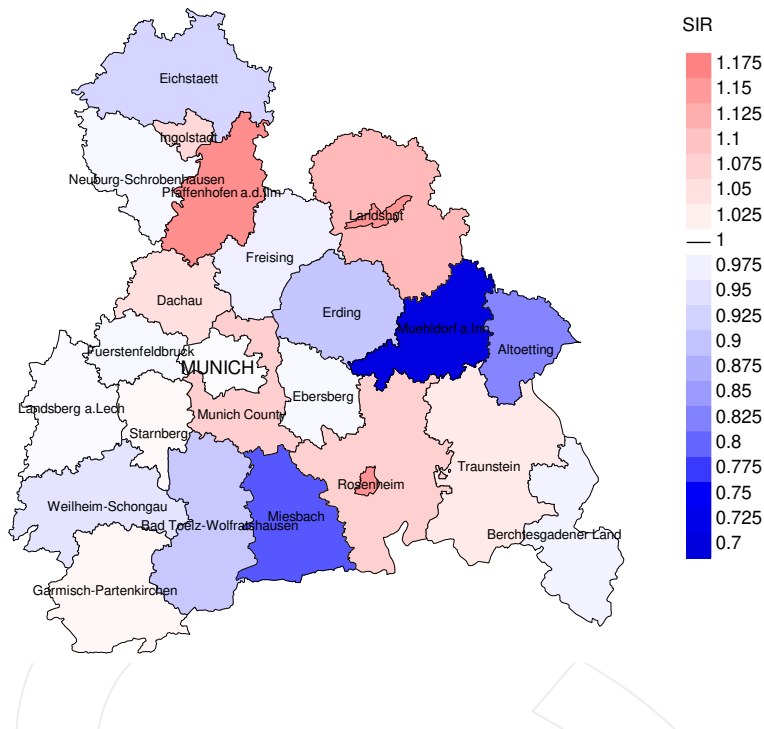


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 89.1/100,000 WS N=40,380, females 7.8/100,000 WS N=4,631).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 142 women were identified with newly diagnosed urologic cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.4/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 6.5 and 10.9/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

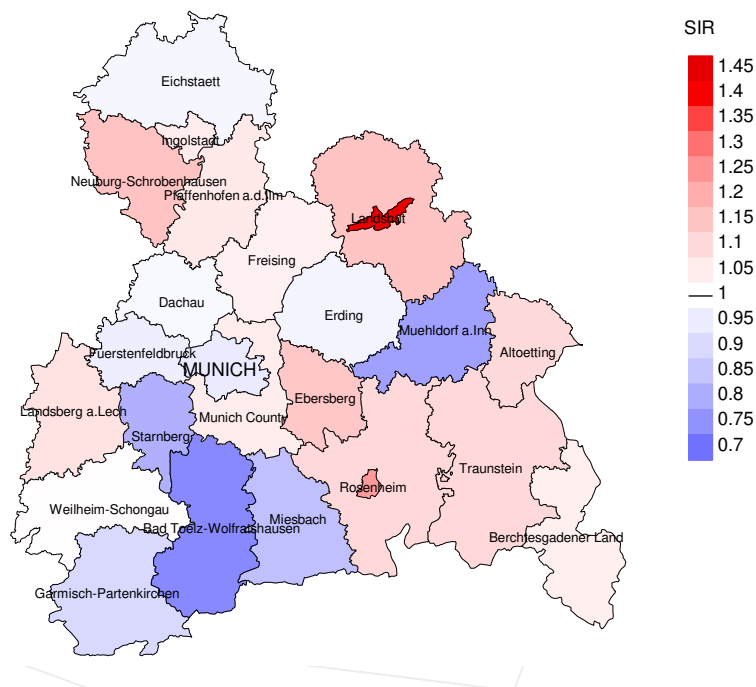


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=40,380, females N=4,631).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 142 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 1.14. Though, the value of this parameter may vary with an underlying probability of 99% between 0.91 and 1.41, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 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	2503	96.4	9.3	1696	67.8	95.8
1999	2408	96.5	7.6	1565	65.0	96.0
2000	2572	96.3	9.0	1585	61.6	96.3
2001	2665	95.6	7.2	1566	58.8	96.2
2002	4966	95.6	10.0	2928	59.0	97.2
2003	4884	94.8	7.8	2674	54.8	97.9
2004	4823	95.2	7.8	2455	50.9	98.2
2005	4794	93.0	6.3	2285	47.7	97.6
2006	4718	88.4	6.0	2214	46.9	98.7
2007	5479	70.2	6.7	2383	43.5	98.2
2008	5166	63.8	6.4	2209	42.8	98.6
2009	4955	63.2	6.1	2043	41.2	98.4
2010	4883	62.8	6.6	1842	37.7	98.2
2011	5030	61.3	5.9	1731	34.4	96.9
2012	5143	59.6	5.4	1586	30.8	96.6
2013	4730	60.1	5.6	1399	29.6	96.5
2014	4670	62.6	6.1	1160	24.8	95.4
2015	3325	98.3	9.1	837	25.2	94.6
2016	2720	71.7	9.4	495	18.2	90.5
1998-2016	80434	78.1	7.1	34653	43.1	97.2

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 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	2503	1113	93.7	362	14.5
1999	2408	1054	94.1	310	12.9
2000	2572	1060	95.1	317	12.3
2001	2665	1123	93.8	297	11.1
2002	4966	1662	95.9	681	13.7
2003	4884	1804	97.1	575	11.8
2004	4823	1782	97.0	530	11.0
2005	4794	1902	96.6	466	9.7
2006	4718	2004	97.0	475	10.1
2007	5479	2271	97.4	583	10.6
2008	5166	2398	98.7	552	10.7
2009	4955	2481	98.6	563	11.4
2010	4883	2634	98.4	558	11.4
2011	5030	2694	98.6	550	10.9
2012	5143	2800	98.4	544	10.6
2013	4730	2860	98.5	508	10.7
2014	4670	2937	98.1	522	11.2
2015	3325	3078	98.4	531	16.0
2016	2720	2808	98.8	454	16.7
1998-2016	80434	40465	97.6	9378	11.7

Table 9c

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 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 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	59.8	40.2	80.7
1999	1054	63.6	36.4	79.5
2000	1060	62.9	37.1	80.2
2001	1123	60.4	39.6	79.4
2002	1662	65.1	34.9	81.2
2003	1804	66.6	33.4	79.4
2004	1782	63.9	36.1	78.4
2005	1902	65.5	34.5	77.1
2006	2004	64.9	35.1	77.4
2007	2271	66.8	33.2	77.2
2008	2398	63.7	36.3	74.5
2009	2481	62.6	37.4	74.4
2010	2634	63.3	36.7	74.7
2011	2694	62.2	37.8	73.6
2012	2800	60.9	39.1	71.9
2013	2860	58.6	41.4	70.3
2014	2937	58.8	41.2	70.8
2015	3078	57.9	42.1	68.5
2016	2808	54.9	45.1	67.4
1998-2016	40465	61.8	38.2	74.4

Table 10a

Medians of age at death according to the grouping in Table 9
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	82.9	77.9
2000	899	79.7	78.0	82.3	79.6
2001	959	78.9	77.1	81.7	78.4
2002	1403	78.6	76.9	80.9	78.1
2003	1540	78.0	76.1	81.7	77.0
2004	1497	79.1	76.9	82.2	78.0
2005	1631	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	77.1	82.2	77.9
2009	2149	79.5	76.9	83.0	78.1
2010	2259	79.6	77.8	82.4	78.7
2011	2360	79.9	77.5	83.0	78.7
2012	2423	80.3	78.1	83.2	79.0
2013	2502	80.9	78.6	83.3	79.6
2014	2588	81.0	78.1	84.0	79.4
2015	2695	80.7	78.5	83.9	79.1
2016	2477	81.5	79.1	84.1	80.1
1998–2016	34972	79.7	77.7	82.8	78.6

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 10b

Medians of age at death according to the grouping in Table 9
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	79.6	82.7	81.8
1999	157	78.9	78.7	79.9	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	81.0	80.0
2004	285	81.2	80.0	83.7	80.8
2005	271	81.3	79.1	83.4	80.4
2006	299	81.1	79.7	84.0	80.0
2007	322	80.8	79.8	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	358	80.6	78.4	85.0	79.4
2014	349	82.1	80.0	87.1	80.7
2015	382	81.6	79.6	87.5	80.3
2016	331	82.5	78.4	86.5	80.0
1998-2016	5492	81.1	79.1	85.2	80.2

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 11a

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	562	50.7	0.26	28.2	0.23	47.6	0.26	70.9	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	0.28
2001	566	48.8	0.24	26.1	0.22	44.2	0.25	64.7	0.28
2002	897	48.1	0.20	24.3	0.18	40.9	0.21	59.4	0.23
2003	1011	53.9	0.23	26.7	0.20	44.4	0.23	65.0	0.26
2004	939	49.9	0.22	23.7	0.19	39.7	0.22	58.8	0.25
2005	1045	55.2	0.25	25.1	0.21	42.4	0.24	63.7	0.28
2006	1097	57.3	0.26	26.0	0.23	43.6	0.26	63.7	0.29
2007	1293	58.4	0.26	25.9	0.22	43.6	0.25	63.8	0.29
2008	1308	58.8	0.29	25.0	0.24	41.9	0.27	62.1	0.31
2009	1317	59.0	0.30	24.9	0.25	41.1	0.28	59.8	0.32
2010	1416	62.8	0.33	25.4	0.26	42.6	0.30	62.5	0.35
2011	1464	65.4	0.33	26.2	0.27	44.0	0.31	64.0	0.35
2012	1468	64.7	0.32	24.6	0.25	42.0	0.29	61.9	0.34
2013	1455	63.2	0.35	24.1	0.27	40.5	0.32	59.2	0.36
2014	1496	64.2	0.37	24.2	0.28	40.5	0.32	58.3	0.37
2015	1541	64.8	0.54	23.5	0.41	39.6	0.47	58.3	0.53
2016	1358	56.5	0.58	19.8	0.42	33.7	0.49	49.9	0.57
1998-2016	21338	58.0	0.30	24.7	0.24	41.5	0.28	60.9	0.32

Table 11b

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	107	9.1	0.39	3.0	0.29	4.9	0.32	7.2	0.37
1999	115	9.7	0.48	3.4	0.36	5.6	0.40	7.8	0.45
2000	119	9.9	0.49	3.4	0.41	5.5	0.43	7.9	0.47
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	191	9.7	0.45	3.2	0.37	5.2	0.40	7.4	0.43
2004	203	10.3	0.47	3.2	0.36	5.2	0.39	7.5	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	227	9.8	0.45	3.0	0.34	5.0	0.38	7.3	0.43
2008	222	9.6	0.44	3.1	0.33	5.0	0.37	7.0	0.40
2009	241	10.4	0.47	3.4	0.38	5.4	0.41	7.6	0.44
2010	253	10.8	0.49	3.2	0.40	5.3	0.43	7.7	0.47
2011	214	9.2	0.44	2.9	0.32	4.7	0.37	6.6	0.41
2012	243	10.3	0.52	3.2	0.43	5.2	0.46	7.4	0.49
2013	226	9.5	0.48	3.0	0.38	4.7	0.41	6.6	0.45
2014	237	9.8	0.51	2.9	0.38	4.7	0.41	6.8	0.46
2015	248	10.2	0.64	2.9	0.48	4.8	0.52	6.9	0.59
2016	188	7.7	0.60	2.5	0.50	3.9	0.53	5.2	0.56
1998-2016	3742	9.8	0.48	3.1	0.37	5.0	0.40	7.1	0.44

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9	2	0.0	0.0	2	0.0	0.0			0.0
10-14	2	0.0	0.0			0.0	2	0.1	0.1
15-19	2	0.0	0.0	2	0.0	0.0			0.1
20-24	6	0.0	0.1	5	0.0	0.1	1	0.0	0.1
25-29	7	0.0	0.1	6	0.0	0.1	1	0.0	0.2
30-34	10	0.1	0.2	10	0.1	0.2			0.2
35-39	19	0.1	0.3	13	0.1	0.3	6	0.3	0.4
40-44	43	0.3	0.6	30	0.2	0.5	13	0.6	1.0
45-49	121	0.7	1.3	93	0.7	1.1	28	1.2	2.2
50-54	245	1.5	2.8	191	1.4	2.5	54	2.3	4.6
55-59	446	2.7	5.5	377	2.7	5.2	69	3.0	7.6
60-64	850	5.2	10.7	744	5.3	10.4	106	4.6	12.2
65-69	1626	9.9	20.6	1403	9.9	20.4	223	9.7	21.9
70-74	2757	16.8	37.4	2452	17.4	37.7	305	13.3	35.1
75-79	3334	20.3	57.7	2909	20.6	58.4	425	18.5	53.6
80-84	3349	20.4	78.1	2869	20.3	78.7	480	20.9	74.5
85+	3596	21.9	100.0	3010	21.3	100.0	586	25.5	100.0
All ages	16415	100.0		14116	100.0		2299	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(incl. multiple malignancies)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9	2		0.2	0.25			8.3	
10-14		2			0.2	0.67		8.3
15-19	2		0.2	0.04			4.5	
20-24	5	1	0.4	0.03	0.1	0.25	8.8	3.0
25-29	6	1	0.4	0.02	0.1	0.20	8.1	1.4
30-34	10		0.6	0.03			9.6	
35-39	13	6	0.8	0.03	0.4	0.18	6.5	2.1
40-44	30	13	1.6	0.06	0.7	0.19	6.1	1.9
45-49	93	28	4.7	0.10	1.5	0.30	8.1	2.1
50-54	191	54	11.1	0.12	3.2	0.30	9.3	2.7
55-59	377	69	26.6	0.13	4.7	0.26	11.1	2.4
60-64	744	106	60.7	0.16	8.0	0.30	14.9	2.8
65-69	1403	223	118.4	0.19	17.2	0.37	19.3	4.2
70-74	2452	305	221.6	0.29	24.1	0.42	26.3	4.5
75-79	2909	425	365.1	0.48	42.4	0.54	32.4	6.1
80-84	2869	480	623.8	0.80	67.8	0.71	38.0	7.0
85+	3010	586	983.1	1.04	79.8	0.76	46.1	6.3
All ages	14116	2299					27.0	5.0
Mortality								
Raw			61.8	0.35	9.7	0.50		
WS			24.3	0.27	3.0	0.39		
ES			40.8	0.31	4.8	0.42		
BRD-S			59.7	0.36	6.9	0.46		
PYLL-70								
per 100,000			106.9		22.8			
ES			92.3		19.2			
AYLL-70			7.5		9.0			

Table 14a

Further malignancies in deaths in period 1998–2016
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C09–C10 Oropharynx	115	1.1	55	47.8	3	2.6	57	49.6
C15 Oesophagus	197	1.9	35	17.8	10	5.1	152	77.2
C16 Stomach	465	4.5	109	23.4	35	7.5	321	69.0
C18 Colon	1112	10.9	421	37.9	95	8.5	596	53.6
C19–C20 Rectum	611	6.0	232	38.0	63	10.3	316	51.7
C22 Liver	278	2.7	26	9.4	21	7.6	231	83.1
C23–C24 Bile	105	1.0	12	11.4	8	7.6	85	81.0
C25 Pancreas	527	5.1	29	5.5	37	7.0	461	87.5
C32 Larynx	130	1.3	71	54.6	6	4.6	53	40.8
C33–C34 Lung	1568	15.3	192	12.2	105	6.7	1271	81.1
C43 Malign. melanoma	407	4.0	201	49.4	20	4.9	186	45.7
C44 Skin others	659	6.4	216	32.8	25	3.8	418	63.4
C61 Prostate	802	7.8			162	20.2	640	79.8
C64 Kidney	347	3.4			70	20.2	277	79.8
C65 Renal pelvis	140	1.4			22	15.7	118	84.3
C67 Bladder	672	6.6			163	24.3	509	75.7
C70–C72 CNS cancer	169	1.6	13	7.7	13	7.7	143	84.6
C76–C79 CUP	233	2.3	39	16.7	23	9.9	171	73.4
C82–C85 NHL	444	4.3	139	31.3	51	11.5	254	57.2
C90 Mult. myeloma	162	1.6	36	22.2	12	7.4	114	70.4
C91–C96 Leukaemia	220	2.1	17	7.7	16	7.3	187	85.0
Others, specified	882	8.6	215	24.4	78	8.8	589	66.8
All further malignancies	10245	100.0	2058	20.1	1038	10.1	7149	69.8

Further malignancies with number of cases 1 to 92 are pooled in category “Others, specified”.

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 further malignancy.

Table 14b

Further malignancies in deaths in period 1998–2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C15 Oesophagus	11	0.7			1	9.1	10	90.9
C16 Stomach	47	2.9	16	34.0	9	19.1	22	46.8
C18 Colon	127	7.8	55	43.3	15	11.8	57	44.9
C19–C20 Rectum	58	3.6	27	46.6	6	10.3	25	43.1
C22 Liver	13	0.8	2	15.4	5	38.5	6	46.2
C23–C24 Bile	21	1.3	1	4.8	4	19.0	16	76.2
C25 Pancreas	71	4.4	4	5.6	6	8.5	61	85.9
C33–C34 Lung	148	9.1	17	11.5	20	13.5	111	75.0
C43 Malign. melanoma	33	2.0	21	63.6	2	6.1	10	30.3
C44 Skin others	48	3.0	20	41.7	3	6.3	25	52.1
C50 Breast	349	21.5	213	61.0	24	6.9	112	32.1
C51 Vulva	14	0.9	9	64.3	1	7.1	4	28.6
C53 Cervix uteri	86	5.3	66	76.7	9	10.5	11	12.8
C54 Corpus uteri	80	4.9	55	68.8	12	15.0	13	16.3
C55,C57 Fem. genitals un	12	0.7	7	58.3	2	16.7	3	25.0
C56 Ovary	54	3.3	22	40.7	5	9.3	27	50.0
C64 Kidney	71	4.4			18	25.4	53	74.6
C65 Renal pelvis	34	2.1			7	20.6	27	79.4
C66 Ureter	28	1.7			9	32.1	19	67.9
C67 Bladder	82	5.0			12	14.6	70	85.4
C70–C72 CNS cancer	14	0.9	4	28.6	2	14.3	8	57.1
C73 Thyroid	33	2.0	17	51.5	2	6.1	14	42.4
C76–C79 CUP	34	2.1	4	11.8	2	5.9	28	82.4
C82–C85 NHL	53	3.3	24	45.3	9	17.0	20	37.7
C90 Mult. myeloma	11	0.7	4	36.4	1	9.1	6	54.5
C91–C96 Leukaemia	18	1.1	2	11.1	4	22.2	12	66.7
Others, specified	75	4.6	26	34.7	12	16.0	37	49.3
All further malignancies	1625	100.0	616	37.9	202	12.4	807	49.7

Further malignancies with number of cases 1 to 9 are pooled in category "Others, specified".

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 further malignancy.

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(First primaries only *)

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9	2		0.2	0.25			8.7	
10-14		1			0.1	0.50		4.8
15-19	2		0.2	0.04			4.8	
20-24	5	1	0.4	0.03	0.1	0.25	9.8	3.2
25-29	4	1	0.3	0.01	0.1	0.20	6.0	1.5
30-34	10		0.6	0.03			9.8	
35-39	13	6	0.8	0.03	0.4	0.18	6.9	2.3
40-44	27	11	1.4	0.06	0.6	0.19	5.9	1.8
45-49	82	25	4.2	0.10	1.3	0.30	7.8	2.2
50-54	151	42	8.7	0.11	2.5	0.29	8.4	2.5
55-59	303	51	21.4	0.12	3.5	0.24	10.3	2.1
60-64	605	70	49.4	0.15	5.3	0.25	14.5	2.3
65-69	1080	170	91.1	0.17	13.1	0.37	18.5	4.0
70-74	1878	208	169.8	0.27	16.4	0.40	26.1	3.9
75-79	2236	306	280.6	0.47	30.6	0.53	33.8	5.6
80-84	2208	340	480.1	0.84	48.1	0.73	40.2	6.4
85+	2369	455	773.7	1.11	62.0	0.78	49.7	6.2
All ages	10975	1687					26.9	4.6
Mortality								
Raw			48.0	0.33	7.1	0.49		
WS			19.0	0.25	2.2	0.37		
ES			31.8	0.29	3.5	0.41		
BRD-S			46.4	0.34	5.0	0.45		
PYLL-70								
per 100,000			87.7		17.7			
ES			75.8		14.8			
AYLL-70			7.7		9.3			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**Single primaries only** *)

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9	2		0.2	0.25			8.7	
10-14		1			0.1	0.50		4.8
15-19	2		0.2	0.04			4.8	
20-24	5	1	0.4	0.03	0.1	0.25	9.8	3.2
25-29	4	1	0.3	0.01	0.1	0.20	6.0	1.5
30-34	10		0.6	0.03			9.8	
35-39	11	4	0.7	0.03	0.3	0.12	5.9	1.6
40-44	26	9	1.4	0.06	0.5	0.16	5.7	1.5
45-49	73	23	3.7	0.09	1.2	0.30	7.0	2.1
50-54	120	37	6.9	0.09	2.2	0.28	6.7	2.2
55-59	254	45	17.9	0.11	3.1	0.24	8.8	1.9
60-64	481	58	39.3	0.13	4.4	0.24	11.7	1.9
65-69	761	148	64.2	0.13	11.4	0.36	13.3	3.6
70-74	1308	162	118.2	0.22	12.8	0.36	18.8	3.1
75-79	1506	236	189.0	0.37	23.6	0.46	23.7	4.5
80-84	1530	278	332.7	0.67	39.3	0.67	29.6	5.4
85+	1755	372	573.2	0.89	50.7	0.67	39.8	5.3
All ages	7848	1375					19.9	3.8
Mortality								
Raw			34.3	0.26	5.8	0.44		
WS			13.8	0.20	1.8	0.33		
ES			23.0	0.23	2.9	0.37		
BRD-S			33.1	0.27	4.1	0.41		
PYLL-70								
per 100,000			71.9		15.3			
ES			62.5		12.9			
AYLL-70			8.3		9.4			

* See corresponding tables with multiple malignancies.

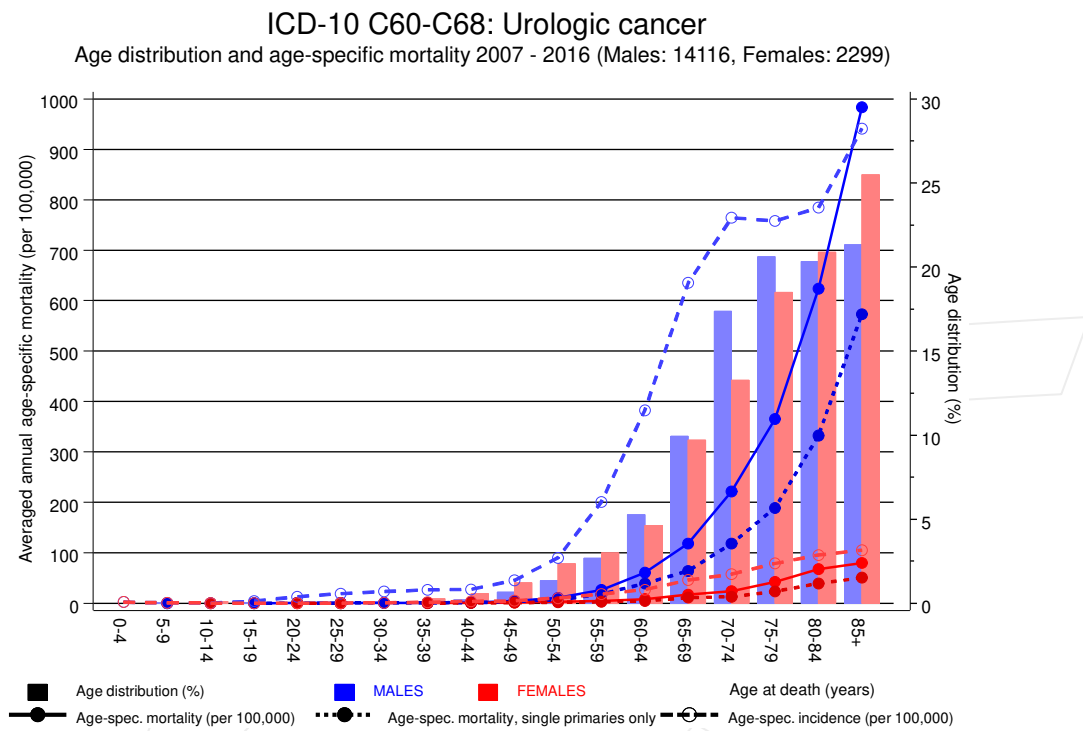
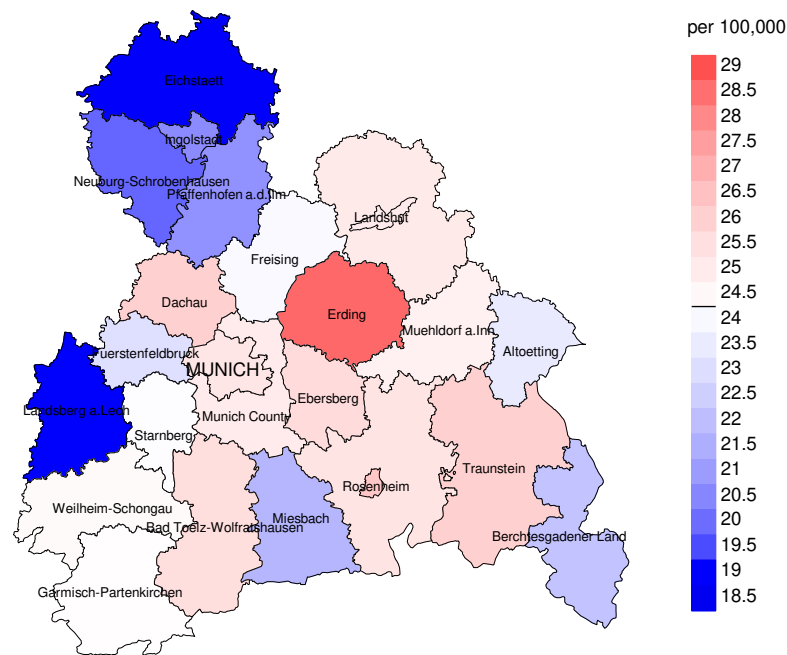


Figure 17. Distribution of age at death (bars; males: mean=71.5 yrs, median=72.1 yrs; females: mean=73.2 yrs, median=74.8 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed 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 - 2016: Males



Average mortality (world standard population) 2007 - 2016: Females

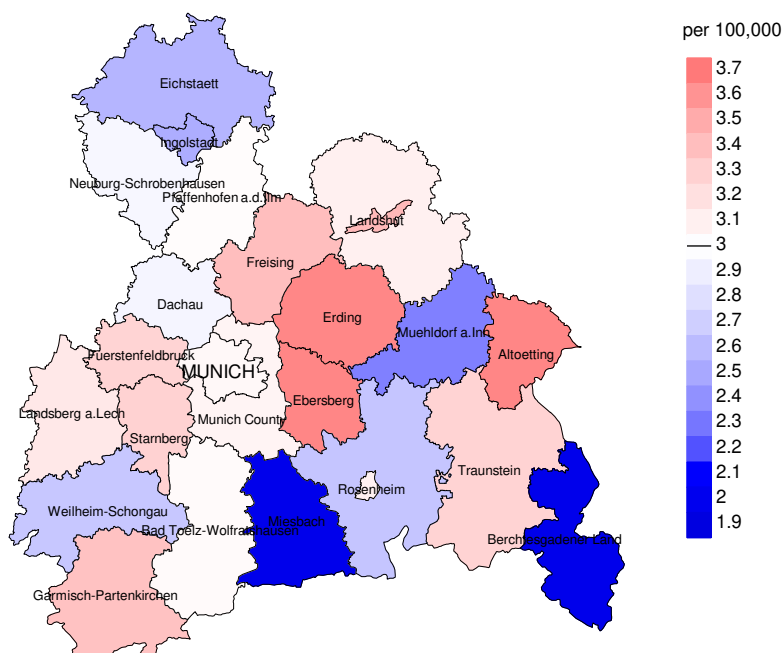
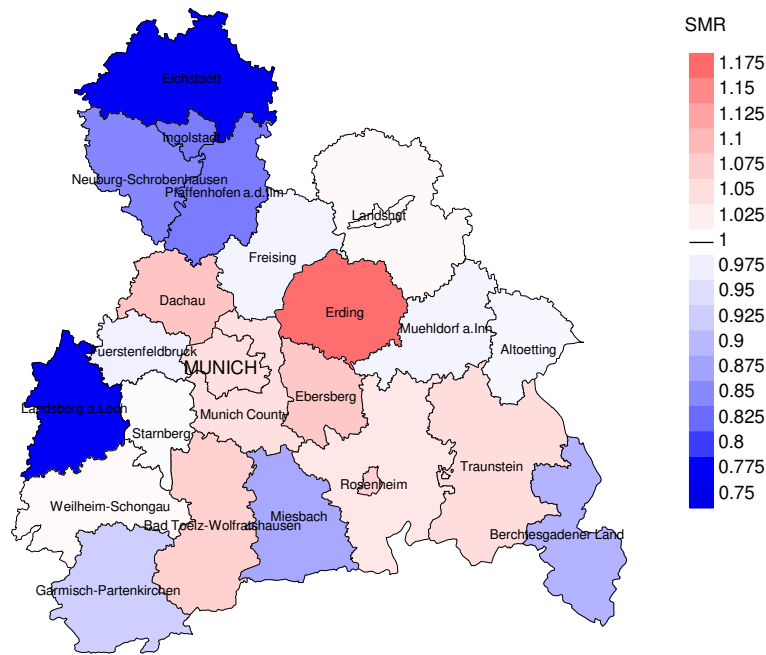


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 24.3/100,000 WS N=14,116, females 3.0/100,000 WS N=2,299).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 82 women died from urologic cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.5 and 5.3/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

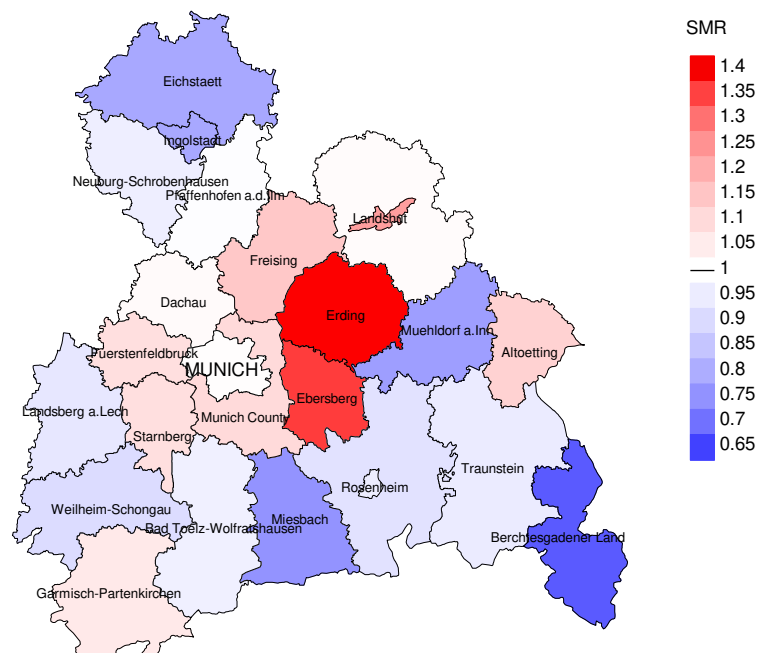


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=14,116, females N=2,299).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 82 women died from urologic cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.35. Though, the value of this parameter may vary with an underlying probability of 99% between 1.00 and 1.79, 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

MCR	Munich Cancer Registry (Tumorregister München)
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
SEER	Surveillance, Epidemiology, and End Results (USA)
DCO	Death certificate only
BRD-S	German standard population
ES	European standard population (old)
WS	World standard population
SIR	Standardized incidence ratio
CI	Confidence interval
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
SMR	Standardized mortality ratio
MI-index	Ratio between mortality and incidence
FRG	Federal Republic of Germany

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