

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C64-C68: Urinary tract cancer

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	23,443
Diseases	24,423
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/bC6468E-ICD-10-C64-C68-Urinary-tract-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
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	788	72	9.1	16.2	16.3	72.8	97.0
1999	750	65	8.7	15.7	16.2	71.6	96.1
2000	726	84	11.6	16.6	16.0	71.8	97.2
2001	728	70	9.6	17.1	16.0	72.5	96.6
2002	1345	182	13.5	18.5	15.8	75.4	97.9 #
2003	1324	150	11.3	18.6	15.7	70.1	95.7
2004	1303	148	11.4	19.0	15.5	66.9	96.7
2005	1351	97	7.2	19.3	15.2	62.1	94.8
2006	1394	98	7.0	19.4	14.9	63.9	92.2
2007	1511	123	8.1	19.7	14.4	60.1	81.2 #
2008	1580	133	8.4	20.4	13.8	58.5	75.3
2009	1584	128	8.1	21.1	13.5	57.6	73.2
2010	1585	124	7.8	21.7	13.0	53.4	71.9
2011	1544	105	6.8	22.2	12.3	52.5	72.0
2012	1562	113	7.2	22.6	11.7	49.5	69.2
2013	1557	118	7.6	23.2	10.6	46.9	69.4
2014	1504	119	7.9	23.6	9.5	41.4	68.8
2015	1266	145	11.5	23.9	7.9	38.5	98.6
2016	1021	118	11.6	24.1	7.5	27.9	83.0 ##
1998-2016	24423	2192	9.0	24.1	16.3	57.3	83.6

24,423 cases diagnosed 1998-2016 are related to a total of 23,443 patients. Currently, in 8,724 (37.2 %) of these 23,443 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 6,513 / 1,696 / 515 (27.8 % / 7.2 % / 2.2 %) 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 1,504 cases has been diagnosed, of which 23.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.5 % 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	511	64.8	38	7.4	16.4	18.5	73.4	97.8
1999	506	67.5	45	8.9	15.7	18.3	71.1	96.6
2000	481	66.3	52	10.8	16.7	18.2	70.9	96.5
2001	449	61.7	33	7.3	17.3	18.2	70.2	96.4
2002	881	65.5	102	11.6	18.9	18.0	74.8	98.1 #
2003	898	67.8	88	9.8	19.2	17.8	69.2	95.3
2004	865	66.4	76	8.8	19.5	17.7	67.2	96.4
2005	900	66.6	45	5.0	19.7	17.2	60.8	95.2
2006	930	66.7	43	4.6	19.8	16.9	62.7	92.4
2007	1010	66.8	62	6.1	20.3	16.3	59.0	80.4 #
2008	1064	67.3	70	6.6	21.1	15.6	57.0	74.2
2009	1066	67.3	79	7.4	22.0	15.2	57.7	73.4
2010	1063	67.1	56	5.3	22.5	14.8	52.1	72.2
2011	1045	67.7	68	6.5	23.1	13.7	53.3	72.2
2012	1079	69.1	58	5.4	23.6	13.0	48.4	69.2
2013	1076	69.1	62	5.8	24.3	11.6	46.5	68.9
2014	1029	68.4	68	6.6	24.7	10.7	40.8	69.7
2015	869	68.6	90	10.4	24.9	8.9	35.4	98.6
2016	707	69.2	68	9.6	25.2	8.6	26.3	81.9 ##
1998-2016	16429	67.3	1203	7.3	25.2	18.5	56.3	83.4

16,429 cases diagnosed 1998-2016 are related to a total of 15,733 patients. Currently, in 6,355 (40.4 %) of these 15,733 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 4,699 / 1,250 / 406 (29.9 % / 7.9 % / 2.6 %) 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 1,029 cases has been diagnosed, of which 24.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 10.7 % 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	35.2	34	12.3	15.9	12.1	71.8	95.3
1999	244	32.5	20	8.2	15.5	11.9	72.5	95.1
2000	245	33.7	32	13.1	16.4	11.7	73.5	98.8
2001	279	38.3	37	13.3	16.7	11.5	76.3	96.8
2002	464	34.5	80	17.2	17.8	11.4	76.5	97.6 #
2003	426	32.2	62	14.6	17.5	11.3	72.1	96.5
2004	438	33.6	72	16.4	18.2	11.2	66.4	97.3
2005	451	33.4	52	11.5	18.6	10.9	64.7	94.0
2006	464	33.3	55	11.9	18.6	10.7	66.4	91.8
2007	501	33.2	61	12.2	18.6	10.3	62.3	82.8 #
2008	516	32.7	63	12.2	19.0	10.1	61.4	77.5
2009	518	32.7	49	9.5	19.4	9.8	57.3	73.0
2010	522	32.9	68	13.0	20.2	9.1	56.1	71.3
2011	499	32.3	37	7.4	20.4	9.4	50.9	71.5
2012	483	30.9	55	11.4	20.7	8.8	52.0	69.2
2013	481	30.9	56	11.6	21.0	8.3	48.0	70.5
2014	475	31.6	51	10.7	21.3	7.0	42.7	66.9
2015	397	31.4	55	13.9	21.7	5.7	45.3	98.5
2016	314	30.8	50	15.9	21.8	5.0	31.5	85.4 ##
1998-2016	7994	32.7	989	12.4	21.8	12.1	59.5	84.1

7,994 cases diagnosed 1998-2016 are related to a total of 7,710 patients. Currently, in 2,369 (30.7 %) of these 7,710 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,814 / 446 / 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 475 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	511	277	46.1	23.5	28.3	10.4	42.2	15.4	54.8	19.8
1999	506	244	45.2	20.6	27.2	9.8	40.6	14.1	52.6	17.6
2000	481	245	42.2	20.4	25.2	8.4	37.7	12.8	49.6	16.8
2001	449	279	38.7	22.9	22.8	9.8	34.1	14.8	43.7	19.1
2002	881	464	47.3	23.7	26.0	10.0	39.9	14.8	53.2	19.3
2003	898	426	47.9	21.6	26.6	8.8	39.7	13.2	52.1	17.2
2004	865	438	46.0	22.2	25.2	9.0	37.4	13.6	49.1	17.8
2005	900	451	47.5	22.7	25.4	9.5	37.9	13.9	49.0	18.1
2006	930	464	48.6	23.1	25.6	10.2	38.2	14.6	50.0	18.5
2007	1010	501	45.6	21.7	23.8	8.9	35.5	13.0	45.7	17.1
2008	1064	516	47.8	22.2	24.4	9.5	36.6	13.8	47.4	17.8
2009	1066	518	47.8	22.3	24.0	9.1	35.8	13.3	47.1	17.5
2010	1063	522	47.2	22.3	23.2	8.2	34.7	12.5	44.9	16.5
2011	1045	499	46.7	21.3	22.9	9.3	34.1	13.1	43.9	16.5
2012	1079	483	47.5	20.5	22.4	7.7	33.7	11.7	44.6	15.7
2013	1076	481	46.7	20.2	22.1	8.0	33.0	11.7	43.1	15.1
2014	1029	475	44.1	19.7	20.7	7.8	31.0	11.6	40.1	15.0
2015	869	397	36.5	16.3	15.8	6.2	24.5	9.3	33.0	12.0
2016	707	314	29.4	12.8	13.2	5.0	20.0	7.4	26.5	9.3
1998-2016	16429	7994	44.6	20.8	22.7	8.5	34.0	12.5	44.3	16.2

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.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	788	68.9	13.5	2.8	99.7	51.7	61.3	70.0	78.1	85.5
1999	750	68.0	12.7	1.1	94.3	52.7	59.6	68.6	77.3	84.2
2000	726	69.4	12.6	0.3	99.7	53.7	61.8	70.3	78.4	85.6
2001	728	69.2	12.3	1.9	96.4	53.5	61.5	69.5	78.3	85.1
2002	1345	70.9	12.3	0.1	99.5	55.2	63.4	72.2	79.5	85.9
2003	1324	70.4	13.0	0.4	103	54.4	63.2	71.3	79.2	85.5
2004	1303	70.1	13.1	0.0	99.0	54.2	62.7	71.2	79.2	85.1
2005	1351	69.9	12.8	0.7	101	54.6	62.6	70.8	79.0	84.6
2006	1394	70.0	13.4	0.2	101	53.7	63.2	71.2	78.8	85.2
2007	1511	70.2	13.4	1.2	101	53.5	64.0	71.3	79.3	85.2
2008	1580	70.4	13.1	0.2	100	53.1	63.6	71.5	79.7	85.7
2009	1584	70.5	13.2	0.5	103	53.8	63.6	71.9	79.8	85.0
2010	1585	71.0	12.9	5.4	100	53.7	63.4	72.2	80.6	86.5
2011	1544	70.6	13.8	0.5	97.6	53.3	63.4	72.1	79.9	86.4
2012	1562	71.4	12.3	1.4	103	54.9	64.5	72.9	80.1	85.0
2013	1557	71.2	12.9	0.3	101	54.4	64.7	72.6	80.2	85.9
2014	1504	71.1	12.5	1.2	107	55.3	63.5	72.9	79.6	85.8
2015	1266	72.9	11.7	0.7	103	56.1	66.4	74.6	80.8	86.6
2016	1021	71.9	12.3	12.6	98.8	54.6	63.9	74.1	80.5	86.4
1998-2016	24423	70.6	12.9	0.0	107	54.2	63.2	72.0	79.6	85.6

Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	511	67.7	13.5	5.0	95.6	50.8	60.2	69.0	76.7	84.3
1999	506	67.3	12.2	2.3	94.1	52.8	59.5	67.2	76.0	83.0
2000	481	67.8	12.6	0.3	99.7	52.7	60.8	68.7	76.7	82.1
2001	449	67.5	11.2	1.9	95.1	53.3	60.7	67.4	75.8	81.4
2002	881	69.8	12.0	0.1	97.6	54.7	62.7	70.9	78.1	83.7
2003	898	69.0	12.8	0.4	101	53.0	62.1	69.6	77.6	83.7
2004	865	68.7	12.9	0.0	98.8	53.4	61.5	69.7	77.6	82.8
2005	900	68.7	11.7	0.7	101	54.5	61.7	69.0	77.0	82.9
2006	930	69.3	12.5	0.8	101	54.0	62.7	70.1	77.9	83.6
2007	1010	69.1	12.6	1.3	101	53.2	62.8	70.1	77.3	83.6
2008	1064	69.8	12.7	0.2	100	52.6	62.9	70.8	78.5	85.0
2009	1066	69.7	12.8	0.5	97.4	53.3	62.9	71.0	78.6	84.1
2010	1063	69.3	12.6	5.4	99.1	52.4	61.2	70.8	78.4	84.0
2011	1045	70.2	12.7	1.5	96.9	52.6	62.7	71.4	79.0	85.7
2012	1079	70.4	12.4	1.4	103	53.8	62.9	72.3	79.1	84.3
2013	1076	70.6	12.3	0.9	98.6	54.0	64.0	71.9	79.2	84.8
2014	1029	70.5	12.5	1.2	97.0	55.2	62.8	72.2	79.2	85.2
2015	869	72.7	11.1	28.1	103	57.0	66.5	74.7	80.4	85.6
2016	707	71.6	11.7	20.8	98.8	55.0	63.2	73.8	79.9	85.2
1998-2016	16429	69.7	12.4	0.0	103	53.7	62.3	70.9	78.3	84.2

Table 3b

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

Year of diagnosis	Cases n	Std. dev.		Min. Max.		10% 25%		Median		
		Mean	dev.	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	518	72.2	14.0	1.7	103	55.5	66.0	74.3	82.1	87.0
2010	522	74.5	12.9	5.4	100	56.4	68.2	75.7	84.3	89.5
2011	499	71.3	15.9	0.5	97.6	53.6	64.9	73.8	81.5	88.0
2012	483	73.7	11.8	9.7	96.4	58.4	67.5	75.3	82.2	87.2
2013	481	72.7	14.0	0.3	101	55.1	66.7	74.5	81.7	88.1
2014	475	72.3	12.5	2.5	107	55.6	65.0	74.4	80.9	87.4
2015	397	73.2	13.1	0.7	98.0	54.4	66.4	74.6	82.3	89.1
2016	314	72.8	13.4	12.6	96.0	53.3	65.4	74.6	82.8	88.6
1998-2016	7994	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	47	0.3	0.3	23	0.2	0.2	24	0.5	0.5
5-9	16	0.1	0.4	8	0.1	0.3	8	0.2	0.7
10-14	5	0.0	0.5	2	0.0	0.3	3	0.1	0.7
15-19	2	0.0	0.5	1	0.0	0.3	1	0.0	0.8
20-24	8	0.1	0.5	4	0.0	0.4	4	0.1	0.8
25-29	16	0.1	0.6	11	0.1	0.5	5	0.1	1.0
30-34	36	0.2	0.9	21	0.2	0.7	15	0.3	1.3
35-39	110	0.7	1.6	76	0.8	1.5	34	0.7	2.0
40-44	218	1.5	3.1	146	1.5	2.9	72	1.5	3.5
45-49	427	2.9	6.0	333	3.3	6.2	94	2.0	5.5
50-54	712	4.8	10.9	531	5.3	11.6	181	3.8	9.4
55-59	1015	6.9	17.8	746	7.5	19.0	269	5.7	15.1
60-64	1364	9.3	27.0	1003	10.0	29.0	361	7.7	22.8
65-69	2077	14.1	41.1	1466	14.6	43.7	611	13.0	35.7
70-74	2528	17.2	58.3	1783	17.8	61.5	745	15.8	51.6
75-79	2461	16.7	75.0	1657	16.6	78.0	804	17.1	68.7
80-84	1945	13.2	88.3	1251	12.5	90.5	694	14.7	83.4
85+	1727	11.7	100.0	946	9.5	100.0	781	16.6	100.0
All ages	14714	100.0		10008	100.0		4706	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=665 %	Females DCO rate n=532 %	Males	Females
							Prop.all cancers n=113978 %	Prop.all cancers n=112253 %
0- 4	21	24	1.9	2.3			10.7	16.1
5- 9	8	8	0.7	0.8			7.7	9.5
10-14	2	3	0.2	0.3		33.3	1.7	3.0
15-19	1	1	0.1	0.1			0.4	0.5
20-24	4	4	0.3	0.3			0.9	1.1
25-29	11	5	0.7	0.3			1.6	0.6
30-34	21	15	1.3	0.9			2.2	1.0
35-39	76	34	4.7	2.1			5.5	1.4
40-44	142	70	7.6	3.9	0.7		6.6	1.5
45-49	327	94	16.6	4.9	0.3	1.1	8.3	1.4
50-54	519	179	30.0	10.5	1.3	0.6	8.4	2.1
55-59	727	266	51.4	18.1	1.8	1.9	7.9	2.8
60-64	980	358	80.0	26.9	1.8	2.5	7.4	3.2
65-69	1428	596	120.5	45.9	3.0	2.5	7.6	4.3
70-74	1737	729	157.0	57.6	3.9	4.7	8.3	4.9
75-79	1622	788	203.6	78.7	7.5	6.3	9.8	5.9
80-84	1219	676	265.0	95.5	12.1	16.9	11.1	6.2
85+	937	773	306.0	105.3	26.1	39.1	11.8	6.1
All ages	9782	4623			6.8	11.5	8.6	4.1
Incidence								
Raw			42.8	19.5				
WS			20.6	7.8				
ES			30.9	11.4				
BRD-S			40.3	14.8				

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

ICD-10 C64-C68: Malignant neoplasms of urinary tract
 Age distribution and age-specific incidence 2007 - 2016 (Males: 9782, Females: 4623)

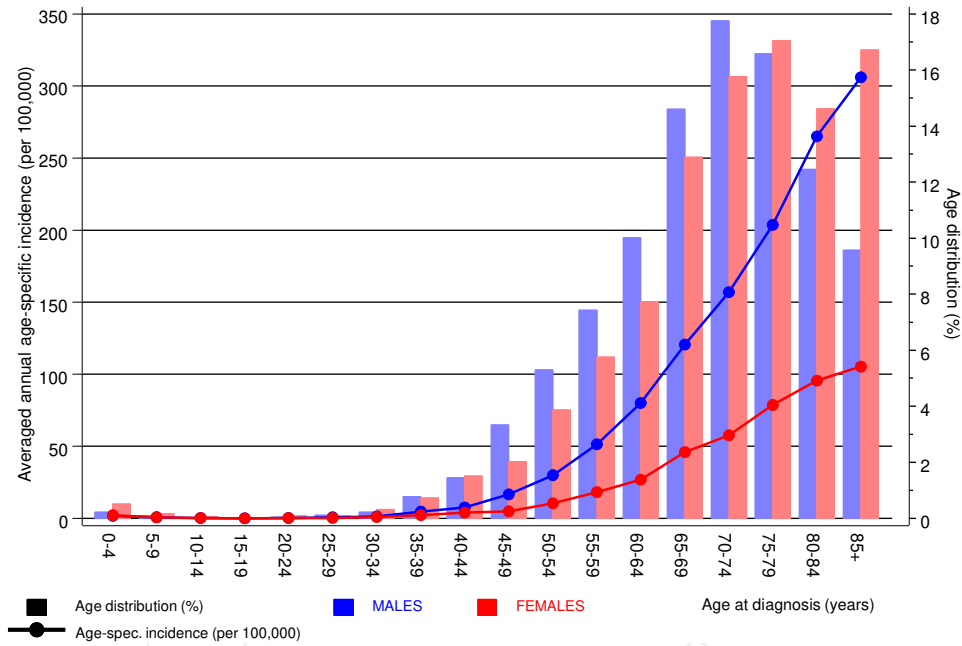


Figure 6. Age distribution (males: mean=70.3 yrs, median=71.8 yrs; females: mean=72.7 yrs, median=74.5 yrs) and age-specific incidence.

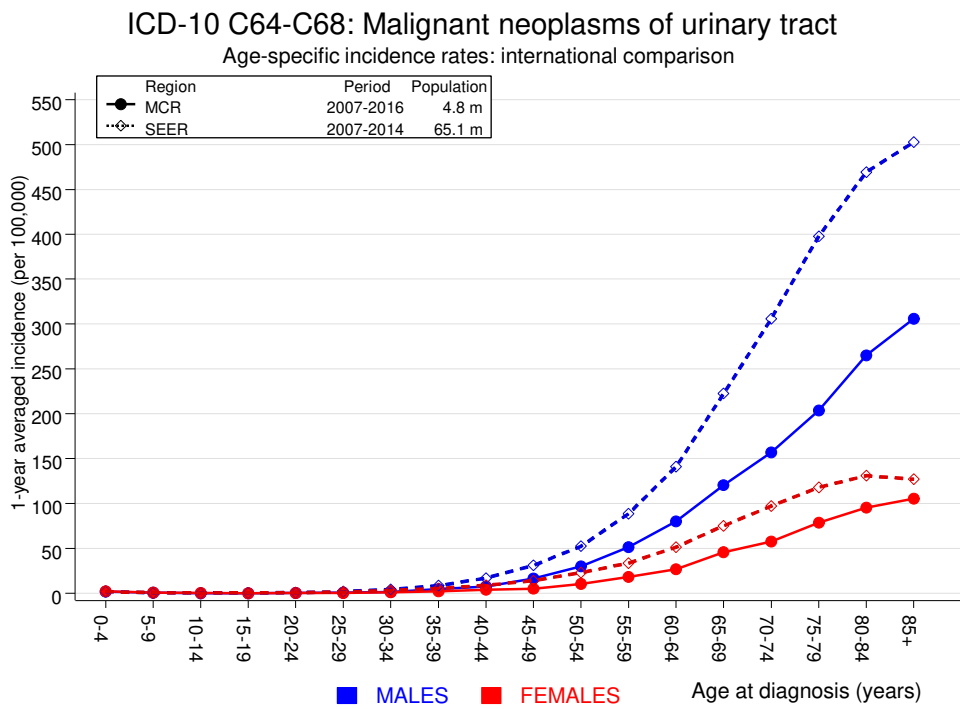


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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	18	6.4	2.8	1.7	4.5 #	2.5	5.6
C09-C10 Oropharynx	20	7.7	2.6	1.6	4.0 #	2.7	
C12-C13 Hypopharynx	11	4.2	2.6	1.3	4.7 #	1.5	
C15 Oesophagus	36	15.2	2.4	1.7	3.3 #	4.5	11.1
C16 Stomach	69	36.4	1.9	1.5	2.4 #	7.1	8.7
C17 Small intestine	20	4.6	4.4	2.7	6.8 #	3.4	
C18 Colon	205	86.3	2.4	2.1	2.7 #	25.8	7.3
C19-C20 Rectum	86	45.2	1.9	1.5	2.3 #	8.9	3.5
C21 Anus/canal	4	1.8	2.2	0.6	5.7	0.5	25.0
C22 Liver	62	24.0	2.6	2.0	3.3 #	8.3	14.5
C23-C24 Bile	16	8.7	1.8	1.1	3.0 #	1.6	12.5
C25 Pancreas	81	32.7	2.5	2.0	3.1 #	10.5	24.7
C32 Larynx	19	8.3	2.3	1.4	3.6 #	2.3	5.3
C33-C34 Lung	364	100.6	3.6	3.3	4.0 #	57.3	13.5
C38,C45 Mesothelioma	11	5.9	1.9	0.9	3.4	1.1	18.2
C43 Malign. melanoma	86	35.5	2.4	1.9	3.0 #	11.0	2.3
C46,C49 Soft tissue	15	4.8	3.1	1.7	5.2 #	2.2	
C48 Peritoneal	7	0.6	11.1	4.5	22.9 #	1.4	28.6
C60 Penis	7	2.0	3.5	1.4	7.1 #	1.1	
C61 Prostate	1451	247.6	5.9	5.6	6.2 #	261.6	5.0
C62 Testis	7	1.6	4.2	1.7	8.7 #	1.2	
C64 Kidney	243	29.2	8.3	7.3	9.4 #	46.5	10.3
C65 Renal pelvis	95	3.8	24.8	20.1	30.3 #	19.8	
C66 Ureter	79	2.2	36.7	29.1	45.8 #	16.7	
C67 Bladder	180	41.2	4.4	3.8	5.1 #	30.2	11.1
C68 Urethra	56	0.7	81.8	61.8	106.2 #	12.0	
C68 Urinary org.	21	0.6	33.6	20.8	51.3 #	4.4	76.2
C70-C72 CNS cancer	25	10.8	2.3	1.5	3.4 #	3.1	8.0
C73 Thyroid	17	4.9	3.4	2.0	5.5 #	2.6	11.8
C74-C80 Cancer others	4	2.3	1.8	0.5	4.5	0.4	
C76-C79 CUP	34	15.0	2.3	1.6	3.2 #	4.1	8.8
C81 Hodgkin lymphoma	4	1.8	2.2	0.6	5.7	0.5	
C82-C85 NHL	87	35.7	2.4	2.0	3.0 #	11.2	6.9
C90 Mult. myeloma	22	11.5	1.9	1.2	2.9 #	2.3	13.6
C91-C96 Leukaemia	25	14.8	1.7	1.1	2.5 #	2.2	28.0
Others, specified	18	10.0	1.8	1.1	2.8 #	1.7	16.7
Not observed	0	1.7	0.0	0.0	2.2	-0.4	
All further malignancies	3505	866.1	4.0	3.9	4.2 #	573.7	7.9

Patients	14257
Median age at next malignancy (years)	72.5
Person-years	46002
Mean observation time (years)	3.2
Median observation time (years)	1.7

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 to 3 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

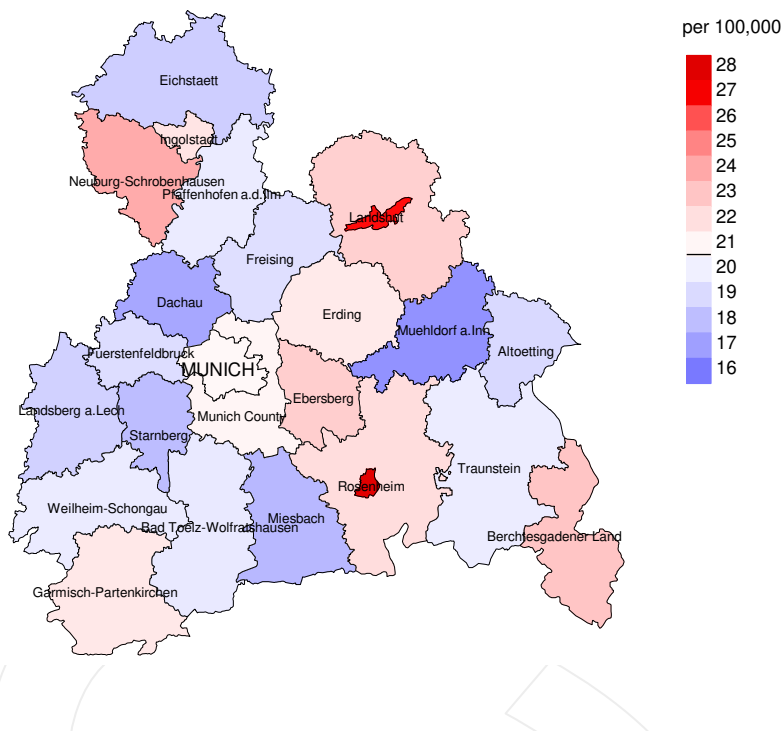
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	2	1.5	1.3	0.2	4.7	0.2	
C15 Oesophagus	8	1.7	4.7	2.0	9.3 #	2.9	25.0
C16 Stomach	24	11.0	2.2	1.4	3.3 #	6.0	4.2
C17 Small intestine	6	1.3	4.5	1.7	9.8 #	2.2	
C18 Colon	63	30.2	2.1	1.6	2.7 #	15.2	6.3
C19-C20 Rectum	28	12.2	2.3	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	19.9	4.4	3.5	5.4 #	31.6	17.0
C43 Malign. melanoma	17	9.6	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 #	45.6	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 #	5.6	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	41.3	29.3	56.4 #	17.6	
C66 Ureter	37	0.5	77.0	54.2	106.2 #	16.9	
C67 Bladder	91	6.0	15.3	12.3	18.8 #	39.4	12.1
C68 Urethra	5	0.1	61.7	20.0	144.0 #	2.3	
C68 Urinary org.	6	0.1	46.3	17.0	100.9 #	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	2.7	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	18	4.8	3.7	2.2	5.9 #	6.1	22.2
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	963	280.0	3.4	3.2	3.7 #	316.7	12.7

Patients	6709
Median age at next malignancy (years)	74.9
Person-years	21568
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

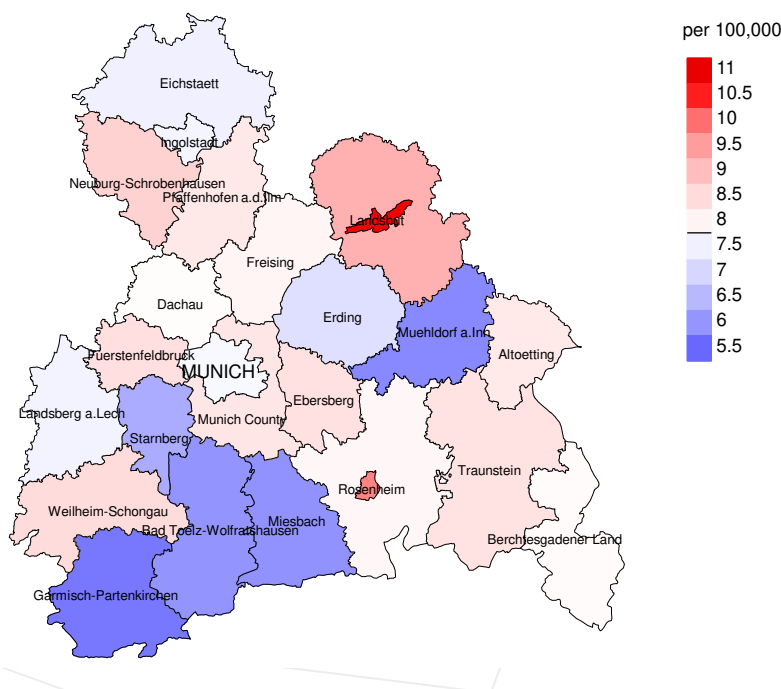
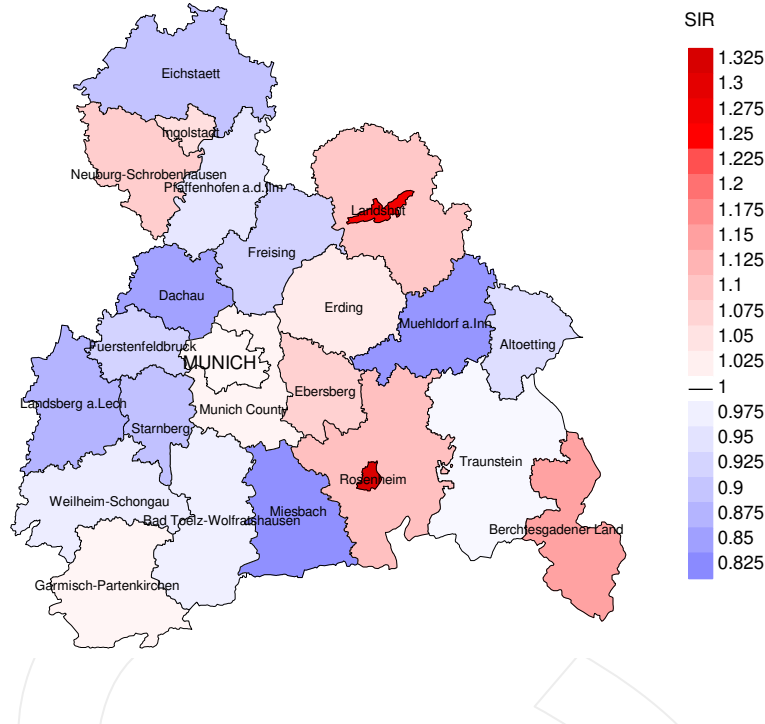


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 20.6/100,000 WS N=9,782, females 7.8/100,000 WS N=4,623).

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 141 women were identified with newly diagnosed urinary tract 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 6.4 and 10.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

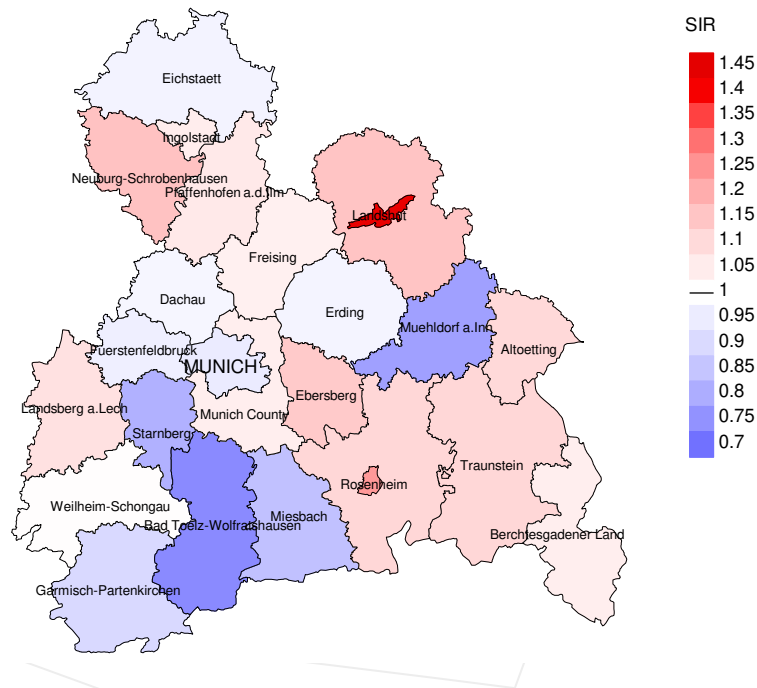


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=9,782, females N=4,623).

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 141 women were identified with newly diagnosed urinary tract 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	788	97.0	9.1	574	72.8	94.8
1999	750	96.1	8.7	537	71.6	95.9
2000	726	97.2	11.6	521	71.8	96.9
2001	728	96.6	9.6	528	72.5	96.4
2002	1345	97.9	13.5	1014	75.4	96.9
2003	1324	95.7	11.3	928	70.1	98.0
2004	1303	96.7	11.4	872	66.9	98.2
2005	1351	94.8	7.2	839	62.1	97.7
2006	1394	92.2	7.0	891	63.9	99.0
2007	1511	81.2	8.1	908	60.1	98.7
2008	1580	75.3	8.4	924	58.5	98.9
2009	1584	73.2	8.1	912	57.6	98.8
2010	1585	71.9	7.8	847	53.4	98.3
2011	1544	72.0	6.8	811	52.5	97.4
2012	1562	69.2	7.2	773	49.5	97.9
2013	1557	69.4	7.6	731	46.9	97.3
2014	1504	68.8	7.9	623	41.4	96.5
2015	1266	98.6	11.5	488	38.5	95.7
2016	1021	83.0	11.6	285	27.9	90.2
1998-2016	24423	83.6	9.0	14006	57.3	97.5

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	788	486	92.6	147	18.7
1999	750	458	95.2	156	20.8
2000	726	471	95.1	147	20.2
2001	728	478	95.8	128	17.6
2002	1345	702	96.6	301	22.4
2003	1324	811	96.8	290	21.9
2004	1303	794	97.0	265	20.3
2005	1351	785	96.6	219	16.2
2006	1394	835	97.4	237	17.0
2007	1511	948	97.8	274	18.1
2008	1580	949	98.8	278	17.6
2009	1584	1026	99.1	325	20.5
2010	1585	1068	98.7	296	18.7
2011	1544	1020	98.4	285	18.5
2012	1562	1110	98.3	303	19.4
2013	1557	1091	99.1	284	18.2
2014	1504	1113	98.1	280	18.6
2015	1266	1208	98.4	314	24.8
2016	1021	1052	98.8	260	25.5
1998-2016	24423	16405	97.7	4789	19.6

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	486	64.8	35.2	81.6
1999	458	70.1	29.9	83.0
2000	471	69.0	31.0	83.7
2001	478	69.9	30.1	85.2
2002	702	71.4	28.6	85.7
2003	811	70.8	29.2	84.5
2004	794	70.4	29.6	84.0
2005	785	71.2	28.8	83.1
2006	835	71.3	28.7	80.9
2007	948	72.9	27.1	82.5
2008	949	71.4	28.6	82.2
2009	1026	71.8	28.2	83.0
2010	1068	68.6	31.4	80.3
2011	1020	68.5	31.5	82.5
2012	1110	65.4	34.6	77.2
2013	1091	66.0	34.0	78.1
2014	1113	66.6	33.4	77.9
2015	1208	65.8	34.2	77.3
2016	1052	62.2	37.8	76.7
1998-2016	16405	68.6	31.4	81.0

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	320	76.2	74.5	78.0	75.6
1999	301	76.5	74.3	81.1	75.4
2000	310	76.8	73.7	80.4	76.5
2001	314	75.9	73.7	80.6	74.9
2002	443	76.4	75.1	78.9	76.0
2003	548	76.1	74.9	80.5	75.7
2004	509	76.7	75.6	79.9	76.3
2005	514	76.8	75.4	80.0	76.0
2006	536	75.8	74.1	79.7	75.0
2007	626	76.7	75.4	79.9	75.8
2008	643	77.2	75.7	80.3	76.2
2009	694	77.3	75.0	81.4	75.9
2010	693	77.8	76.1	81.9	77.1
2011	686	77.2	75.0	82.0	76.3
2012	733	79.0	77.3	82.2	78.0
2013	734	78.3	76.5	81.5	77.4
2014	764	78.5	75.8	83.4	76.9
2015	826	79.0	77.3	83.4	77.9
2016	722	79.5	78.0	82.7	78.7
1998-2016	10916	77.4	75.7	81.1	76.6

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	263	80.1	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	357	80.6	78.5	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	330	82.6	78.4	86.5	79.9
1998-2016	5489	81.1	79.1	85.1	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	209	18.9	0.41	10.6	0.38	17.4	0.42	24.8	0.46
1999	206	18.4	0.41	10.3	0.38	16.8	0.42	24.5	0.47
2000	206	18.1	0.44	10.0	0.41	16.3	0.44	23.3	0.48
2001	222	19.2	0.50	10.5	0.46	16.9	0.50	23.8	0.55
2002	315	16.9	0.36	8.7	0.34	14.3	0.36	20.4	0.39
2003	383	20.4	0.43	10.5	0.40	16.8	0.43	23.9	0.47
2004	356	18.9	0.42	9.3	0.38	15.2	0.42	21.8	0.45
2005	357	18.8	0.41	9.0	0.36	14.6	0.39	21.1	0.44
2006	389	20.3	0.43	9.8	0.39	15.6	0.42	21.8	0.45
2007	465	21.0	0.47	9.8	0.42	15.9	0.46	22.5	0.50
2008	457	20.5	0.44	9.0	0.38	14.9	0.41	21.6	0.46
2009	498	22.3	0.48	9.8	0.42	15.8	0.45	22.3	0.49
2010	481	21.3	0.47	9.1	0.40	14.8	0.44	21.2	0.49
2011	486	21.7	0.47	9.3	0.42	15.0	0.45	20.7	0.48
2012	484	21.3	0.46	8.7	0.40	14.3	0.44	20.2	0.47
2013	495	21.5	0.47	8.7	0.41	14.2	0.44	20.0	0.48
2014	506	21.7	0.50	8.9	0.44	14.3	0.47	19.7	0.50
2015	548	23.0	0.64	8.8	0.56	14.4	0.59	20.8	0.64
2016	467	19.4	0.68	7.4	0.58	12.1	0.62	17.2	0.67
1998-2016	7530	20.5	0.47	9.2	0.41	14.9	0.45	21.1	0.49

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	225	9.4	0.47	3.0	0.37	4.7	0.41	6.6	0.44
2014	237	9.8	0.51	2.9	0.38	4.7	0.42	6.8	0.46
2015	248	10.2	0.64	2.9	0.48	4.8	0.52	6.9	0.59
2016	187	7.6	0.60	2.5	0.50	3.8	0.53	5.2	0.56
1998-2016	3740	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	0.1			0.0	2	0.1	0.1
15-19	1	0.0	0.1	1	0.0	0.1			0.1
20-24	2	0.0	0.1	1	0.0	0.1	1	0.0	0.1
25-29	3	0.0	0.1	2	0.0	0.1	1	0.0	0.2
30-34	2	0.0	0.2	2	0.0	0.2			0.2
35-39	10	0.1	0.3	4	0.1	0.2	6	0.3	0.4
40-44	28	0.4	0.7	15	0.3	0.6	13	0.6	1.0
45-49	87	1.2	1.9	59	1.2	1.8	28	1.2	2.2
50-54	178	2.5	4.4	124	2.5	4.3	54	2.4	4.6
55-59	295	4.1	8.5	226	4.6	8.9	69	3.0	7.6
60-64	454	6.3	14.8	349	7.1	16.1	105	4.6	12.1
65-69	749	10.4	25.2	526	10.8	26.8	223	9.7	21.9
70-74	1197	16.7	41.9	892	18.3	45.1	305	13.3	35.1
75-79	1355	18.9	60.8	930	19.0	64.1	425	18.5	53.6
80-84	1369	19.1	79.8	890	18.2	82.3	479	20.9	74.5
85+	1450	20.2	100.0	864	17.7	100.0	586	25.5	100.0
All ages	7184	100.0		4887	100.0		2297	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	1		0.1	1.00			2.3	
20-24	1	1	0.1	0.25	0.1	0.25	1.8	3.0
25-29	2	1	0.1	0.18	0.1	0.20	2.7	1.4
30-34	2		0.1	0.10			1.9	
35-39	4	6	0.2	0.05	0.4	0.18	2.0	2.1
40-44	15	13	0.8	0.11	0.7	0.19	3.0	1.9
45-49	59	28	3.0	0.18	1.5	0.30	5.1	2.1
50-54	124	54	7.2	0.24	3.2	0.30	6.0	2.7
55-59	226	69	16.0	0.31	4.7	0.26	6.7	2.4
60-64	349	105	28.5	0.36	7.9	0.29	7.0	2.8
65-69	526	223	44.4	0.37	17.2	0.37	7.2	4.2
70-74	892	305	80.6	0.51	24.1	0.42	9.6	4.5
75-79	930	425	116.7	0.57	42.4	0.54	10.3	6.1
80-84	890	479	193.5	0.73	67.7	0.71	11.8	7.0
85+	864	586	282.2	0.92	79.8	0.76	13.2	6.3
All ages	4887	2297					9.3	5.0
Mortality								
Raw			21.4	0.50	9.7	0.50		
WS			8.9	0.43	3.0	0.39		
ES			14.5	0.47	4.8	0.42		
BRD-S			20.5	0.51	6.9	0.46		
PYLL-70								
per 100,000			55.4		22.7			
ES			48.1		19.1			
AYLL-70			8.5		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	54	1.2	29	53.7	2	3.7	23	42.6
C15 Oesophagus	59	1.3	17	28.8	2	3.4	40	67.8
C16 Stomach	137	3.1	43	31.4	12	8.8	82	59.9
C18 Colon	344	7.7	162	47.1	49	14.2	133	38.7
C19–C20 Rectum	172	3.9	76	44.2	24	14.0	72	41.9
C22 Liver	79	1.8	14	17.7	15	19.0	50	63.3
C25 Pancreas	115	2.6	4	3.5	18	15.7	93	80.9
C32 Larynx	48	1.1	35	72.9	1	2.1	12	25.0
C33–C34 Lung	568	12.8	89	15.7	48	8.5	431	75.9
C43 Malign. melanoma	119	2.7	75	63.0	6	5.0	38	31.9
C44 Skin others	200	4.5	101	50.5	9	4.5	90	45.0
C61 Prostate	1400	31.4	496	35.4	328	23.4	576	41.1
C64 Kidney	168	3.8			41	24.4	127	75.6
C65 Renal pelvis	107	2.4			18	16.8	89	83.2
C66 Ureter	75	1.7			17	22.7	58	77.3
C67 Bladder	170	3.8			28	16.5	142	83.5
C76–C79 CUP	66	1.5	21	31.8	7	10.6	38	57.6
C82–C85 NHL	122	2.7	49	40.2	16	13.1	57	46.7
C91–C96 Leukaemia	43	1.0	3	7.0	4	9.3	36	83.7
Others, specified	406	9.1	144	35.5	43	10.6	219	53.9
All further malignancies	4452	100.0	1358	30.5	688	15.5	2406	54.0

Further malignancies with number of cases 1 to 38 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	46	2.8	16	34.8	9	19.6	21	45.7
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	5.1			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	17	1.0	2	11.8	4	23.5	11	64.7
Others, specified	75	4.6	26	34.7	12	16.0	37	49.3
All further malignancies	1623	100.0	616	38.0	202	12.4	805	49.6

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		Females		Males		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	1		0.1	1.00			2.4	
20-24	1	1	0.1	0.25	0.1	0.25	2.0	3.2
25-29	2	1	0.1	0.20	0.1	0.20	3.0	1.5
30-34	2		0.1	0.11			2.0	
35-39	4	6	0.2	0.06	0.4	0.18	2.1	2.3
40-44	14	11	0.8	0.11	0.6	0.19	3.1	1.8
45-49	54	25	2.7	0.18	1.3	0.30	5.2	2.2
50-54	94	42	5.4	0.22	2.5	0.29	5.2	2.5
55-59	175	51	12.4	0.30	3.5	0.24	5.9	2.1
60-64	273	69	22.3	0.36	5.2	0.25	6.5	2.3
65-69	364	170	30.7	0.37	13.1	0.37	6.2	4.0
70-74	574	208	51.9	0.51	16.4	0.40	8.0	3.9
75-79	584	306	73.3	0.58	30.6	0.53	8.8	5.6
80-84	541	339	117.6	0.78	47.9	0.73	9.8	6.4
85+	539	455	176.0	0.95	62.0	0.78	11.3	6.2
All ages	3224	1685					7.9	4.6
Mortality								
Raw			14.1	0.48	7.1	0.49		
WS			6.1	0.41	2.2	0.36		
ES			9.7	0.45	3.5	0.41		
BRD-S			13.5	0.49	5.0	0.45		
PYLL-70								
per 100,000			44.1		17.6			
ES			38.4		14.8			
AYLL-70			9.0		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 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			8.7	
10-14		1			0.1	0.50		4.8
15-19	1		0.1	1.00			2.4	
20-24	1	1	0.1	0.25	0.1	0.25	2.0	3.2
25-29	2	1	0.1	0.20	0.1	0.20	3.0	1.5
30-34	2		0.1	0.11			2.0	
35-39	4	4	0.2	0.06	0.3	0.12	2.1	1.6
40-44	14	9	0.8	0.12	0.5	0.16	3.1	1.5
45-49	48	23	2.4	0.17	1.2	0.30	4.6	2.1
50-54	83	37	4.8	0.22	2.2	0.28	4.7	2.2
55-59	140	45	9.9	0.29	3.1	0.24	4.8	1.9
60-64	222	58	18.1	0.36	4.4	0.24	5.4	1.9
65-69	247	148	20.8	0.32	11.4	0.36	4.3	3.6
70-74	396	162	35.8	0.44	12.8	0.36	5.7	3.1
75-79	392	236	49.2	0.48	23.6	0.46	6.2	4.5
80-84	369	278	80.2	0.64	39.3	0.67	7.1	5.4
85+	375	372	122.5	0.72	50.7	0.67	8.5	5.3
All ages	2298	1375					5.8	3.8
Mortality								
Raw			10.1	0.41	5.8	0.44		
WS			4.5	0.36	1.8	0.33		
ES			7.0	0.39	2.9	0.37		
BRD-S			9.6	0.42	4.1	0.41		
PYLL-70								
per 100,000			37.0		15.3			
ES			32.3		12.9			
AYLL-70			9.7		9.4			

* See corresponding tables with multiple malignancies.

ICD-10 C64-C68: Malignant neoplasms of urinary tract
 Age distribution and age-specific mortality 2007 - 2016 (Males: 4887, Females: 2297)

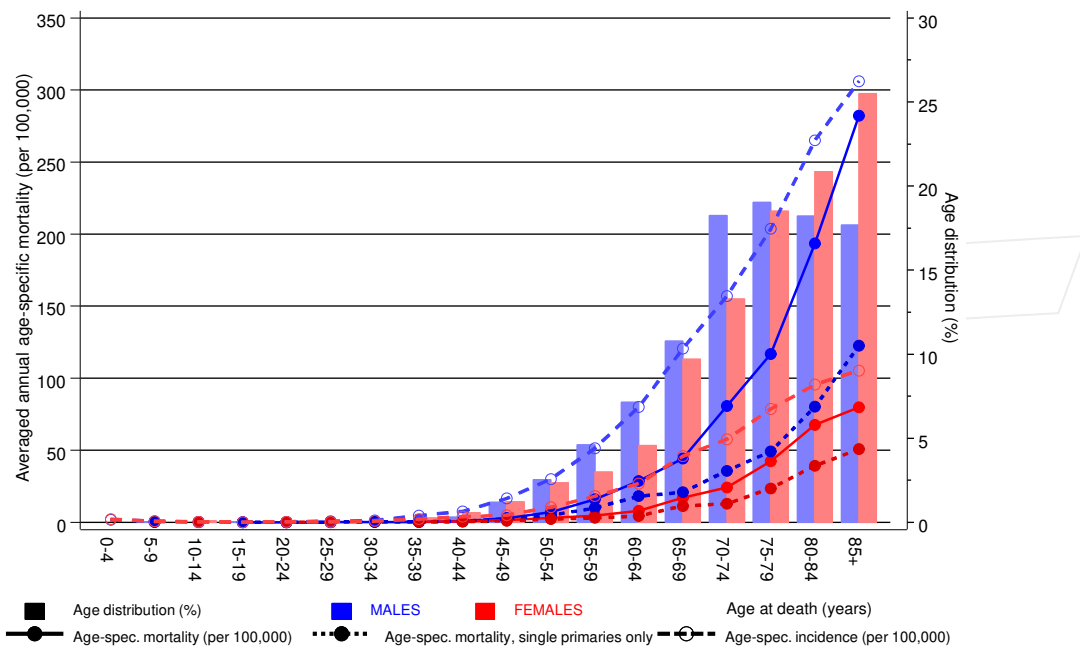
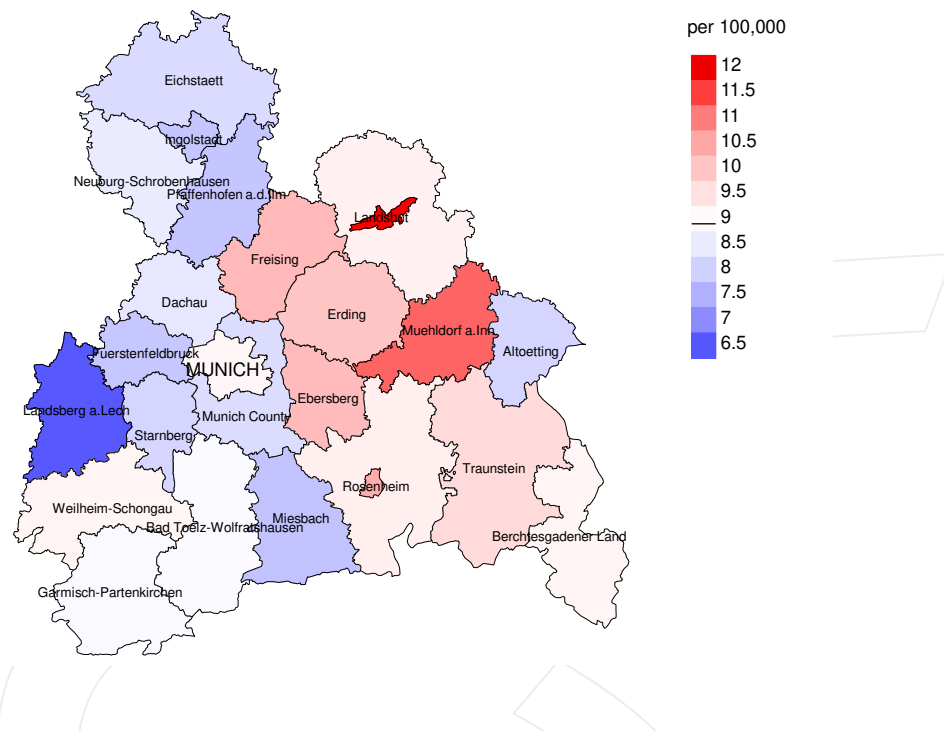


Figure 17. Distribution of age at death (bars; males: mean=71.1 yrs, median=72.1 yrs; females: mean=73.3 yrs, median=74.8 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at urinary tract 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

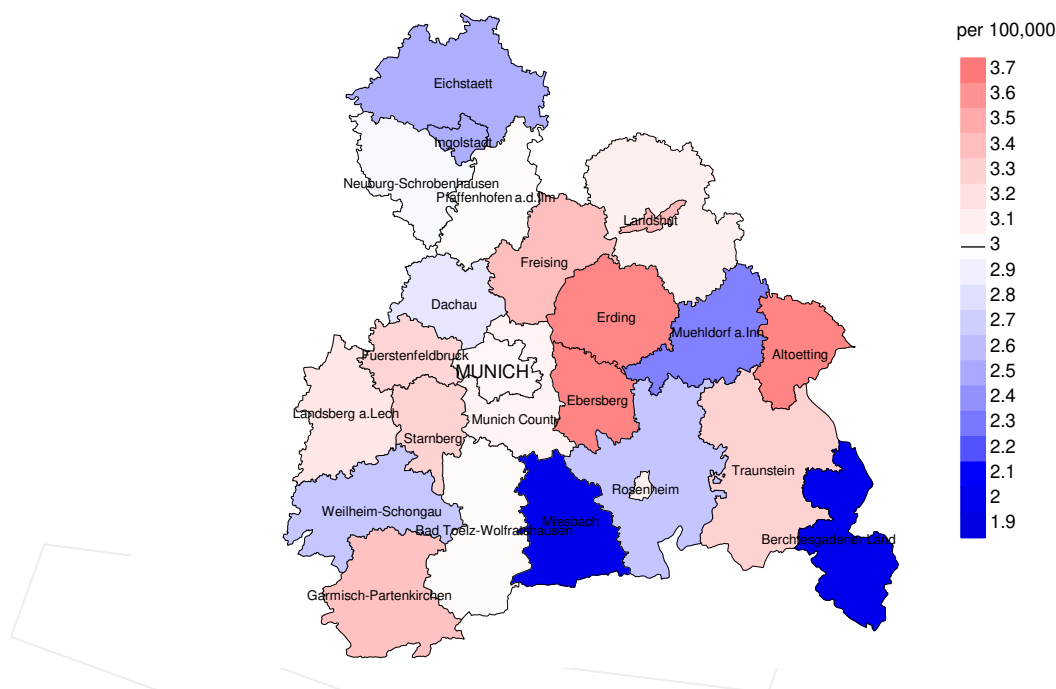
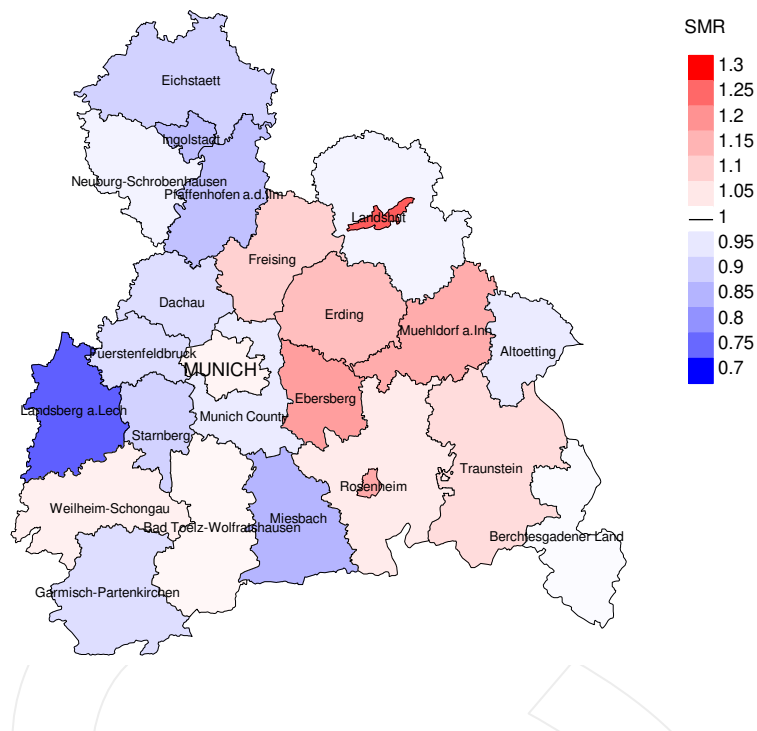


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 8.9/100,000 WS N=4,887, females 3.0/100,000 WS N=2,297).

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 urinary tract 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

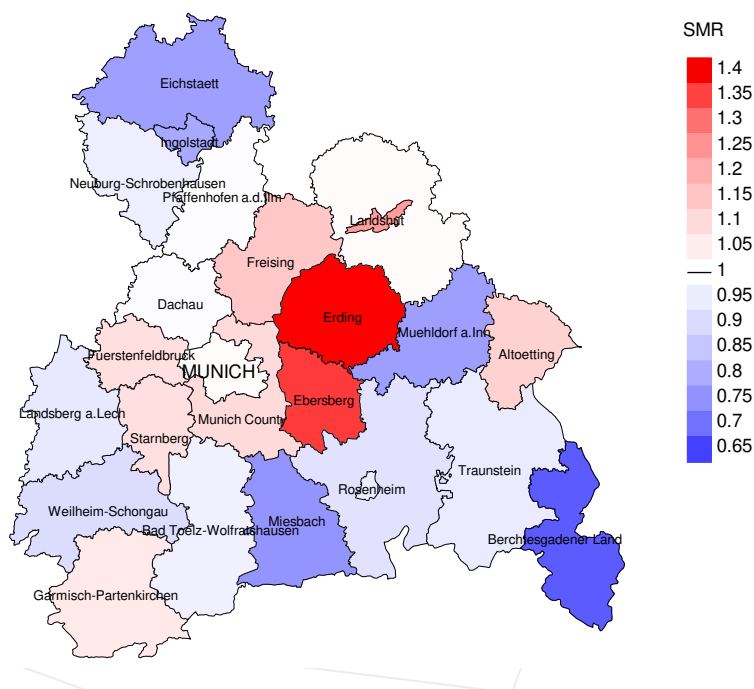


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=4,887, females N=2,297).

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 urinary tract 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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Munich Cancer Registry. ICD-10 C64-C68: Urinary tract cancer - Incidence and Mortality [Internet]. 2018 [updated 2018 Aug 21; cited 2018 Oct 1]. Available from: <https://www.tumorregister-muenchen.de/en/facts/base/bC6468E-ICD-10-C64-C68-Urinary-tract-cancer-incidence-and-mortality.pdf>

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