Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C67: Bladder cancer

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	10,399
Diseases	10,405
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/base/bC67__E-ICD-10-C67-Bladder-cancer-incidence-and-mortality.pdf

Index of figures and tables

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
C67.-	Malignant neoplasm of bladder
C67.0	Trigone of bladder
C67.1	Dome of bladder
C67.2	Lateral wall of bladder
C67.3	Anterior wall of bladder
C67.4	Posterior wall of bladder
C67.5	Bladder neck
C67.6	Ureteric orifice
C67.7	Urachus
C67.8	Overlapping lesion of bladder
C67.9	Bladder, unspecified

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	299	22	7.4	15.7	17.5	81.9	98.0
1999	281	22	7.8	14.7	17.6	80.4	98.2
2000	294	38	12.9	15.6	17.3	83.3	98.6
2001	297	22	7.4	16.4	17.3	79.1	96.6
2002	609	79	13.0	18.1	17.1	82.4	98.5 #
2003	592	73	12.3	18.8	17.1	78.7	97.0
2004	568	66	11.6	19.1	16.9	76.9	97.9
2005	531	53	10.0	18.9	16.8	70.1	95.3
2006	599	48	8.0	19.0	16.5	75.5	94.5
2007	617	45	7.3	19.5	16.3	68.6	83.6 #
2008	655	59	9.0	20.3	16.1	70.5	84.0
2009	667	54	8.1	21.3	16.0	69.7	82.5
2010	663	58	8.7	21.9	15.8	65.8	80.5
2011	681	48	7.0	22.5	15.1	63.4	81.6
2012	690	50	7.2	22.9	14.7	58.8	74.6
2013	742	59	8.0	23.5	13.5	57.4	75.5
2014	611	46	7.5	23.8	12.6	53.4	79.2
2015	563	67	11.9	24.1	10.3	50.4	98.6
2016	446	54	12.1	24.3	10.8	36.8	79.1 ##
1998-2016	10405	963	9.3	24.3	17.5	67.3	87.7

10,405 cases diagnosed 1998-2016 are related to a total of 10,399 patients. Currently, in 4,355 (41.9 %) of these 10,399 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,259 / 844 / 252 (31.3 % / 8.1 % / 2.4 %) 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 retreived from the respective headings.

How to interpret:
In 2014, a subgroup of 611 cases has been diagnosed, of which 23.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 12.6 % 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	209	69.9	14	6.7	17.7	20.5	80.9	98.6
1999	215	76.5	19	8.8	14.9	20.6	78.6	98.6
2000	200	68.0	20	10.0	16.0	20.5	80.0	98.5
2001	198	66.7	10	5.1	16.9	20.5	76.3	96.0
2002	434	71.3	46	10.6	18.5	20.1	82.0	98.4 #
2003	437	73.8	46	10.5	19.1	20.2	77.8	97.3
2004	406	71.5	35	8.6	19.3	20.1	74.9	97.8
2005	371	69.9	25	6.7	19.0	19.9	68.5	95.4
2006	432	72.1	24	5.6	19.0	19.7	73.4	94.0
2007	431	69.9	24	5.6	19.6	19.4	65.7	81.9 #
2008	474	72.4	37	7.8	20.6	19.1	68.8	82.9
2009	490	73.5	37	7.6	21.6	18.9	69.2	80.2
2010	470	70.9	32	6.8	22.2	18.9	64.0	80.9
2011	493	72.4	30	6.1	22.9	18.0	63.9	81.1
2012	513	74.3	25	4.9	23.3	17.7	57.3	73.9
2013	541	72.9	35	6.5	24.0	16.3	57.1	75.4
2014	444	72.7	28	6.3	24.4	15.4	52.5	79.5
2015	396	70.3	47	11.9	24.7	12.2	47.0	98.5
2016	316	70.9	35	11.1	24.9	12.3	34.8	78.2 ##
1998-2016	7470	71.8	569	7.6	24.9	20.5	65.8	87.1

7,470 cases diagnosed 1998-2016 are related to a total of 7,465 patients. Currently, in 3,411 (45.7 %) of these 7,465 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,553 / 652 / 206 (34.2 % / 8.7 % / 2.8 %) 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 retreived from the respective headings.

How to interpret:
In 2014, a subgroup of 444 cases has been diagnosed, of which 24.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 15.4 % 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	90	30.1	8	8.9	11.1	10.2	84.4	96.7	
1999	66	23.5	3	4.5	14.1	10.2	86.4	97.0	
2000	94	32.0	18	19.1	14.4	9.7	90.4	98.9	
2001	99	33.3	12	12.1	15.2	9.6	84.8	98.0	
2002	175	28.7	33	18.9	17.4	9.5	83.4	98.9	#
2003	155	26.2	27	17.4	18.0	9.4	81.3	96.1	
2004	162	28.5	31	19.1	18.8	9.1	82.1	98.1	
2005	160	30.1	28	17.5	18.8	9.0	73.8	95.0	
2006	167	27.9	24	14.4	18.9	8.7	80.8	95.8	
2007	186	30.1	21	11.3	19.1	8.9	75.3	87.6	#
2008	181	27.6	22	12.2	19.7	8.6	75.1	86.7	
2009	177	26.5	17	9.6	20.5	8.6	71.2	88.7	
2010	193	29.1	26	13.5	21.2	7.9	69.9	79.8	
2011	188	27.6	18	9.6	21.5	7.9	62.2	83.0	
2012	177	25.7	25	14.1	21.8	7.2	63.3	76.8	
2013	201	27.1	24	11.9	22.0	6.5	58.2	75.6	
2014	167	27.3	18	10.8	22.2	6.0	55.7	78.4	
2015	167	29.7	20	12.0	22.4	5.9	58.7	98.8	
2016	130	29.1	19	14.6	22.7	7.2	41.5	81.5	##
1998-2016	2935	28.2	394	13.4	22.7	10.2	71.1	89.0	

2,935 cases diagnosed 1998-2016 are related to a total of 2,934 patients. Currently, in 944 (32.2 %) of these 2,934 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 706 / 192 / 46 (24.1 % / 6.5 % / 1.6 %) 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 retreived from the respective headings.

How to interpret:
In 2014, a subgroup of 167 cases has been diagnosed, of which 22.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.0 % 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	209	90	18.9	7.7	11.2	2.9	17.5	4.6	24.1	6.1
1999	215	66	19.2	5.6	11.1	2.2	17.3	3.4	23.6	4.7
2000	200	94	17.6	7.8	9.7	2.7	15.6	4.4	22.4	6.1
2001	198	99	17.1	8.1	10.0	3.0	15.3	4.7	19.9	6.5
2002	434	175	23.3	8.9	12.1	3.2	19.5	5.0	27.3	6.9
2003	437	155	23.3	7.9	12.1	2.8	19.2	4.4	26.6	6.0
2004	406	162	21.6	8.2	11.0	2.7	17.3	4.5	23.9	6.2
2005	371	160	19.6	8.0	9.7	2.9	15.3	4.5	21.1	6.0
2006	432	167	22.6	8.3	11.1	3.2	17.5	4.8	24.3	6.4
2007	431	186	19.5	8.1	9.5	2.9	14.8	4.5	20.0	6.2
2008	474	181	21.3	7.8	9.9	2.9	15.9	4.4	21.8	5.8
2009	490	177	22.0	7.6	10.1	2.6	16.0	4.0	22.1	5.5
2010	470	193	20.9	8.2	9.6	2.5	15.1	4.1	20.2	5.6
2011	493	188	22.0	8.0	10.0	3.0	15.6	4.6	21.1	5.9
2012	513	177	22.6	7.5	9.6	2.5	15.2	4.0	21.4	5.4
2013	541	201	23.5	8.4	10.2	3.0	15.9	4.5	21.7	5.9
2014	444	167	19.0	6.9	8.0	2.4	12.7	3.7	17.4	5.0
2015	396	167	16.6	6.9	6.4	2.5	10.4	3.8	15.1	5.0
2016	316	130	13.1	5.3	5.5	1.9	8.6	2.9	11.8	3.7
1998-2016	7470	2935	20.3	7.7	9.5	2.7	15.0	4.2	20.6	5.6

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	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	299	72.5	12.8	26.3	96.1	55.0	65.1	73.4	83.1	88.1
1999	281	71.3	10.8	42.1	94.1	56.4	63.7	72.3	79.4	85.3
2000	294	73.6	10.4	39.3	99.7	59.8	65.3	74.7	80.8	86.6
2001	297	71.7	12.1	30.9	95.8	55.1	62.8	72.7	80.9	87.1
2002	609	74.1	10.6	36.1	99.5	60.7	66.9	74.8	81.7	88.2
2003	592	73.5	11.6	25.4	103	59.4	65.7	74.5	81.8	87.9
2004	568	73.6	11.6	33.3	99.0	58.7	64.8	75.4	81.5	88.3
2005	531	73.4	11.9	28.0	101	58.7	65.1	74.5	82.0	87.8
2006	599	73.2	12.1	3.0	101	57.3	66.0	74.4	81.9	87.0
2007	617	73.2	11.6	1.3	101	57.3	66.8	73.7	81.4	86.9
2008	655	74.0	11.7	6.6	100	57.8	66.8	74.7	82.6	87.8
2009	667	74.0	10.9	39.9	103	59.3	66.7	75.0	82.4	87.3
2010	663	74.1	11.9	31.5	100	56.9	67.0	75.2	83.3	88.3
2011	681	73.3	12.4	1.5	97.6	56.7	66.2	74.6	82.3	88.4
2012	690	74.3	10.6	37.0	103	59.4	68.3	75.3	81.7	87.2
2013	742	74.1	11.2	33.4	99.0	59.5	67.5	74.5	82.2	87.9
2014	611	74.2	10.8	36.9	107	58.4	67.9	75.0	81.8	87.6
2015	563	75.8	10.4	37.7	103	61.8	70.5	77.0	83.2	87.6
2016	446	74.2	11.5	35.4	98.8	58.2	66.7	76.2	82.8	87.5
1998-2016	10405	73.7	11.4	1.3	107	58.4	66.6	74.8	82.0	87.6

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	209	71.4	12.6	26.3	95.6	55.1	64.3	72.5	80.4	87.1
1999	215	70.4	10.7	42.6	94.1	55.6	62.8	70.6	78.5	84.9
2000	200	71.8	10.3	39.3	99.7	58.5	64.2	73.7	79.3	84.9
2001	198	69.4	11.2	44.0	95.1	54.0	61.5	69.5	77.8	85.4
2002	434	73.1	10.1	37.0	97.6	60.4	66.1	73.5	80.3	86.1
2003	437	72.4	11.1	25.4	101	58.9	65.2	73.3	80.0	86.1
2004	406	71.9	11.2	37.8	98.8	58.2	63.7	73.1	79.9	85.5
2005	371	72.2	10.8	38.6	101	58.9	64.7	73.2	80.4	84.9
2006	432	72.7	11.3	3.0	101	58.2	65.5	73.5	80.6	85.8
2007	431	72.5	11.4	1.3	101	57.0	66.5	72.6	80.2	86.6
2008	474	73.6	11.3	37.5	100	57.8	66.5	74.2	81.6	87.4
2009	490	73.2	10.5	46.0	97.4	59.1	66.2	74.3	81.1	86.2
2010	470	72.3	11.6	31.5	99.1	56.1	65.6	72.7	81.0	86.9
2011	493	72.9	12.0	1.5	95.4	55.8	66.3	74.2	81.6	87.3
2012	513	73.7	10.0	39.9	103	59.8	68.3	74.8	80.6	85.2
2013	541	73.7	10.6	40.5	98.6	59.2	67.4	74.1	81.7	87.0
2014	444	73.8	10.5	42.0	95.2	58.3	67.4	74.9	81.1	86.6
2015	396	76.3	9.4	44.2	103	63.6	71.4	77.2	82.8	87.0
2016	316	74.0	10.9	35.4	98.8	58.9	66.8	76.0	81.7	87.0
1998-2016	7470	72.9	11.0	1.3	103	58.3	65.9	73.9	80.8	86.4

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	90	74.9	13.0	35.3	96.1	54.6	69.1	77.6	85.7	89.3
1999	66	74.3	10.8	42.1	91.3	56.4	70.4	76.5	80.8	86.4
2000	94	77.3	9.7	56.1	94.5	62.6	70.4	79.1	85.9	88.8
2001	99	76.1	12.5	30.9	95.8	56.7	68.2	78.0	84.8	90.2
2002	175	76.5	11.4	36.1	99.5	62.6	68.3	78.5	85.7	89.3
2003	155	76.5	12.5	25.4	103	61.9	69.2	78.7	85.2	90.7
2004	162	77.7	11.5	33.3	99.0	59.5	72.4	79.0	86.1	90.6
2005	160	76.1	13.7	28.0	98.8	57.5	66.4	79.5	85.7	91.7
2006	167	74.6	13.9	4.3	96.7	55.5	67.1	76.8	84.6	91.4
2007	186	75.0	11.9	34.4	98.4	57.9	68.9	77.8	83.8	87.8
2008	181	75.0	12.6	6.6	97.0	58.6	68.2	76.4	84.8	88.1
2009	177	76.3	11.5	39.9	103	59.7	68.9	78.6	84.6	89.2
2010	193	78.6	11.3	37.0	100	64.0	71.0	81.0	87.2	91.1
2011	188	74.4	13.1	12.3	97.6	57.2	65.4	75.6	84.2	90.6
2012	177	76.0	12.0	37.0	96.4	58.9	69.0	78.4	84.9	89.5
2013	201	75.3	12.5	33.4	99.0	60.5	68.3	76.2	85.2	90.9
2014	167	75.1	11.6	36.9	107	59.8	69.8	75.5	82.2	89.7
2015	167	74.7	12.3	37.7	96.7	57.2	67.4	75.1	83.8	90.6
2016	130	74.6	12.9	41.4	93.0	55.0	66.6	76.3	85.9	89.3
1998-2016	2935	75.8	12.3	4.3	107	58.5	68.7	77.5	85.0	89.9

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	2	0.0	0.0	2	0.0	0.0			0.0
5-9	1	0.0	0.0			0.0	1	0.1	0.1
10-14	1	0.0	0.1			0.0	1	0.1	0.1
15-19	0	0.0	0.1			0.0			0.1
20-24	0	0.0	0.1			0.0			0.1
25-29	0	0.0	0.1			0.0			0.1
30-34	3	0.0	0.1	1	0.0	0.1	2	0.1	0.2
35-39	12	0.2	0.3	6	0.1	0.2	6	0.3	0.6
40-44	47	0.7	1.0	30	0.7	0.9	17	1.0	1.5
45-49	122	1.9	3.0	90	2.0	2.8	32	1.8	3.3
50-54	203	3.2	6.2	150	3.3	6.1	53	3.0	6.3
55-59	349	5.5	11.7	253	5.5	11.6	96	5.4	11.8
60-64	514	8.1	19.8	396	8.7	20.3	118	6.7	18.4
65-69	809	12.8	32.6	635	13.9	34.2	174	9.8	28.3
70-74	1083	17.1	49.7	788	17.3	51.5	295	16.7	45.0
75-79	1109	17.5	67.2	859	18.8	70.3	250	14.1	59.1
80-84	1002	15.8	83.0	710	15.5	85.8	292	16.5	75.7
85+	1078	17.0	100.0	648	14.2	100.0	430	24.3	100.0
All ages	6335	100.0		4568	100.0		1767	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=329 %	Females DCO rate n=210 %	Males Prop.all cancers n=113978 %	Females Prop.all cancers n=112253 %
0- 4	2		0.2				1.0	
5- 9		1		0.1				1.2
10-14		1		0.1				1.0
15-19								
20-24								
25-29								
30-34	1	2	0.1	0.1			0.1	0.1
35-39	6	6	0.4	0.4			0.4	0.2
40-44	30	17	1.6	0.9			1.4	0.4
45-49	90	32	4.6	1.7			2.3	0.5
50-54	150	53	8.7	3.1		1.9	2.4	0.6
55-59	253	96	17.9	6.5	1.6	1.0	2.7	1.0
60-64	396	118	32.3	8.9	2.3	5.1	3.0	1.0
65-69	634	174	53.5	13.4	3.0	1.7	3.4	1.2
70-74	788	294	71.2	23.2	3.6	4.4	3.7	2.0
75-79	859	250	107.8	25.0	7.7	4.0	5.2	1.9
80-84	708	292	153.9	41.3	9.6	14.4	6.4	2.7
85+	648	430	211.6	58.6	20.8	31.2	8.2	3.4
All ages	4565	1766			7.2	11.9	4.0	1.6
Incidence								
Raw			20.0	7.5				
WS			8.8	2.6				
ES			13.9	4.0				
BRD-S			19.0	5.4				

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).

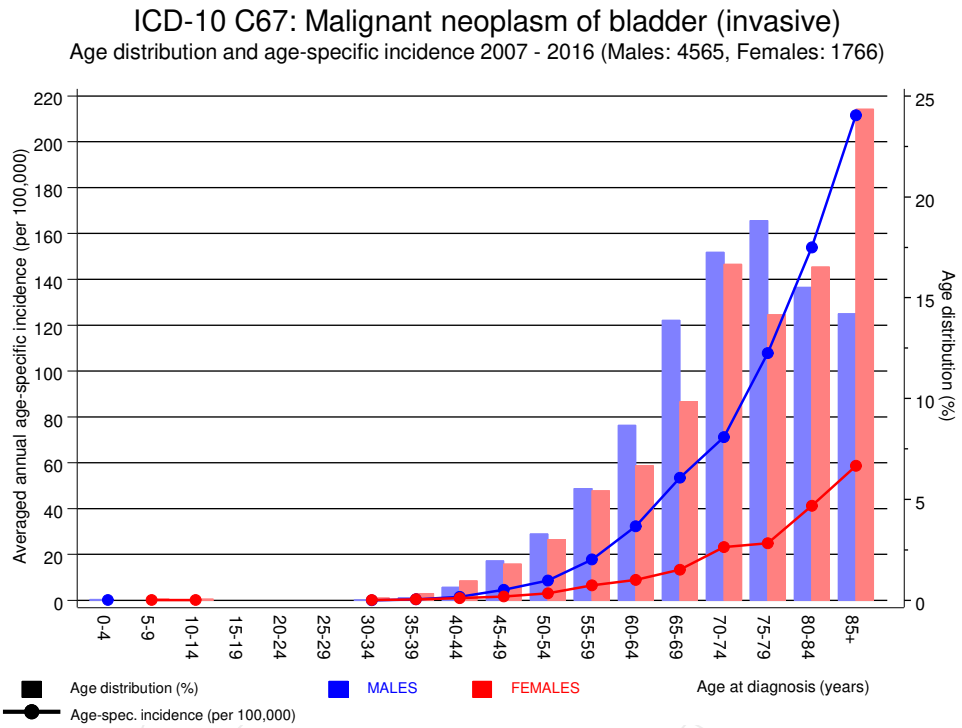


Figure 6. Age distribution (males: mean=73.5 yrs, median=74.5 yrs; females: mean=75.5 yrs, median=77.0 yrs) and age-specific incidence.

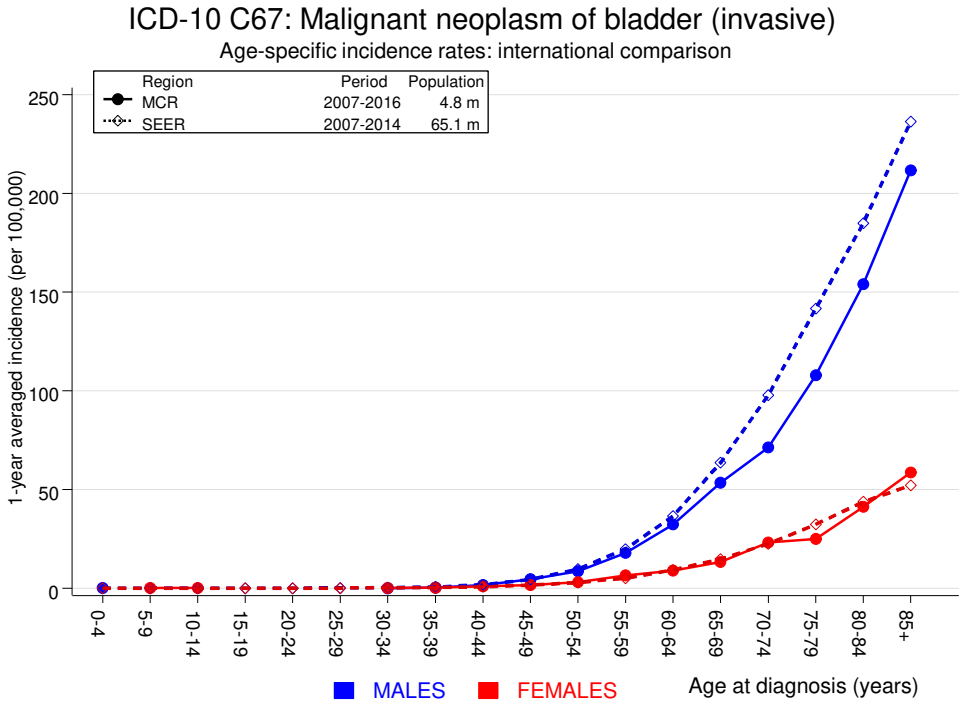


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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	7	2.6	2.7	1.1	5.5	#	2.3	14.3
C07–C08	Salivary gland	2	1.0	2.1	0.3	7.6		0.5	
C09–C10	Oropharynx	5	3.1	1.6	0.5	3.7		1.0	
C12–C13	Hypopharynx	4	1.7	2.4	0.6	6.1		1.2	
C15	Oesophagus	19	6.6	2.9	1.7	4.5	#	6.5	10.5
C16	Stomach	41	17.3	2.4	1.7	3.2	#	12.3	4.9
C17	Small intestine	7	2.1	3.4	1.4	7.0	#	2.6	
C18	Colon	95	40.6	2.3	1.9	2.9	#	28.4	6.3
C19–C20	Rectum	41	20.3	2.0	1.5	2.7	#	10.8	4.9
C21	Anus/canal	2	0.8	2.5	0.3	9.2		0.6	
C22	Liver	24	10.8	2.2	1.4	3.3	#	6.9	16.7
C23–C24	Bile	6	4.1	1.5	0.5	3.2		1.0	16.7
C25	Pancreas	35	15.2	2.3	1.6	3.2	#	10.3	28.6
C32	Larynx	7	3.5	2.0	0.8	4.1		1.8	
C33–C34	Lung	201	45.4	4.4	3.8	5.1	#	81.2	12.9
C38,C45	Mesothelioma	5	2.7	1.9	0.6	4.4		1.2	20.0
C43	Malign. melanoma	29	15.8	1.8	1.2	2.6	#	6.9	
C46,C49	Soft tissue	2	2.2	0.9	0.1	3.3		−0.1	
C48	Peritoneal	3	0.3	10.7	2.2	31.3	#	1.4	33.3
C60	Penis	3	0.9	3.2	0.7	9.3		1.1	
C61	Prostate	1035	112.4	9.2	8.7	9.8	#	481.4	5.3
C64	Kidney	61	13.0	4.7	3.6	6.0	#	25.1	26.2
C65	Renal pelvis	62	1.8	34.6	26.6	44.4	#	31.4	
C66	Ureter	46	1.0	45.6	33.4	60.8	#	23.5	
C67	Bladder	4	19.8	0.2	0.1	0.5	#	−8.3	50.0
C68	Urethra	54	0.3	170.6	128.2	222.7	#	28.0	
C68	Urinary org.	10	0.3	31.2	15.0	57.3	#	5.1	90.0
C70–C72	CNS cancer	10	4.8	2.1	1.0	3.9	#	2.7	10.0
C73	Thyroid	2	2.0	1.0	0.1	3.5		−0.0	
C74–C80	Cancer others	2	1.1	1.7	0.2	6.3		0.4	
C76–C79	CUP	25	7.1	3.5	2.3	5.2	#	9.4	8.0
C81	Hodgkin lymphoma	2	0.8	2.6	0.3	9.4		0.6	
C82–C85	NHL	26	16.5	1.6	1.0	2.3	#	4.9	11.5
C90	Mult. myeloma	8	5.3	1.5	0.6	3.0		1.4	12.5
C91–C96	Leukaemia	11	7.0	1.6	0.8	2.8		2.1	45.5
Others, specified		4	2.7	1.5	0.4	3.8		0.7	25.0
Not observed		0	2.3	0.0	0.0	1.6		−1.2	
All further malignancies		1900	395.3	4.8	4.6	5.0	#	785.1	7.9

Patients	6755
Median age at next malignancy (years)	73.1
Person-years	19166
Mean observation time (years)	2.8
Median observation time (years)	1.5

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 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

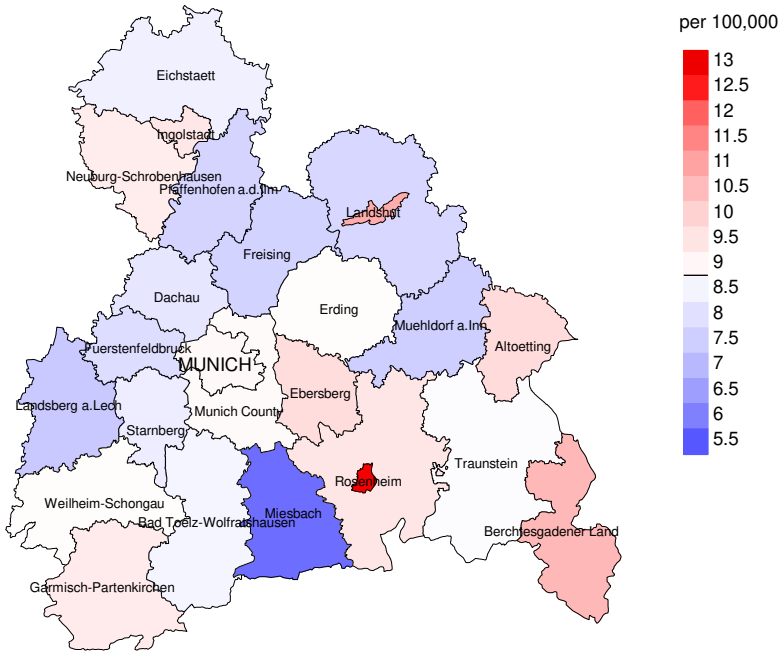
Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C15	Oesophagus	5	0.5	9.4	3.1	22.0	#	7.0	40.0
C16	Stomach	6	3.7	1.6	0.6	3.5		3.6	16.7
C17	Small intestine	4	0.4	9.8	2.7	25.1	#	5.6	
C18	Colon	21	10.1	2.1	1.3	3.2	#	17.2	9.5
C19–C20	Rectum	14	3.9	3.6	1.9	6.0	#	15.8	7.1
C23–C24	Bile	3	1.5	2.0	0.4	5.9		2.4	33.3
C25	Pancreas	19	4.6	4.1	2.5	6.4	#	22.6	42.1
C33–C34	Lung	36	6.1	5.9	4.1	8.1	#	47.0	25.0
C43	Malign. melanoma	2	2.9	0.7	0.1	2.5		−1.5	50.0
C50	Breast	56	23.5	2.4	1.8	3.1	#	51.1	14.3
C51	Vulva	4	1.0	3.9	1.1	10.0	#	4.7	
C52	Vagina	2	0.2	10.8	1.3	39.1	#	2.9	
C53	Cervix uteri	14	1.0	14.7	8.0	24.6	#	20.5	7.1
C54	Corpus uteri	9	4.5	2.0	0.9	3.8		7.0	11.1
C55,C57	Fem. genitals un	4	0.3	13.4	3.7	34.3	#	5.8	25.0
C56	Ovary	10	3.5	2.8	1.4	5.2	#	10.2	40.0
C64	Kidney	19	2.2	8.5	5.1	13.3	#	26.4	31.6
C65	Renal pelvis	30	0.3	99.5	67.1	142.0	#	46.7	
C66	Ureter	20	0.2	131.3	80.2	202.8	#	31.2	
C68	Urethra	5	0.0	199.3	64.7	465.2	#	7.8	
C68	Urinary org.	2	0.1	39.6	4.8	143.0	#	3.1	100.0
C70–C72	CNS cancer	2	1.2	1.7	0.2	6.3		1.3	50.0
C76–C79	CUP	5	1.9	2.6	0.8	6.0		4.8	
C82–C85	NHL	10	3.6	2.7	1.3	5.0	#	10.0	40.0
C91–C96	Leukaemia	8	1.6	5.1	2.2	10.0	#	10.1	37.5
Others, specified		14	7.9	1.8	1.0	3.0		9.6	14.3
Not observed		0	1.5	0.0	0.0	2.4		−2.4	
All further malignancies		324	88.4	3.7	3.3	4.1	#	370.5	17.9

Patients	2537
Median age at next malignancy (years)	77.2
Person-years	6359
Mean observation time (years)	2.5
Median observation time (years)	1.0

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

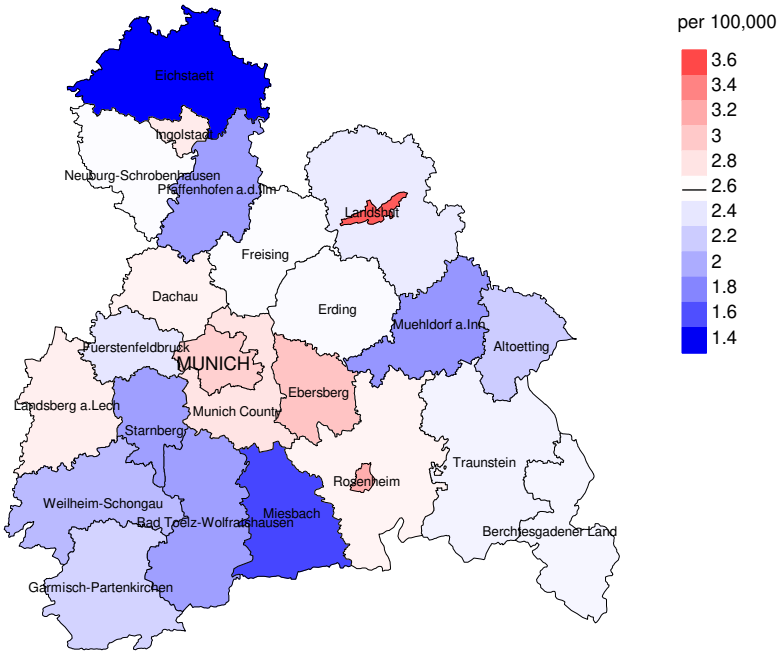
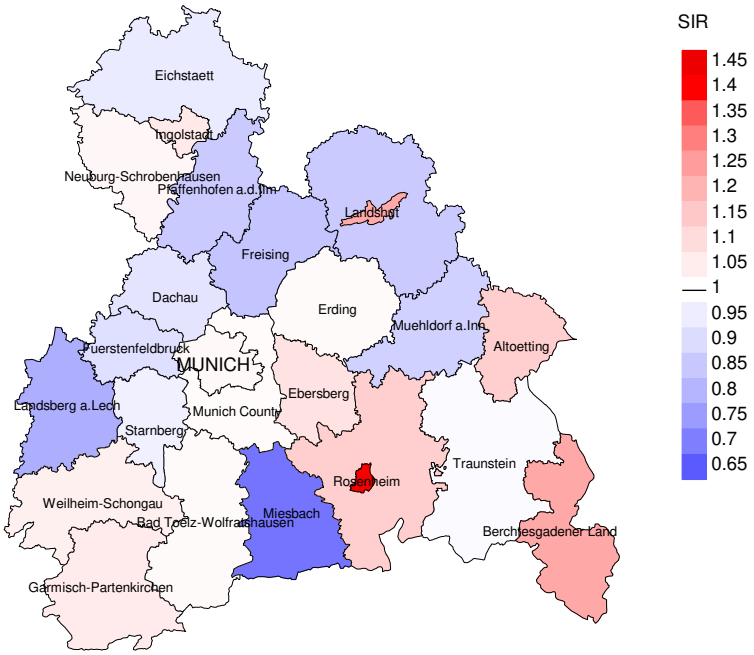


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 8.8/100,000 WS N=4,565, females 2.6/100,000 WS N=1,766).

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 52 women were identified with newly diagnosed bladder cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 3.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.9 and 4.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

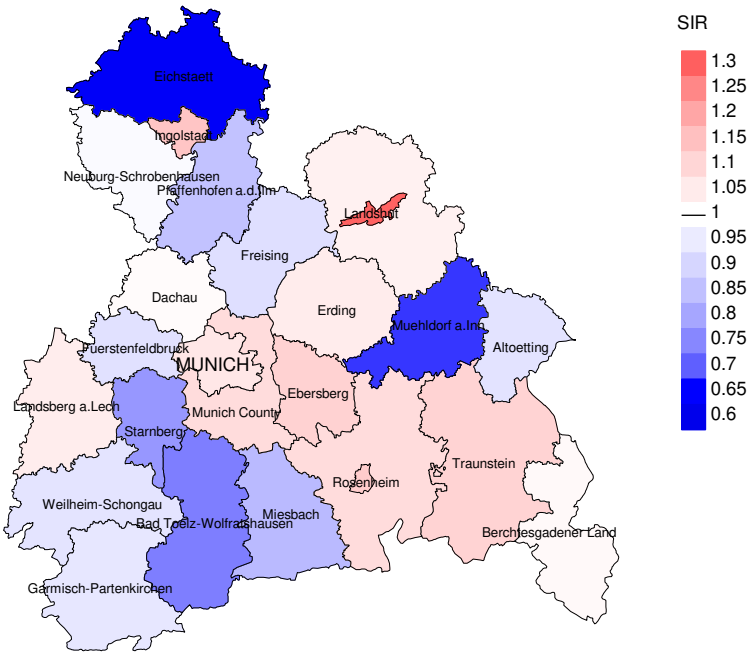


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=4,565, females N=1,766).

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 52 women were identified with newly diagnosed bladder cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.11. Though, the value of this parameter may vary with an underlying probability of 99% between 0.75 and 1.57, 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	299	98.0	7.4	245	81.9	93.9
1999	281	98.2	7.8	226	80.4	96.5
2000	294	98.6	12.9	245	83.3	97.1
2001	297	96.6	7.4	235	79.1	94.0
2002	609	98.5	13.0	502	82.4	97.4
2003	592	97.0	12.3	466	78.7	97.9
2004	568	97.9	11.6	437	76.9	98.6
2005	531	95.3	10.0	372	70.1	97.6
2006	599	94.5	8.0	452	75.5	99.6
2007	617	83.6	7.3	423	68.6	98.8
2008	655	84.0	9.0	462	70.5	98.9
2009	667	82.5	8.1	465	69.7	98.9
2010	663	80.5	8.7	436	65.8	98.4
2011	681	81.6	7.0	432	63.4	97.2
2012	690	74.6	7.2	406	58.8	98.3
2013	742	75.5	8.0	426	57.4	96.2
2014	611	79.2	7.5	326	53.4	97.2
2015	563	98.6	11.9	284	50.4	94.4
2016	446	79.1	12.1	164	36.8	87.8
1998-2016	10405	87.7	9.3	7004	67.3	97.3

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	299	245	91.4	67	22.4
1999	281	219	94.5	66	23.5
2000	294	225	95.1	73	24.8
2001	297	218	96.3	52	17.5
2002	609	333	96.1	151	24.8
2003	592	411	97.3	148	25.0
2004	568	406	97.5	136	23.9
2005	531	412	97.6	114	21.5
2006	599	421	97.6	132	22.0
2007	617	489	97.5	132	21.4
2008	655	467	98.5	142	21.7
2009	667	535	99.1	171	25.6
2010	663	551	98.7	155	23.4
2011	681	506	98.6	142	20.9
2012	690	560	98.4	149	21.6
2013	742	552	99.1	154	20.8
2014	611	576	97.7	139	22.7
2015	563	591	98.1	178	31.6
2016	446	527	98.5	147	33.0
1998–2016	10405	8244	97.7	2448	23.5

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	245	64.5	35.5	83.9
1999	219	64.8	35.2	81.2
2000	225	67.1	32.9	85.0
2001	218	67.9	32.1	84.8
2002	333	72.7	27.3	86.3
2003	411	68.1	31.9	84.5
2004	406	71.7	28.3	86.6
2005	412	69.9	30.1	84.1
2006	421	72.4	27.6	83.7
2007	489	74.0	26.0	84.7
2008	467	71.7	28.3	83.7
2009	535	71.6	28.4	85.5
2010	551	69.9	30.1	84.0
2011	506	69.2	30.8	84.6
2012	560	69.5	30.5	82.4
2013	552	69.7	30.3	82.1
2014	576	69.4	30.6	82.4
2015	591	69.9	30.1	83.1
2016	527	66.8	33.2	81.7
1998-2016	8244	69.9	30.1	83.8

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	165	79.7	79.6	79.8	80.4
1999	154	79.5	77.4	81.4	78.3
2000	159	78.6	76.7	80.8	77.6
2001	143	79.5	77.8	82.1	78.4
2002	231	77.6	76.5	79.9	77.1
2003	309	77.5	75.7	80.8	77.0
2004	283	79.2	78.2	81.4	78.3
2005	291	78.6	77.8	80.0	78.6
2006	283	77.0	76.1	80.6	76.6
2007	342	79.0	78.3	80.5	78.3
2008	334	78.7	77.3	81.7	77.5
2009	386	79.3	77.1	82.9	78.3
2010	386	79.7	77.8	83.4	79.1
2011	356	79.2	76.4	81.8	78.1
2012	414	80.0	79.1	82.7	79.2
2013	406	78.4	77.3	80.6	78.3
2014	423	78.8	76.3	84.4	77.2
2015	434	80.2	79.2	83.4	79.7
2016	392	80.6	79.1	84.6	79.7
1998-2016	5891	79.2	77.6	81.9	78.4

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

Table 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	80	82.3	81.3	85.7	82.3
1999	65	80.0	80.1	79.9	80.1
2000	66	82.0	80.6	84.7	81.9
2001	75	84.0	81.2	88.3	84.0
2002	102	81.5	80.9	86.3	81.7
2003	102	81.5	80.9	83.1	81.0
2004	123	83.1	80.2	89.0	81.4
2005	121	83.1	82.6	84.5	83.0
2006	138	81.9	81.2	87.4	81.8
2007	147	81.8	81.0	87.2	81.2
2008	133	81.8	80.0	85.6	81.5
2009	149	80.9	79.5	83.5	80.3
2010	165	83.3	82.3	85.9	82.7
2011	150	82.3	79.6	88.7	80.8
2012	146	83.8	80.4	89.0	82.9
2013	146	81.2	79.6	85.4	80.0
2014	153	82.4	80.2	87.7	81.9
2015	157	82.6	80.6	89.3	81.0
2016	135	83.3	77.4	87.6	79.9
1998-2016	2353	82.3	80.6	86.7	81.6

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	98	8.8	0.47	4.7	0.42	8.3	0.47	12.6	0.52
1999	95	8.5	0.44	4.6	0.41	7.9	0.46	12.1	0.51
2000	100	8.8	0.50	4.7	0.49	8.0	0.51	12.0	0.54
2001	98	8.5	0.49	4.4	0.44	7.6	0.50	11.6	0.58
2002	164	8.8	0.38	4.4	0.36	7.4	0.38	10.8	0.40
2003	205	10.9	0.47	5.4	0.45	9.0	0.47	13.0	0.49
2004	198	10.5	0.49	5.0	0.45	8.5	0.49	12.5	0.53
2005	199	10.5	0.54	4.7	0.49	8.1	0.53	12.3	0.58
2006	204	10.7	0.47	4.9	0.44	8.1	0.47	11.8	0.48
2007	251	11.3	0.58	5.0	0.53	8.5	0.57	12.5	0.62
2008	238	10.7	0.50	4.5	0.45	7.7	0.48	11.4	0.52
2009	272	12.2	0.56	5.1	0.51	8.6	0.54	12.3	0.56
2010	275	12.2	0.59	5.0	0.52	8.4	0.56	12.2	0.61
2011	250	11.2	0.51	4.6	0.46	7.6	0.49	10.7	0.51
2012	285	12.6	0.56	5.1	0.53	8.5	0.56	12.1	0.57
2013	282	12.3	0.52	4.8	0.47	8.0	0.50	11.3	0.52
2014	296	12.7	0.67	5.1	0.64	8.3	0.66	11.5	0.66
2015	293	12.3	0.74	4.4	0.69	7.5	0.72	11.1	0.74
2016	261	10.9	0.83	3.9	0.70	6.5	0.76	9.6	0.81
1998-2016	4064	11.0	0.54	4.7	0.50	8.0	0.53	11.6	0.56

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	60	5.1	0.67	1.6	0.54	2.7	0.58	4.0	0.65
1999	47	4.0	0.71	1.2	0.57	2.1	0.61	3.0	0.64
2000	51	4.2	0.54	1.3	0.48	2.2	0.50	3.2	0.52
2001	50	4.1	0.51	1.2	0.39	2.0	0.43	3.1	0.48
2002	78	4.0	0.45	1.3	0.40	2.1	0.41	2.9	0.43
2003	75	3.8	0.48	1.2	0.42	2.0	0.45	2.7	0.46
2004	93	4.7	0.57	1.4	0.52	2.4	0.53	3.3	0.53
2005	89	4.5	0.56	1.2	0.41	2.1	0.46	3.1	0.52
2006	101	5.0	0.60	1.6	0.49	2.5	0.53	3.6	0.56
2007	111	4.8	0.60	1.4	0.50	2.4	0.52	3.4	0.55
2008	97	4.2	0.54	1.3	0.46	2.2	0.49	3.0	0.52
2009	111	4.8	0.63	1.5	0.58	2.4	0.60	3.4	0.62
2010	110	4.7	0.57	1.3	0.53	2.2	0.54	3.1	0.55
2011	100	4.3	0.53	1.4	0.46	2.2	0.49	3.1	0.53
2012	104	4.4	0.59	1.4	0.54	2.2	0.55	3.0	0.56
2013	103	4.3	0.52	1.4	0.45	2.1	0.47	3.0	0.50
2014	104	4.3	0.62	1.3	0.53	2.1	0.55	2.9	0.58
2015	120	4.9	0.72	1.4	0.57	2.3	0.61	3.2	0.65
2016	91	3.7	0.70	1.2	0.65	1.9	0.67	2.5	0.68
1998-2016	1695	4.4	0.58	1.3	0.50	2.2	0.52	3.1	0.55

Table 12

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14	1	0.0	0.0			0.0	1	0.1	0.1
15-19	0	0.0	0.0			0.0			0.1
20-24	0	0.0	0.0			0.0			0.1
25-29	0	0.0	0.0			0.0			0.1
30-34	0	0.0	0.0			0.0			0.1
35-39	3	0.1	0.1			0.0	3	0.3	0.4
40-44	11	0.3	0.4	6	0.2	0.2	5	0.5	0.9
45-49	45	1.2	1.6	27	1.0	1.2	18	1.7	2.6
50-54	81	2.2	3.8	51	1.9	3.1	30	2.9	5.4
55-59	146	3.9	7.6	109	4.0	7.1	37	3.5	8.9
60-64	203	5.4	13.1	159	5.9	13.0	44	4.2	13.1
65-69	332	8.8	21.9	251	9.3	22.3	81	7.7	20.8
70-74	594	15.8	37.7	457	16.9	39.2	137	13.0	33.9
75-79	666	17.7	55.5	502	18.6	57.8	164	15.6	49.5
80-84	744	19.8	75.3	541	20.0	77.8	203	19.3	68.8
85+	928	24.7	100.0	600	22.2	100.0	328	31.2	100.0
All ages	3754	100.0		2703	100.0		1051	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.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14		1			0.1	1.00		4.2
15-19								
20-24								
25-29								
30-34								
35-39		3			0.2	0.50		1.1
40-44	6	5	0.3	0.20	0.3	0.29	1.2	0.7
45-49	27	18	1.4	0.30	0.9	0.56	2.3	1.4
50-54	51	30	3.0	0.34	1.8	0.57	2.5	1.5
55-59	109	37	7.7	0.43	2.5	0.39	3.2	1.3
60-64	159	44	13.0	0.40	3.3	0.37	3.2	1.2
65-69	251	81	21.2	0.40	6.2	0.47	3.4	1.5
70-74	457	137	41.3	0.58	10.8	0.47	4.9	2.0
75-79	502	164	63.0	0.58	16.4	0.66	5.6	2.3
80-84	541	203	117.6	0.76	28.7	0.70	7.2	3.0
85+	600	328	196.0	0.93	44.7	0.76	9.2	3.6
All ages	2703	1051					5.2	2.3
Mortality								
Raw			11.8	0.59	4.4	0.60		
WS			4.7	0.54	1.3	0.52		
ES			7.9	0.57	2.2	0.54		
BRD-S			11.4	0.60	3.0	0.57		
PYLL-70								
per 100,000			24.0		11.1			
ES			20.6		9.4			
AYLL-70			8.0		10.1			

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	22	0.8	14	63.6			8	36.4
C15	Oesophagus	30	1.1	8	26.7	1	3.3	21	70.0
C16	Stomach	74	2.8	21	28.4	4	5.4	49	66.2
C18	Colon	173	6.6	101	58.4	16	9.2	56	32.4
C19-C20	Rectum	91	3.5	53	58.2	7	7.7	31	34.1
C22	Liver	34	1.3	9	26.5	5	14.7	20	58.8
C25	Pancreas	54	2.1	3	5.6	9	16.7	42	77.8
C32	Larynx	27	1.0	22	81.5			5	18.5
C33-C34	Lung	321	12.2	44	13.7	22	6.9	255	79.4
C43	Malign. melanoma	63	2.4	42	66.7	2	3.2	19	30.2
C44	Skin others	118	4.5	64	54.2	5	4.2	49	41.5
C61	Prostate	987	37.5	336	34.0	267	27.1	384	38.9
C64	Kidney	100	3.8	48	48.0	13	13.0	39	39.0
C65	Renal pelvis	112	4.3	34	30.4	12	10.7	66	58.9
C66	Ureter	90	3.4	40	44.4	13	14.4	37	41.1
C68	Urethra	40	1.5	5	12.5	12	30.0	23	57.5
C68	Urinary org.	23	0.9	3	13.0	4	17.4	16	69.6
C76-C79	CUP	33	1.3	6	18.2	2	6.1	25	75.8
C82-C85	NHL	55	2.1	31	56.4	6	10.9	18	32.7
C91-C96	Leukaemia	21	0.8	2	9.5	3	14.3	16	76.2
Others, specified		165	6.3	72	43.6	9	5.5	84	50.9
All further malignancies		2633	100.0	958	36.4	412	15.6	1263	48.0

Further malignancies with number of cases 1 to 19 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 ←%
C16	Stomach	16	2.2	8	50.0	1	6.3	7	43.8
C18	Colon	62	8.5	34	54.8	3	4.8	25	40.3
C19–C20	Rectum	27	3.7	15	55.6	1	3.7	11	40.7
C25	Pancreas	24	3.3	2	8.3	1	4.2	21	87.5
C33–C34	Lung	56	7.6	5	8.9	8	14.3	43	76.8
C43	Malign. melanoma	11	1.5	9	81.8			2	18.2
C44	Skin others	15	2.0	2	13.3	1	6.7	12	80.0
C50	Breast	143	19.5	99	69.2	8	5.6	36	25.2
C51	Vulva	10	1.4	7	70.0	1	10.0	2	20.0
C53	Cervix uteri	60	8.2	49	81.7	8	13.3	3	5.0
C54	Corpus uteri	47	6.4	36	76.6	8	17.0	3	6.4
C56	Ovary	24	3.3	11	45.8	1	4.2	12	50.0
C64	Kidney	31	4.2	14	45.2	8	25.8	9	29.0
C65	Renal pelvis	53	7.2	20	37.7	10	18.9	23	43.4
C66	Ureter	37	5.0	21	56.8	3	8.1	13	35.1
C76–C79	CUP	13	1.8	1	7.7			12	92.3
C82–C85	NHL	17	2.3	9	52.9	2	11.8	6	35.3
C91–C96	Leukaemia	9	1.2			1	11.1	8	88.9
Others, specified		78	10.6	30	38.5	9	11.5	39	50.0
All further malignancies		733	100.0	372	50.8	74	10.1	287	39.2

Further malignancies with number of cases 1 to 7 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 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								
10-14		1			0.1	1.00		4.8
15-19								
20-24								
25-29								
30-34								
35-39		3			0.2	0.50		1.2
40-44	6	3	0.3	0.25	0.2	0.23	1.3	0.5
45-49	24	17	1.2	0.29	0.9	0.61	2.3	1.5
50-54	41	23	2.4	0.33	1.3	0.55	2.3	1.4
55-59	86	27	6.1	0.42	1.8	0.36	2.9	1.1
60-64	119	31	9.7	0.40	2.3	0.33	2.9	1.0
65-69	171	54	14.4	0.40	4.2	0.43	2.9	1.3
70-74	270	89	24.4	0.54	7.0	0.46	3.8	1.7
75-79	310	116	38.9	0.60	11.6	0.66	4.7	2.1
80-84	322	133	70.0	0.81	18.8	0.67	5.9	2.5
85+	373	246	121.8	0.93	33.5	0.75	7.8	3.4
All ages	1722	743					4.2	2.0
Mortality								
Raw			7.5	0.58	3.1	0.58		
WS			3.1	0.52	1.0	0.50		
ES			5.1	0.55	1.5	0.52		
BRD-S			7.3	0.59	2.1	0.55		
PYLL-70								
per 100,000			18.9		8.7			
ES			16.2		7.4			
AYLL-70			8.5		10.9			

* 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								
10-14		1			0.1	1.00		4.8
15-19								
20-24								
25-29								
30-34								
35-39		3			0.2	0.50		1.2
40-44	6	3	0.3	0.25	0.2	0.23	1.3	0.5
45-49	22	16	1.1	0.31	0.8	0.64	2.1	1.4
50-54	34	20	2.0	0.36	1.2	0.56	1.9	1.2
55-59	63	23	4.5	0.40	1.6	0.34	2.2	1.0
60-64	82	27	6.7	0.37	2.0	0.33	2.0	0.9
65-69	95	47	8.0	0.31	3.6	0.42	1.7	1.1
70-74	162	72	14.6	0.43	5.7	0.41	2.3	1.4
75-79	198	94	24.9	0.48	9.4	0.59	3.1	1.8
80-84	216	113	47.0	0.67	16.0	0.61	4.2	2.2
85+	269	215	87.9	0.74	29.3	0.68	6.1	3.1
All ages	1147	634					2.9	1.8
Mortality								
Raw			5.0	0.49	2.7	0.54		
WS			2.1	0.44	0.8	0.47		
ES			3.4	0.47	1.3	0.49		
BRD-S			4.9	0.50	1.8	0.51		
PYLL-70								
per 100,000			14.3		7.8			
ES			12.3		6.6			
AYLL-70			9.6		11.1			

* See corresponding tables with multiple malignancies.

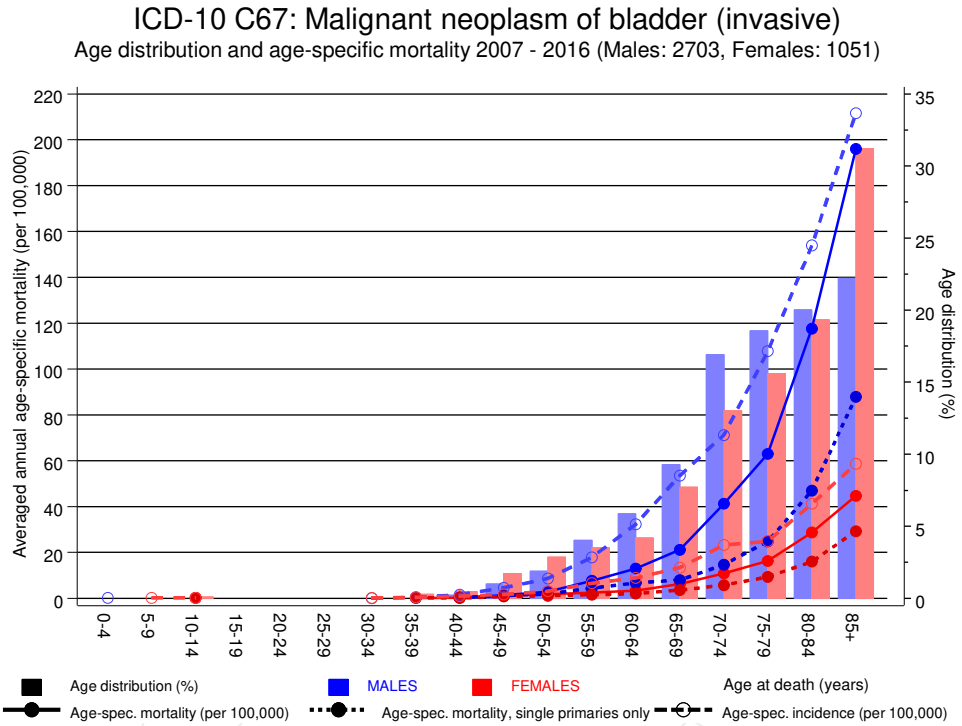


Figure 17. Distribution of age at death (bars; males: mean=73.3 yrs, median=74.2 yrs; females: mean=75.2 yrs, median=77.1 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

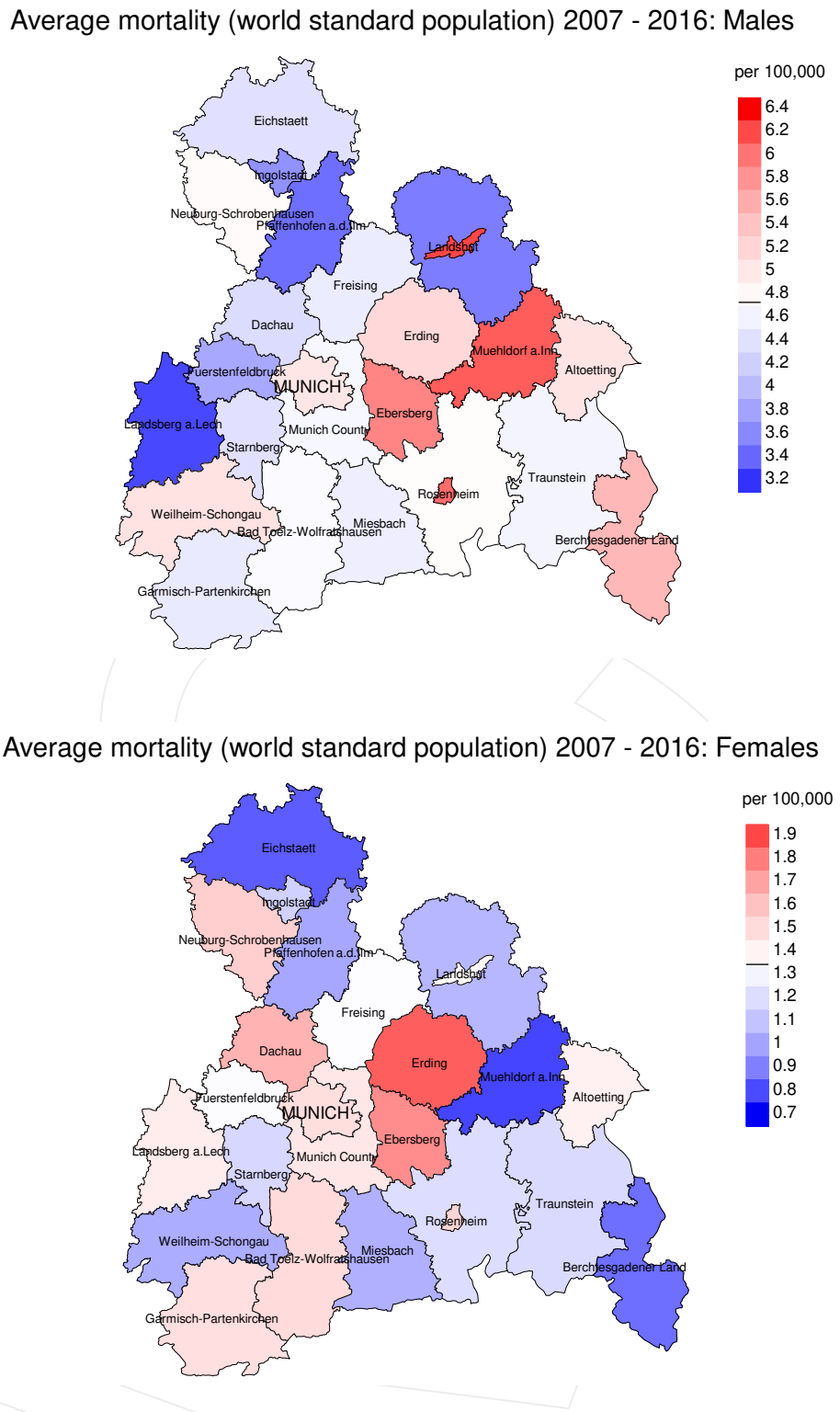
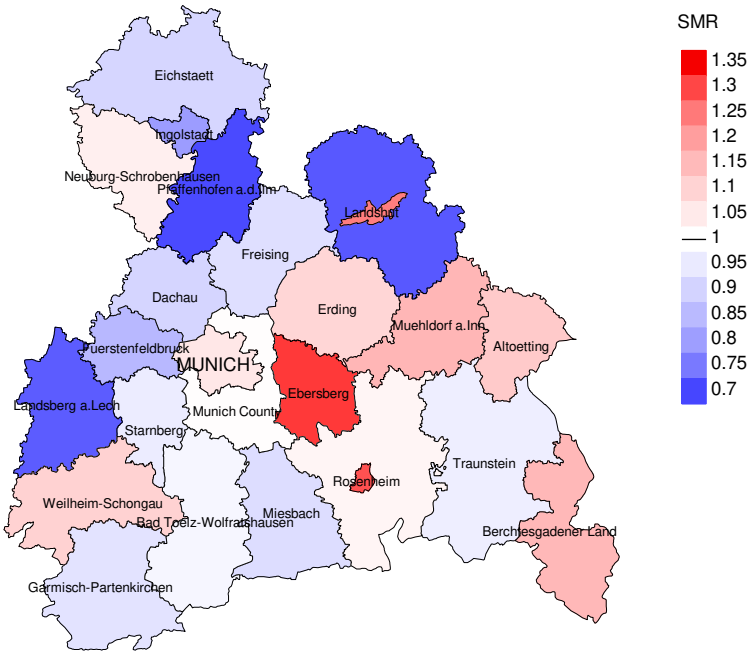


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 4.7/100,000 WS N=2,703, females 1.3/100,000 WS N=1,051).

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 35 women died from bladder cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.9 and 3.2/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

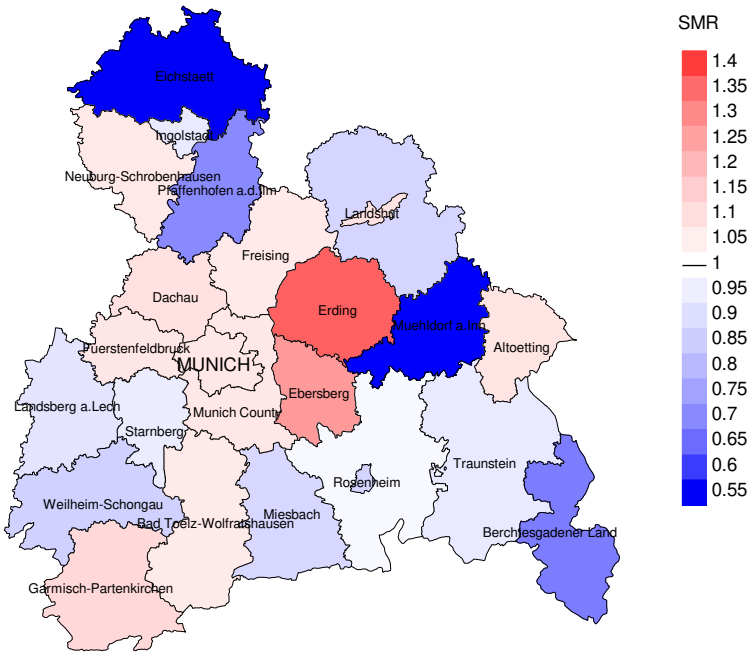


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,703, females N=1,051).

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 35 women died from bladder cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.27. Though, the value of this parameter may vary with an underlying probability of 99% between 0.78 and 1.93, 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

Recommended Citation

Munich Cancer Registry. ICD-10 C67: Bladder cancer - Incidence and Mortality [Internet]. 2018 [updated 2018 Aug 21; cited 2018 Oct 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bC67__E-ICD-10-C67-Bladder-cancer-incidence-and-mortality.pdf

Copyright

Disclaimer