

Munich Cancer Registry



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- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C67: Bladder cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	12,245
Diseases	12,251
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m





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<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

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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, January 2021

- [#] 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	29	9.7	15.7	18.1	84.6	98.3
1999	285	22	7.7	14.6	18.1	83.5	97.9
2000	291	39	13.4	15.4	17.9	86.3	98.6
2001	299	24	8.0	16.3	17.9	82.6	98.0
2002	610	83	13.6	18.0	17.7	85.7	98.7 #
2003	594	74	12.5	18.8	17.7	83.3	97.5
2004	569	68	12.0	19.1	17.6	81.0	98.1
2005	532	56	10.5	18.9	17.5	75.0	97.0
2006	597	52	8.7	19.0	17.2	80.1	96.0
2007	618	50	8.1	19.5	17.1	75.2	94.5 #
2008	662	64	9.7	20.4	16.9	78.7	98.5
2009	671	54	8.0	21.3	16.7	75.3	98.8
2010	670	62	9.3	21.9	16.6	72.8	97.3
2011	683	52	7.6	22.5	16.0	71.6	98.7
2012	698	54	7.7	22.9	15.8	68.5	97.9
2013	755	61	8.1	23.5	14.9	65.6	98.1
2014	654	51	7.8	23.8	14.3	64.5	97.2
2015	681	75	11.0	24.1	13.1	63.1	95.0
2016	615	65	10.6	24.4	13.3	61.8	99.8
2017	660	62	9.4	24.9	13.3	48.6	99.7
2018	509	8	1.6	25.4	13.8	28.9	98.8
2019	299	7	2.3	25.6	8.7	27.4	77.6 ##
1998-2019	12251	1112	9.1	25.6	18.1	69.9	97.3

12,251 cases diagnosed 1998-2019 are related to a total of 12,245 patients. Currently, in 5,306 (43.3 %) of these 12,245 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,872 / 1,068 / 366 (31.6 % / 8.7 % / 3.0 %) 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 2017, a subgroup of 660 cases has been diagnosed, of which 24.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 13.3 % 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	19	9.1	17.7	21.1	83.7	98.6
1999	219	76.8	19	8.7	14.7	21.2	82.6	98.2
2000	198	68.0	20	10.1	15.8	21.1	83.3	98.5
2001	199	66.6	12	6.0	16.7	21.1	80.9	98.0
2002	435	71.3	47	10.8	18.3	20.9	85.3	98.6 #
2003	439	73.9	47	10.7	19.1	20.9	82.7	97.7
2004	406	71.4	36	8.9	19.3	20.8	79.3	98.0
2005	372	69.9	27	7.3	19.0	20.7	73.7	96.8
2006	430	72.0	27	6.3	19.1	20.4	78.6	95.3
2007	435	70.4	26	6.0	19.7	20.2	72.6	93.1 #
2008	478	72.2	38	7.9	20.7	19.9	79.3	99.0
2009	494	73.6	37	7.5	21.6	19.7	74.1	98.4
2010	477	71.2	35	7.3	22.2	19.7	71.3	96.9
2011	495	72.5	33	6.7	22.9	19.0	72.7	98.6
2012	518	74.2	28	5.4	23.3	18.8	67.6	97.7
2013	553	73.2	35	6.3	24.0	17.9	65.6	97.8
2014	474	72.5	30	6.3	24.4	17.2	63.3	97.0
2015	481	70.6	52	10.8	24.7	15.8	62.0	94.4
2016	438	71.2	43	9.8	25.0	15.9	58.9	100.0
2017	463	70.2	32	6.9	25.7	16.5	44.1	99.8
2018	387	76.0	6	1.6	26.1	17.2	26.6	99.5
2019	221	73.9	3	1.4	26.4	10.4	24.0	75.6 ##
1998–2019	8821	72.0	652	7.4	26.4	21.1	68.5	97.1

8,821 cases diagnosed 1998-2019 are related to a total of 8,817 patients. Currently, in 4,172 (47.3 %) of these 8,817 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,040 / 830 / 302 (34.5 % / 9.4 % / 3.4 %) 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 2017, a subgroup of 463 cases has been diagnosed, of which 25.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 16.5 % 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 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	10	11.1	11.1	10.6	86.7	97.8
1999	66	23.2	3	4.5	14.1	10.6	86.4	97.0
2000	93	32.0	19	20.4	14.5	10.2	92.5	98.9
2001	100	33.4	12	12.0	15.2	10.0	86.0	98.0
2002	175	28.7	36	20.6	17.4	10.0	86.9	98.9 #
2003	155	26.1	27	17.4	18.0	9.9	85.2	96.8
2004	163	28.6	32	19.6	18.8	9.7	85.3	98.2
2005	160	30.1	29	18.1	18.8	9.6	78.1	97.5
2006	167	28.0	25	15.0	18.8	9.4	83.8	97.6
2007	183	29.6	24	13.1	19.1	9.5	81.4	97.8 #
2008	184	27.8	26	14.1	19.7	9.2	77.2	97.3
2009	177	26.4	17	9.6	20.5	9.2	78.5	100.0
2010	193	28.8	27	14.0	21.2	8.7	76.7	98.4
2011	188	27.5	19	10.1	21.5	8.7	68.6	98.9
2012	180	25.8	26	14.4	21.9	8.1	71.1	98.3
2013	202	26.8	26	12.9	22.1	7.5	65.3	99.0
2014	180	27.5	21	11.7	22.3	7.2	67.8	97.8
2015	200	29.4	23	11.5	22.7	6.4	66.0	96.5
2016	177	28.8	22	12.4	22.8	6.7	68.9	99.4
2017	197	29.8	30	15.2	23.0	5.1	59.4	99.5
2018	122	24.0	2	1.6	23.5	4.0	36.1	96.7
2019	78	26.1	4	5.1	23.6	3.8	37.2	83.3 ##
1998-2019	3430	28.0	460	13.4	23.6	10.6	73.7	97.8

3,430 cases diagnosed 1998-2019 are related to a total of 3,428 patients. Currently, in 1,134 (33.1 %) of these 3,428 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 832 / 238 / 64 (24.3 % / 6.9 % / 1.9 %) 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 2017, a subgroup of 197 cases has been diagnosed, of which 23.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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 4.92 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	219	66	19.6	5.6	11.4	2.2	17.7	3.4	24.0	4.7
2000	198	93	17.4	7.7	9.6	2.7	15.4	4.3	22.1	6.0
2001	199	100	17.2	8.2	10.0	3.0	15.4	4.8	20.0	6.5
2002	435	175	23.3	8.9	12.2	3.2	19.5	5.0	27.4	6.9
2003	439	155	23.4	7.9	12.2	2.8	19.3	4.4	26.7	6.0
2004	406	163	21.6	8.2	11.0	2.8	17.3	4.5	23.9	6.3
2005	372	160	19.6	8.0	9.7	2.9	15.3	4.5	21.2	6.0
2006	430	167	22.5	8.3	11.1	3.2	17.4	4.8	24.1	6.4
2007	435	183	19.6	7.9	9.6	2.8	15.0	4.4	20.2	6.1
2008	478	184	21.5	7.9	10.0	2.9	16.0	4.4	22.0	5.9
2009	494	177	22.1	7.6	10.2	2.6	16.1	4.0	22.3	5.5
2010	477	193	21.2	8.2	9.8	2.5	15.3	4.1	20.5	5.6
2011	495	188	22.1	8.0	10.0	3.0	15.7	4.6	21.1	5.9
2012	518	180	22.8	7.6	9.7	2.6	15.4	4.1	21.6	5.5
2013	553	202	24.0	8.5	10.4	3.0	16.3	4.6	22.2	6.0
2014	474	180	20.3	7.5	8.7	2.6	13.6	4.0	18.5	5.4
2015	481	200	20.2	8.2	7.9	3.0	12.8	4.5	18.3	5.9
2016	438	177	18.2	7.2	7.6	2.4	11.9	3.8	16.3	4.9
2017	463	197	19.2	8.0	7.5	2.6	11.9	4.1	16.9	5.6
2018	387	122	15.9	4.9	6.4	1.7	10.1	2.6	13.8	3.5
2019	221	78	9.1	3.1	3.6	0.9	5.7	1.4	7.8	2.1
1998-2019	8821	3430	20.0	7.5	9.2	2.6	14.4	4.0	19.7	5.5

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	299	72.5	12.8	26.3	96.1	55.0	65.1	73.4	83.1	88.1
1999	285	71.0	11.0	42.1	94.1	55.0	63.5	71.8	79.3	85.3
2000	291	73.5	10.4	39.3	99.7	59.8	65.2	74.6	80.8	86.6
2001	299	71.6	12.1	30.9	95.8	55.1	62.4	72.5	80.9	87.1
2002	610	74.0	10.7	36.1	99.5	60.6	66.8	74.8	81.7	88.2
2003	594	73.5	11.6	25.4	103	59.4	65.7	74.5	81.7	87.9
2004	569	73.5	11.5	33.3	99.0	58.7	64.8	75.3	81.4	87.9
2005	532	73.4	11.9	28.0	101	58.6	65.1	74.5	82.0	87.8
2006	597	73.2	12.1	3.0	101	57.5	66.0	74.2	81.8	87.0
2007	618	73.2	11.6	1.3	101	57.0	66.8	73.7	81.4	86.9
2008	662	74.0	11.7	6.6	100	57.8	66.8	74.7	82.6	87.7
2009	671	74.0	10.9	39.9	103	59.3	66.7	75.0	82.3	87.2
2010	670	74.2	11.8	31.5	100	57.0	67.0	75.2	83.3	88.3
2011	683	73.3	12.3	1.5	97.6	56.7	66.2	74.5	82.3	88.4
2012	698	74.3	10.5	37.0	103	59.7	68.4	75.2	81.6	87.2
2013	755	74.0	11.2	33.4	99.0	59.1	67.4	74.4	82.1	87.9
2014	654	74.0	11.0	36.9	107	58.3	67.6	75.0	81.8	87.8
2015	681	75.4	10.5	37.7	103	61.3	69.7	76.6	82.7	87.5
2016	615	74.6	11.4	35.4	98.8	58.3	67.2	76.6	83.0	87.8
2017	660	75.3	10.9	33.3	102	60.3	69.3	77.0	82.7	87.9
2018	509	74.5	10.4	43.3	97.6	59.7	67.6	76.2	82.0	87.1
2019	299	75.5	10.1	42.3	96.6	59.6	70.1	77.5	82.8	87.4
1998-2019	12251	73.9	11.3	1.3	107	58.5	66.8	75.1	82.0	87.6

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	209	71.4	12.6	26.3	95.6	55.1	64.3	72.5	80.4	87.1
1999	219	70.0	10.9	42.6	94.1	55.0	61.9	70.5	78.2	84.9
2000	198	71.8	10.3	39.3	99.7	58.3	64.2	73.7	79.2	84.9
2001	199	69.4	11.3	44.0	95.1	54.0	61.4	69.5	77.8	85.4
2002	435	73.0	10.2	37.0	97.6	60.2	66.0	73.5	80.3	86.1
2003	439	72.4	11.1	25.4	101	58.9	65.2	73.1	80.0	86.1
2004	406	71.9	11.1	37.8	98.8	58.2	63.7	73.1	79.8	85.2
2005	372	72.2	10.8	38.6	101	58.9	64.7	73.3	80.2	84.9
2006	430	72.7	11.3	3.0	101	58.3	65.8	73.3	80.5	86.0
2007	435	72.4	11.4	1.3	101	56.9	66.5	72.5	80.0	86.6
2008	478	73.6	11.3	37.5	100	57.7	66.5	74.2	81.6	87.4
2009	494	73.2	10.5	46.0	97.4	59.1	66.3	74.3	81.1	86.2
2010	477	72.4	11.6	31.5	99.1	56.2	65.7	72.7	81.0	86.9
2011	495	72.9	12.0	1.5	95.4	55.8	66.3	74.1	81.6	87.3
2012	518	73.7	10.0	39.9	103	60.0	68.3	74.8	80.5	85.2
2013	553	73.6	10.7	40.5	98.6	58.7	67.3	74.0	81.6	86.9
2014	474	73.6	10.7	42.0	95.2	58.1	67.1	74.5	81.1	86.8
2015	481	75.7	9.6	44.2	103	63.2	70.5	76.6	82.1	86.6
2016	438	74.1	10.9	35.4	98.8	58.5	66.9	76.0	81.7	87.0
2017	463	74.9	10.7	33.3	102	60.7	68.8	76.5	82.2	87.0
2018	387	74.5	10.4	43.3	97.6	59.3	67.6	76.2	82.0	86.5
2019	221	74.7	10.1	42.3	95.4	59.6	69.4	75.8	82.0	86.8
1998-2019	8821	73.1	10.9	1.3	103	58.4	66.2	74.2	80.9	86.5

Table 3b

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	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	93	77.2	9.7	56.1	94.5	62.6	70.4	78.9	85.9	88.8
2001	100	76.1	12.5	30.9	95.8	57.2	68.2	77.9	84.8	90.1
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	163	77.6	11.6	33.3	99.0	59.5	71.9	78.9	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	66.9	76.8	84.6	91.4
2007	183	75.1	12.0	34.4	98.4	57.9	69.0	77.9	83.8	87.8
2008	184	75.0	12.6	6.6	97.0	58.6	68.2	76.6	85.0	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	180	76.0	11.8	37.0	96.4	59.5	68.9	78.1	84.8	89.5
2013	202	75.3	12.4	33.4	99.0	60.5	68.4	76.2	85.0	90.9
2014	180	75.1	11.7	36.9	107	59.9	69.3	75.6	82.2	89.4
2015	200	74.6	12.4	37.7	96.7	57.4	67.5	75.2	83.9	89.7
2016	177	75.7	12.4	41.3	97.5	57.1	69.2	78.0	85.9	89.4
2017	197	76.4	11.3	43.7	97.7	60.2	70.6	78.4	84.4	89.5
2018	122	74.7	10.6	45.2	95.2	61.2	67.4	76.3	81.8	88.1
2019	78	77.6	9.8	50.8	96.6	60.3	72.6	79.1	83.9	89.0
1998-2019	3430	75.8	12.1	4.3	107	58.9	68.9	77.6	84.8	89.8

Table 4

Age distribution by 5-year age group and sex for period 2007–2019
(incl. DCO)

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0–4	2	0.0	0.0	2	0.0	0.0			
5–9	1	0.0	0.0				1	0.0	0.0
10–14	1	0.0	0.0				1	0.0	0.1
15–19	0	0.0	0.0						0.1
20–24	0	0.0	0.0						0.1
25–29	0	0.0	0.0						0.1
30–34	4	0.0	0.1	2	0.0	0.1	2	0.1	0.2
35–39	14	0.2	0.3	7	0.1	0.2	7	0.3	0.5
40–44	55	0.7	0.9	36	0.6	0.8	19	0.8	1.3
45–49	146	1.8	2.7	106	1.8	2.6	40	1.8	3.1
50–54	270	3.3	6.0	203	3.4	6.0	67	3.0	6.1
55–59	441	5.4	11.4	325	5.5	11.5	116	5.1	11.2
60–64	662	8.1	19.5	506	8.6	20.1	156	6.9	18.1
65–69	988	12.1	31.6	775	13.1	33.2	213	9.4	27.5
70–74	1369	16.7	48.4	1009	17.1	50.2	360	15.9	43.4
75–79	1516	18.5	66.9	1160	19.6	69.9	356	15.7	59.2
80–84	1337	16.4	83.3	949	16.0	85.9	388	17.2	76.3
85+	1369	16.7	100.0	834	14.1	100.0	535	23.7	100.0
All ages	8175	100.0		5914	100.0		2261	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007–2019

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=398 %	Females DCO rate n=267 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4	2		0.1				0.9	
5- 9		1		0.1				1.1
10-14		1		0.1				0.9
15-19								
20-24								
25-29								
30-34	2	2	0.1	0.1			0.2	0.1
35-39	7	7	0.3	0.3			0.4	0.2
40-44	36	19	1.5	0.8			1.4	0.3
45-49	106	40	4.2	1.6			2.2	0.5
50-54	203	67	8.7	2.9	0.5	6.0	2.6	0.6
55-59	325	116	16.7	5.8	1.2	0.9	2.8	0.9
60-64	506	156	31.0	8.9	2.4	5.1	3.1	1.1
65-69	774	213	50.9	12.6	2.6	2.3	3.4	1.2
70-74	1009	359	72.0	22.4	3.7	5.0	3.9	1.9
75-79	1160	356	104.8	25.9	6.9	3.9	5.3	2.0
80-84	948	388	144.4	39.9	8.4	13.9	6.7	2.7
85+	834	535	195.6	55.4	19.7	30.5	8.5	3.5
All ages	5912	2260			6.7	11.8	4.1	1.6
Incidence								
Raw			19.6	7.3				
WS			8.4	2.5				
ES			13.3	3.9				
BRD-S			18.2	5.2				

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 C67: Malignant neoplasm of bladder (invasive)
 Age distribution and age-specific incidence 2007 - 2019 (Males: 5912, Females: 2260)

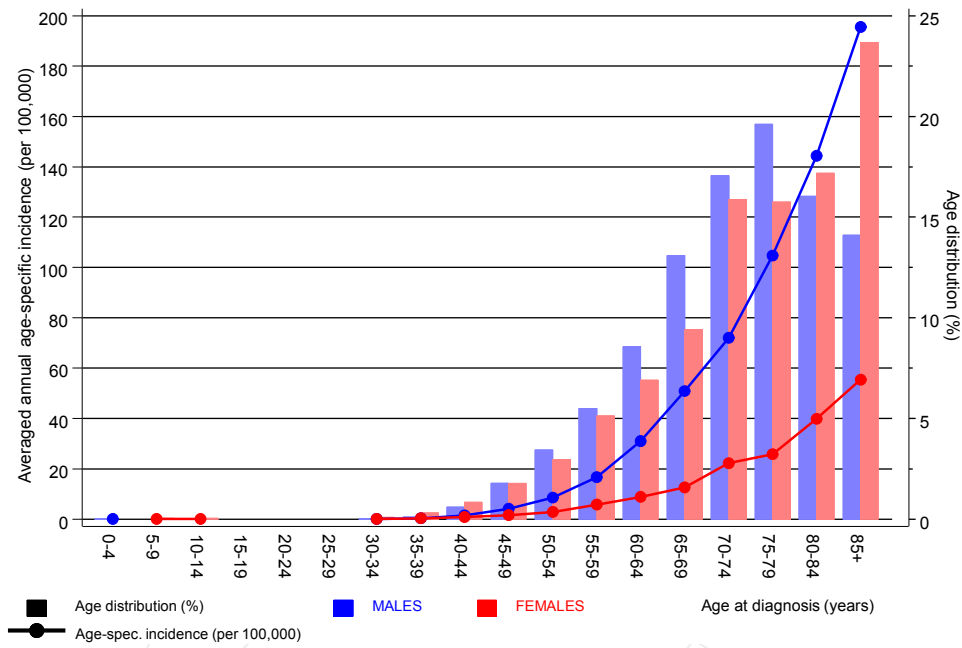


Figure 6. Age distribution (males: mean=73.7 yrs, median=74.9 yrs; females: mean=75.7 yrs, median=77.3 yrs) and age-specific incidence.

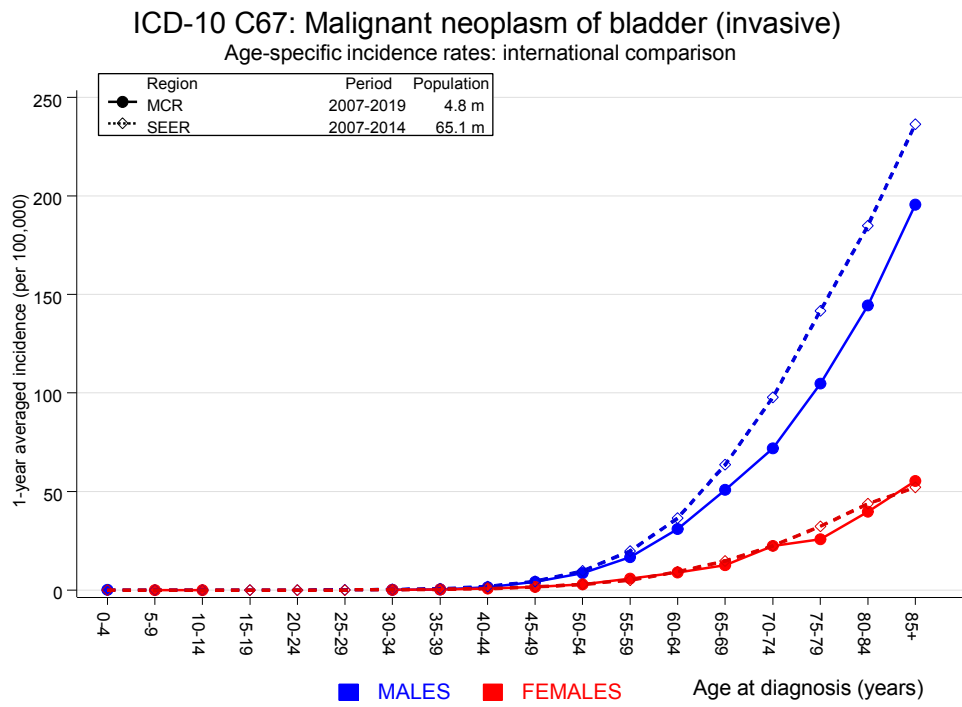


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 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 1998–2019

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	9	3.3	2.7	1.2	5.2 #	2.3	11.1
C07-C08 Salivary gland	2	1.2	1.7	0.2	6.0	0.3	
C09-C10 Oropharynx	6	3.9	1.5	0.6	3.4	0.8	
C12-C13 Hypopharynx	5	2.1	2.4	0.8	5.5	1.2	
C15 Oesophagus	23	8.6	2.7	1.7	4.0 #	5.8	8.7
C16 Stomach	52	21.4	2.4	1.8	3.2 #	12.4	5.8
C17 Small intestine	8	2.8	2.9	1.2	5.6 #	2.1	
C18 Colon	112	51.0	2.2	1.8	2.6 #	24.6	6.3
C19-C20 Rectum	53	25.2	2.1	1.6	2.8 #	11.2	3.8
C21 Anus/canal	2	1.1	1.9	0.2	6.7	0.4	
C22 Liver	33	13.8	2.4	1.6	3.4 #	7.7	12.1
C23-C24 Bile	9	5.4	1.7	0.8	3.2	1.5	11.1
C25 Pancreas	43	19.8	2.2	1.6	2.9 #	9.3	25.6
C30-C31 Sinuses	2	0.8	2.4	0.3	8.7	0.5	
C32 Larynx	8	4.4	1.8	0.8	3.6	1.5	
C33-C34 Lung	254	56.9	4.5	3.9	5.0 #	79.5	11.8
C38,C45 Mesothelioma	7	3.5	2.0	0.8	4.1	1.4	14.3
C43 Malign. melanoma	34	20.6	1.6	1.1	2.3 #	5.4	
C46,C49 Soft tissue	4	2.8	1.4	0.4	3.6	0.5	
C48 Peritoneal	3	0.4	8.2	1.7	24.1 #	1.1	33.3
C50 Breast	2	1.3	1.5	0.2	5.4	0.3	50.0
C60 Penis	4	1.3	3.1	0.9	8.0	1.1	
C61 Prostate	1244	138.5	9.0	8.5	9.5 #	445.9	4.7
C64 Kidney	77	16.2	4.8	3.8	6.0 #	24.5	23.4
C65 Renal pelvis	82	2.3	35.5	28.3	44.1 #	32.1	1.2
C66 Ureter	61	1.4	44.9	34.3	57.7 #	24.1	
C67 Bladder	3	25.7	0.1	0.0	0.3 #	-9.2	33.3
C68 Urethra	75	0.5	164.3	129.2	205.9 #	30.1	
C68 Urinary org.	15	0.4	36.4	20.4	60.0 #	5.9	86.7
C70-C72 CNS cancer	11	5.8	1.9	0.9	3.4	2.1	9.1
C73 Thyroid	3	2.5	1.2	0.2	3.5	0.2	
C76-C79 CUP	32	8.9	3.6	2.5	5.1 #	9.3	6.3
C81 Hodgkin lymphoma	5	1.0	5.0	1.6	11.7 #	1.6	
C82-C85 NHL	38	21.5	1.8	1.2	2.4 #	6.6	15.8
C90 Mult. myeloma	10	6.8	1.5	0.7	2.7	1.3	10.0
C91-C96 Leukaemia	13	8.2	1.6	0.8	2.7	1.9	38.5
Others, specified	5	3.6	1.4	0.5	3.3	0.6	20.0
Not observed	0	2.2	0.0	0.0	1.6	-0.9	
All further malignancies	2349	497.0	4.7	4.5	4.9 #	747.0	7.3

Patients	8172
Median age at next malignancy (years)	73.5
Person-years	24790
Mean observation time (years)	3.0
Median observation time (years)	1.4

The occurrence of further specified malignancy is statistically significant.

Further observed 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 1998–2019

FEMALES

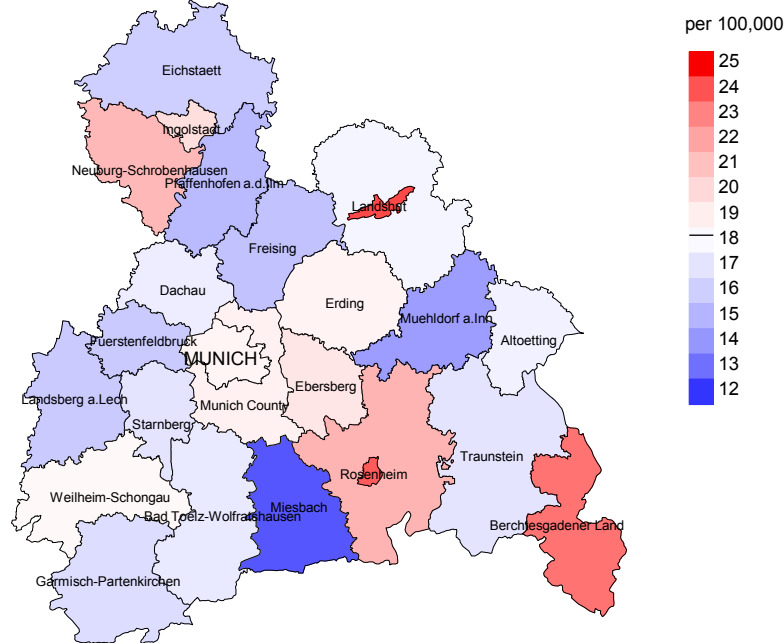
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C15 Oesophagus	5	0.7	7.4	2.4	17.3 #	5.4	40.0
C16 Stomach	8	4.4	1.8	0.8	3.6	4.4	12.5
C17 Small intestine	4	0.5	7.4	2.0	19.0 #	4.3	
C18 Colon	27	12.3	2.2	1.5	3.2 #	18.3	11.1
C19–C20 Rectum	16	4.7	3.4	1.9	5.5 #	14.0	6.3
C21 Anus/canal	2	0.6	3.5	0.4	12.7	1.8	
C22 Liver	4	1.5	2.7	0.7	7.0	3.1	25.0
C23–C24 Bile	3	1.8	1.6	0.3	4.8	1.5	33.3
C25 Pancreas	23	5.8	4.0	2.5	5.9 #	21.3	34.8
C33–C34 Lung	46	7.8	5.9	4.3	7.9 #	47.4	19.6
C38,C45 Mesothelioma	2	0.2	9.1	1.1	33.0 #	2.2	
C43 Malign. melanoma	2	3.7	0.5	0.1	1.9	-2.1	50.0
C50 Breast	76	29.9	2.5	2.0	3.2 #	57.1	11.8
C51 Vulva	4	1.3	3.1	0.8	7.9	3.3	
C52 Vagina	4	0.2	17.5	4.8	44.9 #	4.7	
C53 Cervix uteri	14	1.2	12.0	6.6	20.1 #	15.9	7.1
C54 Corpus uteri	12	5.7	2.1	1.1	3.7 #	7.8	8.3
C55,C57 Fem. genitals un	4	0.3	11.7	3.2	30.0 #	4.5	25.0
C56 Ovary	11	4.3	2.5	1.3	4.6 #	8.3	45.5
C64 Kidney	22	2.7	8.3	5.2	12.5 #	24.0	31.8
C65 Renal pelvis	31	0.4	82.5	56.0	117.1 #	37.9	
C66 Ureter	23	0.2	116.0	73.5	174.0 #	28.2	
C67 Bladder	2	2.6	0.8	0.1	2.8	-0.7	
C68 Urethra	8	0.0	255.6	110.4	503.7 #	9.9	
C68 Urinary org.	3	0.1	49.4	10.2	144.3 #	3.6	100.0
C70–C72 CNS cancer	2	1.4	1.5	0.2	5.3	0.8	50.0
C76–C79 CUP	6	2.4	2.5	0.9	5.4	4.5	
C82–C85 NHL	14	4.5	3.1	1.7	5.2 #	11.7	28.6
C91–C96 Leukaemia	10	1.8	5.7	2.7	10.5 #	10.2	30.0
Others, specified	10	4.9	2.0	1.0	3.7	6.3	10.0
Not observed	0	1.9	0.0	0.0	1.9	-2.4	
All further malignancies	398	109.7	3.6	3.3	4.0 #	357.1	15.8

Patients	3048
Median age at next malignancy (years)	77.0
Person-years	8072
Mean observation time (years)	2.6
Median observation time (years)	1.0

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 are pooled in category "Others, specified".

Average incidence (Germany 1987 standard population) 2007 - 2019: Males



Average incidence (Germany 1987 standard population) 2007 - 2019: Females

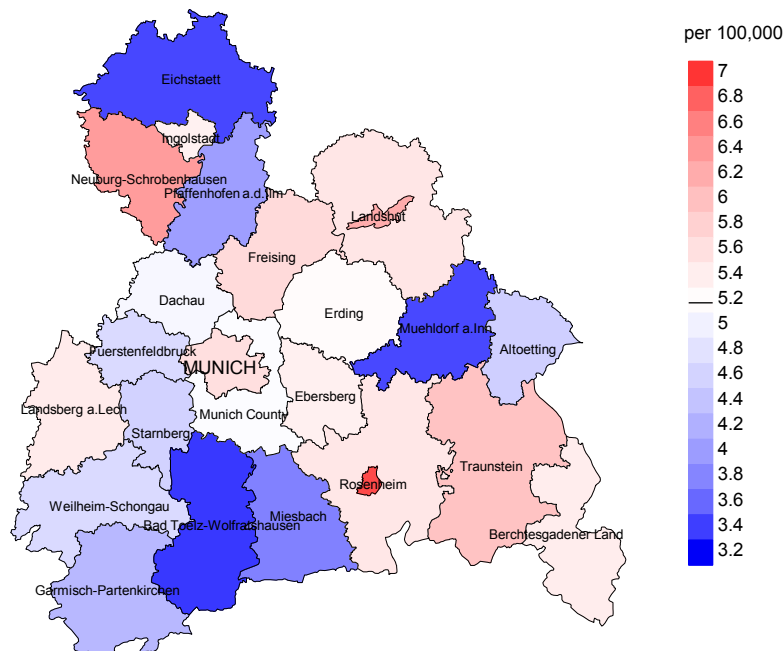
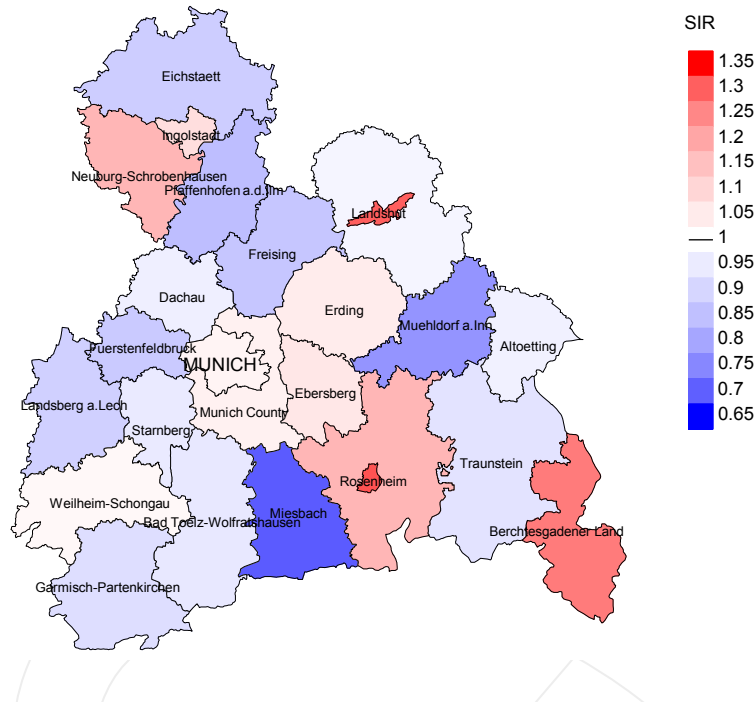


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 18.2/100,000 WS N=5,912, females 5.2/100,000 WS N=2,260).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 63 women were identified with newly diagnosed bladder cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 5.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.8 and 7.5/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

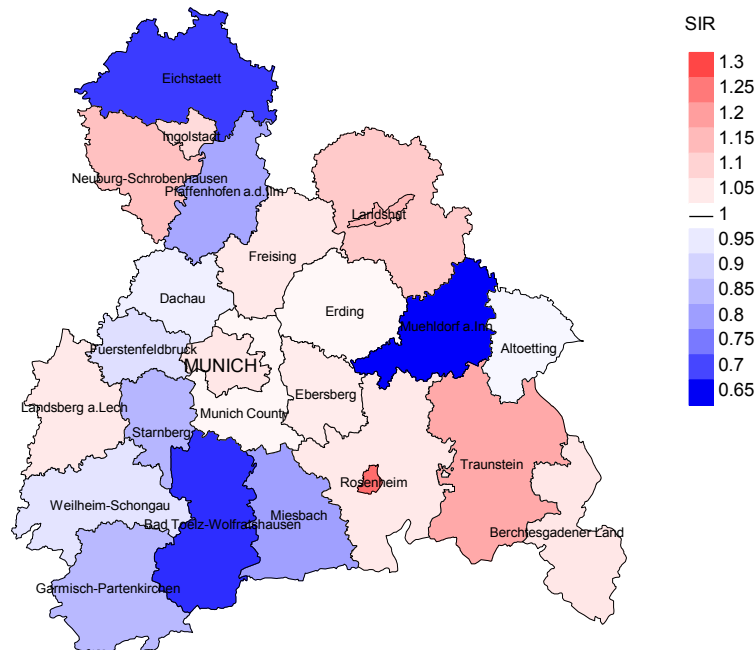


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=5,912, females N=2,260).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 63 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 1.04. Though, the value of this parameter may vary with an underlying probability of 99% between 0.73 and 1.43, 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 4.92 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	98.3	9.7	253	84.6	92.9
1999	285	97.9	7.7	238	83.5	95.8
2000	291	98.6	13.4	251	86.3	96.4
2001	299	98.0	8.0	247	82.6	93.1
2002	610	98.7	13.6	523	85.7	96.6
2003	594	97.5	12.5	495	83.3	96.6
2004	569	98.1	12.0	461	81.0	97.4
2005	532	97.0	10.5	399	75.0	96.7
2006	597	96.0	8.7	478	80.1	96.9
2007	618	94.5	8.1	465	75.2	96.3
2008	662	98.5	9.7	521	78.7	95.8
2009	671	98.8	8.0	505	75.3	96.2
2010	670	97.3	9.3	488	72.8	95.5
2011	683	98.7	7.6	489	71.6	94.5
2012	698	97.9	7.7	478	68.5	94.6
2013	755	98.1	8.1	495	65.6	93.5
2014	654	97.2	7.8	422	64.5	93.4
2015	681	95.0	11.0	430	63.1	91.6
2016	615	99.8	10.6	380	61.8	87.4
2017	660	99.7	9.4	321	48.6	74.1
2018	509	98.8	1.6	147	28.9	49.0
2019	299	77.6	2.3	82	27.4	84.1
1998-2019	12251	97.3	9.1	8568	69.9	93.3

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 4.92 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	285	219	94.5	66	23.2
2000	291	223	95.1	71	24.4
2001	299	217	96.3	52	17.4
2002	610	333	96.1	151	24.8
2003	594	412	97.3	149	25.1
2004	569	404	97.5	135	23.7
2005	532	412	97.6	114	21.4
2006	597	420	97.6	132	22.1
2007	618	487	97.5	132	21.4
2008	662	463	98.5	142	21.5
2009	671	535	99.1	171	25.5
2010	670	551	98.7	155	23.1
2011	683	504	98.6	141	20.6
2012	698	559	98.4	149	21.3
2013	755	550	99.1	154	20.4
2014	654	577	97.9	142	21.7
2015	681	597	98.2	179	26.3
2016	615	633	99.1	182	29.6
2017	660	596	96.3	157	23.8
2018	509	397	34.0	57	11.2
2019	299	376	55.3	51	17.1
1998–2019	12251	9710	93.4	2749	22.4

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 4.92 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	223	66.8	33.2	84.9
2001	217	68.2	31.8	84.7
2002	333	72.7	27.3	86.3
2003	412	68.0	32.0	84.5
2004	404	71.8	28.2	86.8
2005	412	69.9	30.1	84.1
2006	420	72.4	27.6	83.7
2007	487	74.1	25.9	84.8
2008	463	71.7	28.3	84.0
2009	535	71.6	28.4	85.5
2010	551	70.1	29.9	84.0
2011	504	69.0	31.0	84.5
2012	559	69.8	30.2	82.5
2013	550	69.8	30.2	82.2
2014	577	69.7	30.3	82.5
2015	597	70.0	30.0	83.1
2016	633	68.6	31.4	82.0
2017	596	63.6	36.4	78.4
2018	397	39.8	60.2	75.6
2019	376	41.0	59.0	71.6
1998–2019	9710	67.3	32.7	83.1

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	158	78.5	76.6	80.8	77.6
2001	142	79.5	77.8	82.1	78.5
2002	231	77.6	76.5	79.9	77.1
2003	310	77.4	75.7	80.7	77.0
2004	281	79.2	78.2	81.5	78.3
2005	291	78.6	77.8	80.0	78.6
2006	282	77.1	76.1	80.6	76.7
2007	340	79.0	78.3	80.4	78.3
2008	331	78.7	77.3	81.7	77.6
2009	386	79.3	77.0	82.9	78.0
2010	386	79.7	77.8	83.4	79.1
2011	354	79.2	76.5	81.8	78.2
2012	413	80.0	79.1	82.7	79.2
2013	404	78.4	77.3	80.4	78.3
2014	425	78.8	76.3	84.4	77.2
2015	438	80.2	79.2	83.4	79.6
2016	466	80.9	79.0	84.7	79.7
2017	420	81.7	79.4	84.1	80.1
2018	300	80.0	77.1	82.1	79.8
2019	263	81.7	77.6	83.8	80.1
1998-2019	6940	79.5	77.8	82.3	78.6

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

Table 10b

Medians of age at death according to the grouping in Table 9
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	80	82.3	81.3	85.7	82.3
1999	65	80.0	80.1	79.9	80.1
2000	65	82.0	81.1	84.7	82.0
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	132	81.8	80.0	85.7	81.5
2009	149	80.9	79.5	83.5	80.3
2010	165	83.3	82.2	86.5	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	152	82.3	80.2	87.7	81.9
2015	159	82.6	80.6	89.4	81.0
2016	167	81.2	77.7	87.9	79.5
2017	176	82.6	79.8	88.6	80.7
2018	97	81.2	78.5	85.4	81.4
2019	113	80.6	77.1	84.2	77.4
1998-2019	2770	82.2	80.3	86.7	81.3

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 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	0.43	4.6	0.40	7.9	0.45	12.1	0.50
2000	99	8.7	0.50	4.7	0.49	7.9	0.51	11.8	0.53
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	0.44	9.0	0.47	13.0	0.49
2004	197	10.5	0.49	4.9	0.45	8.4	0.49	12.5	0.52
2005	199	10.5	0.53	4.7	0.49	8.1	0.53	12.3	0.58
2006	203	10.6	0.47	4.9	0.44	8.1	0.47	11.7	0.49
2007	250	11.3	0.57	5.0	0.52	8.5	0.56	12.4	0.61
2008	235	10.6	0.49	4.4	0.44	7.6	0.47	11.3	0.51
2009	272	12.2	0.55	5.2	0.51	8.6	0.53	12.3	0.55
2010	275	12.2	0.58	5.0	0.52	8.4	0.55	12.2	0.60
2011	248	11.1	0.50	4.6	0.46	7.6	0.48	10.6	0.50
2012	286	12.6	0.55	5.1	0.52	8.5	0.55	12.1	0.56
2013	281	12.2	0.51	4.8	0.46	7.9	0.49	11.3	0.51
2014	298	12.8	0.63	5.2	0.60	8.4	0.62	11.6	0.63
2015	297	12.5	0.62	4.4	0.56	7.6	0.59	11.3	0.62
2016	315	13.1	0.72	4.7	0.61	7.9	0.66	11.5	0.71
2017	259	10.7	0.56	3.9	0.52	6.5	0.54	9.3	0.55
2018	108	4.4	0.28	1.7	0.27	2.7	0.27	3.8	0.28
2019	102	4.2	0.46	1.6	0.44	2.6	0.45	3.6	0.46
1998-2019	4584	10.4	0.52	4.3	0.47	7.2	0.50	10.5	0.53

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	50	4.2	0.54	1.3	0.47	2.1	0.50	3.1	0.52
2001	50	4.1	0.50	1.2	0.39	2.0	0.42	3.1	0.47
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	0.51	2.4	0.52	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	0.61	1.4	0.51	2.4	0.53	3.4	0.56
2008	97	4.2	0.53	1.3	0.45	2.2	0.48	3.0	0.51
2009	111	4.8	0.63	1.5	0.58	2.4	0.60	3.4	0.62
2010	111	4.7	0.58	1.3	0.54	2.2	0.55	3.2	0.56
2011	100	4.3	0.53	1.4	0.46	2.2	0.49	3.1	0.53
2012	104	4.4	0.58	1.4	0.53	2.2	0.54	3.0	0.55
2013	103	4.3	0.51	1.4	0.45	2.1	0.47	3.0	0.50
2014	104	4.3	0.58	1.3	0.48	2.1	0.51	2.9	0.53
2015	121	5.0	0.60	1.4	0.48	2.3	0.51	3.3	0.55
2016	119	4.8	0.67	1.6	0.67	2.5	0.67	3.3	0.67
2017	120	4.9	0.61	1.3	0.50	2.2	0.54	3.1	0.56
2018	50	2.0	0.41	0.6	0.38	1.0	0.38	1.4	0.40
2019	52	2.1	0.67	0.7	0.79	1.1	0.73	1.5	0.72
1998-2019	1946	4.2	0.57	1.3	0.49	2.1	0.52	3.0	0.54

Table 12

Age distribution of age at death (cancer-related) for period 2007-2019
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	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	5	0.1	0.1	1	0.0	0.0	4	0.3	0.4
40-44	13	0.3	0.4	7	0.2	0.2	6	0.5	0.8
45-49	53	1.2	1.6	30	0.9	1.2	23	1.8	2.6
50-54	101	2.2	3.8	65	2.0	3.2	36	2.8	5.4
55-59	164	3.6	7.4	121	3.8	6.9	43	3.3	8.7
60-64	247	5.5	12.9	187	5.8	12.7	60	4.6	13.3
65-69	405	8.9	21.8	308	9.5	22.3	97	7.4	20.7
70-74	689	15.2	37.1	523	16.2	38.5	166	12.7	33.5
75-79	848	18.7	55.8	620	19.2	57.7	228	17.5	51.0
80-84	893	19.7	75.5	640	19.8	77.6	253	19.4	70.4
85+	1110	24.5	100.0	724	22.4	100.0	386	29.6	100.0
All ages	4529	100.0		3226	100.0		1303	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007–2019
(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		4.3
15-19								
20-24								
25-29								
30-34								
35-39	1	4	0.0	0.14	0.2	0.57	0.4	1.1
40-44	7	6	0.3	0.19	0.3	0.32	1.2	0.7
45-49	30	23	1.2	0.28	0.9	0.58	2.2	1.5
50-54	65	36	2.8	0.32	1.6	0.54	2.6	1.5
55-59	121	43	6.2	0.37	2.2	0.37	2.9	1.2
60-64	187	60	11.5	0.37	3.4	0.38	3.1	1.3
65-69	308	97	20.3	0.40	5.8	0.46	3.6	1.5
70-74	523	166	37.3	0.52	10.3	0.46	4.7	2.0
75-79	620	228	56.0	0.53	16.6	0.64	5.4	2.5
80-84	640	253	97.5	0.68	26.0	0.65	6.8	3.0
85+	724	386	169.8	0.87	40.0	0.72	8.8	3.5
All ages	3226	1303					5.0	2.3
Mortality								
Raw			10.7	0.55	4.2	0.58		
WS			4.2	0.50	1.3	0.51		
ES			7.0	0.52	2.0	0.53		
BRD-S			10.0	0.55	2.9	0.55		
PYLL-70								
per 100,000			21.6		10.4			
ES			18.2		8.7			
AYLL-70			8.0		10.1			

Table 14a

Further malignancies in deaths in period 1998–2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	4	0.1	3	75.0			1	25.0
C03–C06 Oral cavity	20	0.6	8	40.0	1	5.0	11	55.0
C07–C08 Salivary gland	7	0.2	4	57.1			3	42.9
C09–C10 Oropharynx	22	0.7	14	63.6			8	36.4
C12–C13 Hypopharynx	14	0.4	9	64.3			5	35.7
C15 Oesophagus	34	1.0	8	23.5	1	2.9	25	73.5
C16 Stomach	82	2.5	23	28.0	3	3.7	56	68.3
C17 Small intestine	10	0.3	5	50.0			5	50.0
C18 Colon	198	6.1	115	58.1	18	9.1	65	32.8
C19–C20 Rectum	106	3.2	64	60.4	9	8.5	33	31.1
C22 Liver	39	1.2	8	20.5	5	12.8	26	66.7
C23–C24 Bile	13	0.4	2	15.4	2	15.4	9	69.2
C25 Pancreas	57	1.7	3	5.3	9	15.8	45	78.9
C32 Larynx	31	0.9	23	74.2			8	25.8
C33–C34 Lung	349	10.7	52	14.9	22	6.3	275	78.8
C38,C45 Mesothelioma	6	0.2			1	16.7	5	83.3
C43 Malign. melanoma	76	2.3	50	65.8	2	2.6	24	31.6
C44 Skin others	150	4.6	81	54.0	5	3.3	64	42.7
C46,C49 Soft tissue	11	0.3	5	45.5	1	9.1	5	45.5
C60 Penis	7	0.2	4	57.1			3	42.9
C61 Prostate	1117	34.1	372	33.3	290	26.0	455	40.7
C62 Testis	12	0.4	12	100.0				
C64 Kidney	119	3.6	58	48.7	14	11.8	47	39.5
C65 Renal pelvis	129	3.9	39	30.2	15	11.6	75	58.1
C66 Ureter	105	3.2	37	35.2	16	15.2	52	49.5
C67 Bladder	271	8.3			3	1.1	268	98.9
C68 Urethra	55	1.7	6	10.9	18	32.7	31	56.4
C68 Urinary org.	27	0.8	3	11.1	4	14.8	20	74.1
C70–C72 CNS cancer	15	0.5	2	13.3	2	13.3	11	73.3
C73 Thyroid	10	0.3	8	80.0			2	20.0
C76–C79 CUP	41	1.3	7	17.1	3	7.3	31	75.6
C81 Hodgkin lymphoma	4	0.1	3	75.0			1	25.0
C82–C85 NHL	70	2.1	36	51.4	8	11.4	26	37.1
C90 Mult. myeloma	18	0.6	8	44.4	1	5.6	9	50.0
C91–C96 Leukaemia	22	0.7	3	13.6	3	13.6	16	72.7
Others, specified	21	0.6	10	47.6	2	9.5	9	42.9
All further malignancies	3272	100.0	1085	33.2	458	14.0	1729	52.8

Further malignancies with number of cases 1 to 3 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 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	3	0.3	3	100.0				
C09-C10 Oropharynx	5	0.5	3	60.0			2	40.0
C15 Oesophagus	7	0.8					7	100.0
C16 Stomach	16	1.8	8	50.0	1	6.3	7	43.8
C17 Small intestine	4	0.4	2	50.0	1	25.0	1	25.0
C18 Colon	70	7.7	37	52.9	4	5.7	29	41.4
C19-C20 Rectum	33	3.6	19	57.6	1	3.0	13	39.4
C21 Anus/canal	3	0.3	2	66.7			1	33.3
C22 Liver	3	0.3			1	33.3	2	66.7
C23-C24 Bile	5	0.5					5	100.0
C25 Pancreas	26	2.9	2	7.7	1	3.8	23	88.5
C33-C34 Lung	66	7.3	8	12.1	9	13.6	49	74.2
C38,C45 Mesothelioma	3	0.3					3	100.0
C43 Malign. melanoma	15	1.6	13	86.7			2	13.3
C44 Skin others	25	2.7	9	36.0	1	4.0	15	60.0
C46,C49 Soft tissue	4	0.4	2	50.0	1	25.0	1	25.0
C50 Breast	169	18.6	117	69.2	10	5.9	42	24.9
C51 Vulva	10	1.1	7	70.0	1	10.0	2	20.0
C52 Vagina	6	0.7	2	33.3			4	66.7
C53 Cervix uteri	62	6.8	51	82.3	8	12.9	3	4.8
C54 Corpus uteri	55	6.0	43	78.2	8	14.5	4	7.3
C55,C57 Fem. genitals un	5	0.5	2	40.0	2	40.0	1	20.0
C56 Ovary	28	3.1	14	50.0	1	3.6	13	46.4
C64 Kidney	35	3.8	15	42.9	8	22.9	12	34.3
C65 Renal pelvis	56	6.2	22	39.3	10	17.9	24	42.9
C66 Ureter	40	4.4	20	50.0	6	15.0	14	35.0
C67 Bladder	68	7.5			1	1.5	67	98.5
C68 Urethra	7	0.8	1	14.3	1	14.3	5	71.4
C68 Urinary org.	7	0.8	1	14.3			6	85.7
C70-C72 CNS cancer	6	0.7	5	83.3			1	16.7
C73 Thyroid	10	1.1	9	90.0			1	10.0
C74-C80 Cancer others	3	0.3	1	33.3	2	66.7		
C76-C79 CUP	16	1.8	2	12.5			14	87.5
C82-C85 NHL	19	2.1	11	57.9	2	10.5	6	31.6
C90 Mult. myeloma	3	0.3	3	100.0				
C91-C96 Leukaemia	10	1.1			1	10.0	9	90.0
Others, specified	7	0.8	3	42.9	2	28.6	2	28.6
All further malignancies	910	100.0	437	48.0	83	9.1	390	42.9

Further malignancies with number of cases 1 to 2 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 2007-2019
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14		1			0.1	1.00		5.3
15-19								
20-24								
25-29								
30-34								
35-39	1	4	0.0	0.14	0.2	0.57	0.4	1.2
40-44	7	5	0.3	0.26	0.2	0.31	1.3	0.7
45-49	25	20	1.0	0.27	0.8	0.59	2.0	1.5
50-54	52	26	2.2	0.31	1.1	0.51	2.3	1.3
55-59	94	32	4.8	0.36	1.6	0.34	2.6	1.1
60-64	134	45	8.2	0.36	2.6	0.36	2.7	1.2
65-69	204	63	13.4	0.39	3.7	0.41	3.0	1.2
70-74	311	109	22.2	0.49	6.8	0.46	3.7	1.7
75-79	381	159	34.4	0.56	11.5	0.64	4.5	2.3
80-84	374	169	57.0	0.71	17.4	0.65	5.5	2.6
85+	436	291	102.2	0.86	30.1	0.72	7.3	3.3
All ages	2019	924					4.1	2.0
Mortality								
Raw			6.7	0.53	3.0	0.57		
WS			2.7	0.48	0.9	0.49		
ES			4.4	0.50	1.5	0.52		
BRD-S			6.2	0.53	2.0	0.54		
PYLL-70								
per 100,000			16.5		8.1			
ES			14.0		6.8			
AYLL-70			8.5		10.8			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age- spec. mortal. MI-index	Females Age- spec. mortal. MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4						
5- 9						
10-14		1		0.1		5.3
15-19						
20-24						
25-29						
30-34						
35-39	1	4	0.0	0.14	0.2	0.57
40-44	7	5	0.3	0.29	0.2	0.31
45-49	22	18	0.9	0.28	0.7	0.60
50-54	44	23	1.9	0.33	1.0	0.53
55-59	69	28	3.5	0.35	1.4	0.33
60-64	91	39	5.6	0.34	2.2	0.35
65-69	118	55	7.8	0.32	3.3	0.43
70-74	185	88	13.2	0.40	5.5	0.43
75-79	248	130	22.4	0.46	9.4	0.57
80-84	251	144	38.2	0.59	14.8	0.60
85+	310	256	72.7	0.68	26.5	0.66
All ages	1346	791			2.8	1.8
Mortality						
Raw			4.5	0.45	2.5	0.53
WS			1.8	0.41	0.8	0.47
ES			3.0	0.44	1.2	0.49
BRD-S			4.2	0.46	1.7	0.51
PYLL-70 per 100,000			12.5		7.3	
ES			10.6		6.2	
AYLL-70			9.5		11.1	

* See corresponding tables with multiple malignancies.

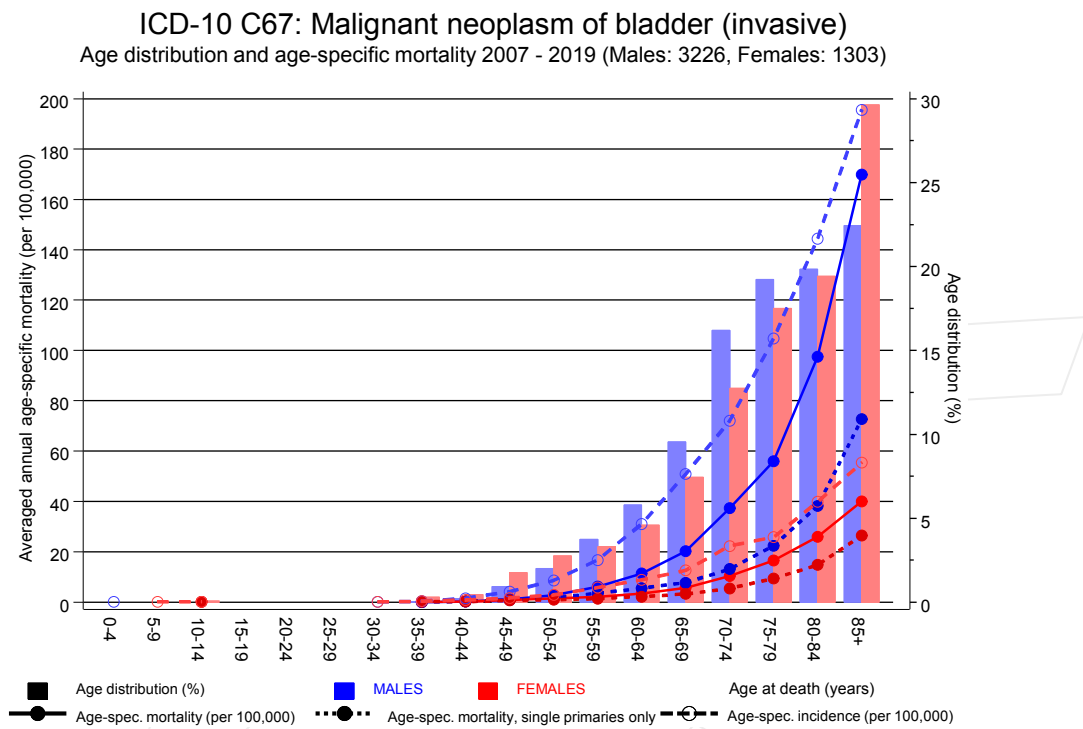
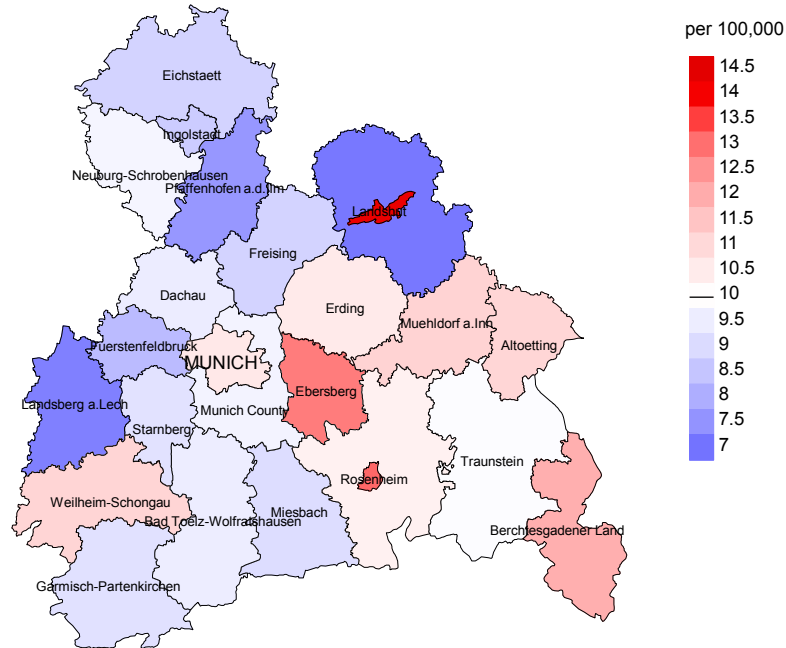


Figure 17. Distribution of age at death (bars; males: mean=73.3 yrs, median=74.3 yrs; females: mean=75.1 yrs, median=77.0 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (Germany 1987 standard population) 2007 - 2019: Males



Average mortality (Germany 1987 standard population) 2007 - 2019: Females

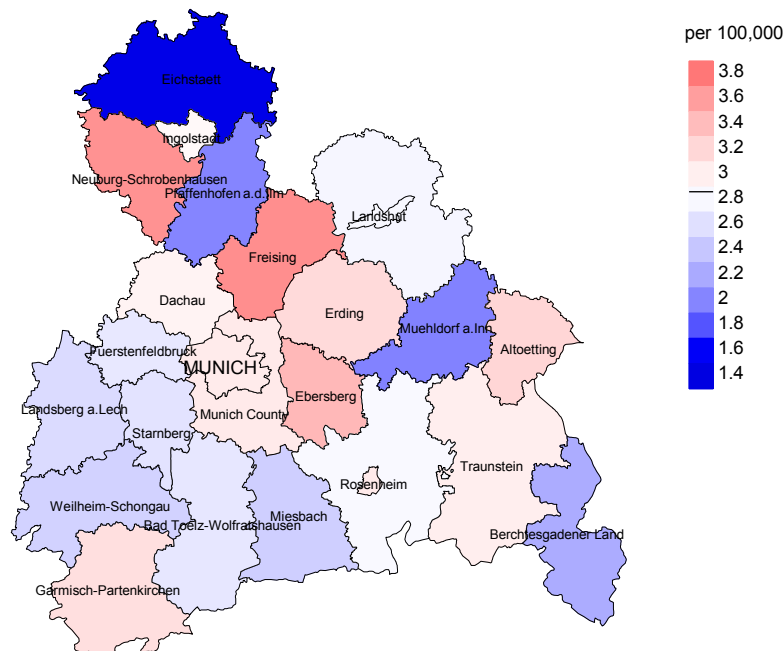
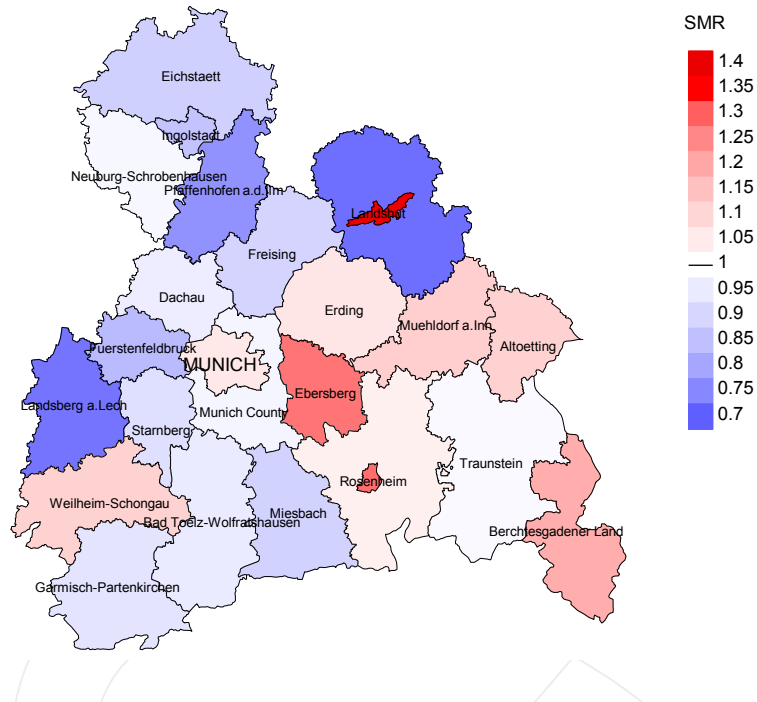


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 10.0/100,000 WS N=3,226, females 2.9/100,000 WS N=1,303).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 42 women died from bladder cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.2 and 5.1/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

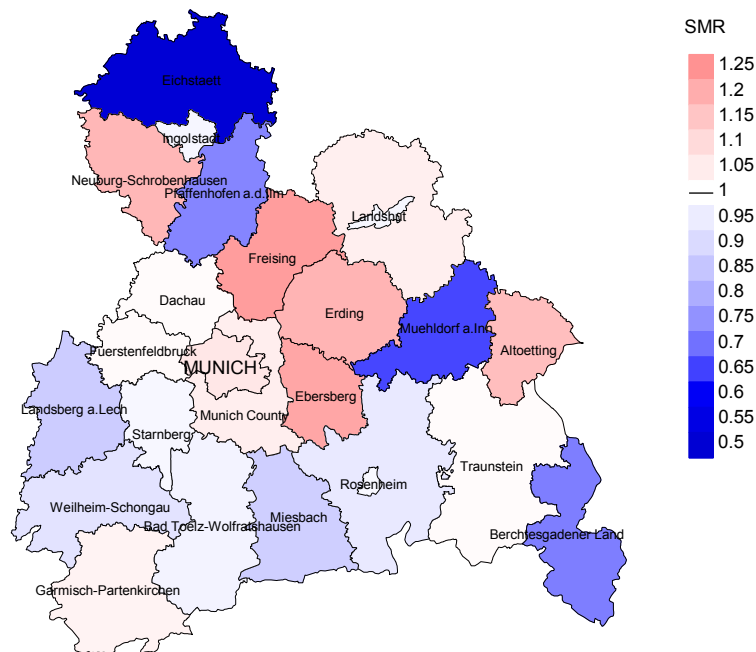


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,226, females N=1,303).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 42 women died from bladder cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.21. Though, the value of this parameter may vary with an underlying probability of 99% between 0.79 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 ratio of mortality and incidence (mortality-to-incidence ratio, **MIR, MI-Index**) is a statistical index 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 MIR. 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 (FRG) 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 of mortality to incidence, MIR
FRG	Federal Republic of Germany

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