

# Munich Cancer Registry



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## ICD-10 C64-C68: Urinary tract cancer

### Incidence and Mortality

Year of diagnosis	1998-2019
Patients	27,032
Diseases	28,235
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/bC6468E-ICD-10-C64-C68-Urinary-tract-cancer-incidence-and-mortality.pdf>

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**Global Statements about the statistics on the Internet –  
Baseline Statistics** (grey button ) , **Survival** (red button )

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut<sup>#</sup>, with a total of 4.69 million inhabitants, account for the frequency of cancer diseases<sup>##</sup> 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<sup>###</sup> 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](mailto:tumor@ibe.med.uni-muenchen.de).

Munich Cancer Registry, January 2021

<sup>#</sup> 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).

<sup>##</sup> 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.

<sup>###</sup> DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

### ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C64	Malignant neoplasm of kidney, except renal pelvis
C65	Malignant neoplasm of renal pelvis
C66	Malignant neoplasm of ureter
C67.-	Malignant neoplasm of bladder
C68.-	Malignant neoplasm of other and unspecified urinary organs

## INCIDENCE

Table 1

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

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	788	84	10.7	16.2	17.2	76.3	97.2
1999	753	72	9.6	15.6	17.1	74.4	96.3
2000	727	92	12.7	16.6	16.9	76.3	97.4
2001	731	74	10.1	17.0	16.9	76.3	97.3
2002	1344	189	14.1	18.5	16.8	79.7	98.5 #
2003	1328	154	11.6	18.6	16.7	75.3	96.2
2004	1309	154	11.8	19.0	16.6	72.0	97.0
2005	1356	104	7.7	19.4	16.3	68.1	96.3
2006	1401	104	7.4	19.4	16.0	69.9	94.1
2007	1522	133	8.7	19.7	15.6	67.0	93.0 #
2008	1592	144	9.0	20.4	15.2	66.1	97.8
2009	1593	132	8.3	21.2	14.8	64.6	98.1
2010	1605	129	8.0	21.8	14.4	61.0	97.5
2011	1562	115	7.4	22.2	14.0	60.2	98.1
2012	1583	120	7.6	22.6	13.5	58.9	97.9
2013	1592	127	8.0	23.2	12.7	55.8	97.8
2014	1575	126	8.0	23.6	12.1	53.1	97.3
2015	1495	162	10.8	24.0	11.3	51.3	93.6
2016	1337	143	10.7	24.3	11.0	50.6	99.1
2017	1324	123	9.3	24.8	10.6	40.4	99.5
2018	1040	23	2.2	25.1	10.2	25.2	99.0
2019	678	16	2.4	25.3	7.4	18.4	70.4 ##
1998-2019	28235	2520	8.9	25.3	17.2	61.0	96.4

28,235 cases diagnosed 1998-2019 are related to a total of 27,032 patients. Currently, in 10,469 (38.7 %) of these 27,032 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 7,668 / 2,105 / 696 (28.4 % / 7.8 % / 2.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 1,324 cases has been diagnosed, of which 24.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 10.6 % 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	511	64.8	46	9.0	16.4	19.3	76.5	97.7
1999	509	67.6	49	9.6	15.7	19.3	74.5	96.5
2000	481	66.2	56	11.6	16.7	19.1	75.9	96.7
2001	451	61.7	37	8.2	17.3	19.1	75.2	97.6
2002	880	65.5	105	11.9	18.9	19.0	79.1	98.8 #
2003	901	67.8	90	10.0	19.2	18.9	75.1	95.9
2004	867	66.2	79	9.1	19.5	18.7	72.8	96.9
2005	905	66.7	50	5.5	19.7	18.4	67.2	96.6
2006	936	66.8	48	5.1	19.8	18.1	69.4	94.0
2007	1019	67.0	65	6.4	20.3	17.6	66.3	92.3 #
2008	1073	67.4	76	7.1	21.1	17.0	65.4	97.9
2009	1072	67.3	83	7.7	22.0	16.6	64.4	97.9
2010	1077	67.1	60	5.6	22.5	16.3	60.1	97.9
2011	1062	68.0	76	7.2	23.1	15.5	61.4	98.2
2012	1093	69.0	62	5.7	23.5	15.0	58.6	97.8
2013	1104	69.3	67	6.1	24.2	14.1	56.2	97.6
2014	1077	68.4	71	6.6	24.7	13.6	52.6	97.2
2015	1033	69.1	100	9.7	25.0	12.8	49.8	93.4
2016	925	69.2	85	9.2	25.5	12.3	49.9	99.0
2017	903	68.2	63	7.0	26.1	12.1	37.9	99.6
2018	754	72.5	15	2.0	26.4	11.6	22.9	99.5
2019	478	70.5	7	1.5	26.5	8.4	16.9	70.9 ##
1998-2019	19111	67.7	1390	7.3	26.5	19.3	60.2	96.4

19,111 cases diagnosed 1998-2019 are related to a total of 18,242 patients. Currently, in 7,655 (42.0 %) of these 18,242 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 5,547 / 1,556 / 552 (30.4 % / 8.5 % / 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 903 cases has been diagnosed, of which 26.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 12.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

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

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	277	35.2	38	13.7	15.9	12.8	75.8	96.4
1999	244	32.4	23	9.4	15.5	12.7	74.2	95.9
2000	246	33.8	36	14.6	16.4	12.5	77.2	98.8
2001	280	38.3	37	13.2	16.6	12.3	78.2	96.8
2002	464	34.5	84	18.1	17.7	12.3	80.8	98.1 #
2003	427	32.2	64	15.0	17.5	12.2	75.6	97.0
2004	442	33.8	75	17.0	18.2	12.1	70.4	97.3
2005	451	33.3	54	12.0	18.6	11.9	70.1	95.8
2006	465	33.2	56	12.0	18.6	11.7	70.8	94.2
2007	503	33.0	68	13.5	18.6	11.4	68.2	94.4 #
2008	519	32.6	68	13.1	19.1	11.2	67.6	97.7
2009	521	32.7	49	9.4	19.4	11.0	65.1	98.5
2010	528	32.9	69	13.1	20.2	10.5	62.9	96.8
2011	500	32.0	39	7.8	20.5	10.6	57.6	98.0
2012	490	31.0	58	11.8	20.8	10.1	59.6	98.0
2013	488	30.7	60	12.3	21.1	9.6	55.1	98.2
2014	498	31.6	55	11.0	21.4	9.0	54.4	97.4
2015	462	30.9	62	13.4	21.8	8.0	54.8	94.2
2016	412	30.8	58	14.1	22.0	7.9	51.9	99.3
2017	421	31.8	60	14.3	22.4	7.1	45.8	99.5
2018	286	27.5	8	2.8	22.6	6.7	31.1	97.9
2019	200	29.5	9	4.5	22.8	5.1	22.0	69.0 ##
1998-2019	9124	32.3	1130	12.4	22.8	12.8	62.8	96.5

9,124 cases diagnosed 1998-2019 are related to a total of 8,790 patients. Currently, in 2,814 (32.0 %) of these 8,790 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,121 / 549 / 144 (24.1 % / 6.2 % / 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 421 cases has been diagnosed, of which 22.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.1 % 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	511	277	46.1	23.5	28.3	10.4	42.2	15.4	54.8	19.8
1999	509	244	45.5	20.6	27.4	9.8	40.9	14.1	52.9	17.6
2000	481	246	42.2	20.5	25.2	8.5	37.7	12.9	49.6	16.9
2001	451	280	38.9	23.0	23.0	9.8	34.2	14.8	43.8	19.2
2002	880	464	47.2	23.7	26.0	10.0	39.8	14.8	53.2	19.3
2003	901	427	48.1	21.7	26.7	8.9	39.8	13.2	52.2	17.3
2004	867	442	46.1	22.4	25.2	9.2	37.5	13.7	49.2	18.0
2005	905	451	47.8	22.7	25.5	9.5	38.1	13.9	49.3	18.1
2006	936	465	48.9	23.1	25.9	10.2	38.5	14.7	50.3	18.5
2007	1019	503	46.0	21.8	24.0	8.9	35.8	13.1	46.1	17.2
2008	1073	519	48.2	22.4	24.6	9.5	37.0	13.8	47.8	17.9
2009	1072	521	48.0	22.4	24.1	9.2	36.0	13.4	47.3	17.6
2010	1077	528	47.8	22.6	23.5	8.3	35.2	12.8	45.5	16.8
2011	1062	500	47.5	21.4	23.2	9.4	34.6	13.2	44.6	16.5
2012	1093	490	48.2	20.8	22.7	7.8	34.2	11.9	45.1	15.9
2013	1104	488	48.0	20.5	22.6	8.2	33.8	11.9	44.2	15.4
2014	1077	498	46.2	20.7	21.8	8.1	32.5	12.1	41.9	15.7
2015	1033	462	43.4	19.0	19.2	7.3	29.3	10.8	39.2	13.9
2016	925	412	38.5	16.8	17.3	6.5	26.2	9.5	34.6	12.2
2017	903	421	37.4	17.1	16.5	6.0	24.9	9.2	33.3	12.3
2018	754	286	31.0	11.5	14.0	4.4	21.0	6.5	27.3	8.6
2019	478	200	19.6	8.1	8.9	2.9	13.4	4.4	17.2	5.9
1998-2019	19111	9124	43.3	19.9	21.7	8.0	32.4	11.8	42.1	15.4

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

Table 3

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	788	68.9	13.5	2.8	99.7	51.7	61.3	70.0	78.1	85.5
1999	753	67.9	12.7	1.1	94.3	52.6	59.6	68.5	77.3	84.1
2000	727	69.4	12.6	0.3	99.7	53.7	61.6	70.2	78.4	85.6
2001	731	69.2	12.3	1.9	96.4	53.5	61.5	69.4	78.3	84.9
2002	1344	70.9	12.4	0.1	99.5	55.2	63.3	72.2	79.5	85.9
2003	1328	70.4	13.0	0.4	103	54.4	63.2	71.2	79.2	85.5
2004	1309	70.0	13.2	0.0	99.0	53.9	62.7	71.1	79.1	85.1
2005	1356	69.9	12.9	0.7	101	54.5	62.6	70.8	79.0	84.6
2006	1401	69.9	13.5	0.2	101	53.6	63.1	71.2	78.8	85.1
2007	1522	70.2	13.3	1.2	101	53.4	63.9	71.3	79.3	85.1
2008	1592	70.4	13.1	0.2	100	53.2	63.5	71.5	79.6	85.7
2009	1593	70.5	13.2	0.5	103	53.6	63.6	71.8	79.8	85.0
2010	1605	71.0	12.9	5.4	100	53.7	63.4	72.2	80.5	86.4
2011	1562	70.5	13.8	0.5	97.6	53.3	63.3	72.1	79.8	86.4
2012	1583	71.4	12.3	1.4	103	55.0	64.5	72.9	80.1	85.0
2013	1592	71.2	12.9	0.3	101	54.4	64.6	72.6	80.2	85.7
2014	1575	71.2	12.5	1.2	107	55.2	63.5	72.9	79.6	85.8
2015	1495	72.5	12.5	0.6	103	55.2	66.0	74.5	80.7	86.4
2016	1337	72.1	12.6	2.4	98.8	54.9	64.3	74.5	80.7	86.8
2017	1324	72.7	12.0	0.9	102	56.0	65.8	74.9	81.0	86.2
2018	1040	71.5	11.7	27.4	97.6	55.1	63.8	73.6	79.3	84.8
2019	678	71.6	11.8	23.8	96.6	55.0	63.3	73.3	80.1	85.1
1998-2019	28235	70.7	12.9	0.0	107	54.3	63.4	72.2	79.7	85.6



Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	511	67.7	13.5	5.0	95.6	50.8	60.2	69.0	76.7	84.3
1999	509	67.2	12.3	2.3	94.1	52.4	59.5	67.2	76.0	83.0
2000	481	67.8	12.6	0.3	99.7	52.7	60.8	68.7	76.7	82.1
2001	451	67.5	11.2	1.9	95.1	53.3	60.5	67.4	75.8	81.4
2002	880	69.8	12.0	0.1	97.6	54.7	62.6	70.9	78.2	83.7
2003	901	69.0	12.8	0.4	101	53.0	62.1	69.6	77.6	83.6
2004	867	68.7	12.9	0.0	98.8	53.4	61.5	69.7	77.6	82.8
2005	905	68.7	11.7	0.7	101	54.6	61.8	69.0	77.0	82.9
2006	936	69.2	12.6	0.8	101	54.0	62.6	70.0	77.9	83.6
2007	1019	69.0	12.6	1.3	101	53.2	62.8	70.1	77.3	83.6
2008	1073	69.7	12.7	0.2	100	52.6	62.8	70.8	78.5	85.0
2009	1072	69.7	12.8	0.5	97.4	53.2	62.9	70.9	78.5	84.1
2010	1077	69.4	12.5	5.4	99.1	52.5	61.3	70.8	78.3	84.1
2011	1062	70.2	12.7	1.5	96.9	52.6	62.6	71.4	79.0	85.6
2012	1093	70.4	12.4	1.4	103	53.9	62.9	72.3	79.1	84.2
2013	1104	70.6	12.3	0.9	98.6	54.0	64.0	71.9	79.2	84.8
2014	1077	70.6	12.4	1.2	97.0	54.9	62.9	72.2	79.3	85.2
2015	1033	72.2	12.0	0.7	103	55.9	65.7	74.3	79.9	85.3
2016	925	71.7	11.9	13.7	98.8	55.1	63.6	73.8	80.2	86.1
2017	903	71.9	11.8	0.9	102	56.0	65.2	73.9	80.1	84.7
2018	754	71.2	11.6	29.1	97.6	54.6	63.5	73.3	79.1	84.7
2019	478	70.9	11.8	23.8	95.4	54.8	62.6	72.5	79.5	84.8
1998-2019	19111	69.9	12.4	0.0	103	53.8	62.5	71.2	78.5	84.4

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	277	71.0	13.5	2.8	99.7	56.2	63.0	72.6	80.1	86.3
1999	244	69.5	13.5	1.1	94.3	52.6	60.9	71.6	78.7	85.7
2000	246	72.6	11.9	37.2	94.5	58.8	63.7	74.3	81.5	87.6
2001	280	71.9	13.4	30.6	96.4	54.2	64.2	73.7	81.1	88.2
2002	464	72.8	12.8	2.4	99.5	57.9	65.3	74.2	81.9	87.7
2003	427	73.2	13.0	2.5	103	56.8	65.6	75.0	82.6	87.9
2004	442	72.6	13.3	18.5	99.0	56.4	64.8	74.6	82.1	87.9
2005	451	72.3	14.6	4.2	98.8	54.0	64.3	74.9	82.1	88.5
2006	465	71.3	15.0	0.2	96.7	52.5	64.6	74.0	81.8	87.5
2007	503	72.4	14.5	1.2	99.1	55.7	67.0	74.7	82.2	87.1
2008	519	71.8	13.8	0.6	97.0	55.7	64.5	73.7	82.0	86.9
2009	521	72.2	14.0	1.7	103	55.5	66.0	74.3	82.1	86.8
2010	528	74.4	12.9	5.4	100	56.0	67.6	75.3	84.0	89.5
2011	500	71.2	16.0	0.5	97.6	53.5	64.9	73.8	81.5	88.0
2012	490	73.6	11.8	9.7	96.4	58.3	67.4	75.2	82.1	87.4
2013	488	72.7	14.0	0.3	101	55.1	66.5	74.4	81.7	88.1
2014	498	72.5	12.5	2.5	107	55.6	65.1	74.6	81.1	87.4
2015	462	73.1	13.6	0.6	98.0	54.4	66.4	74.9	82.3	88.5
2016	412	73.0	14.1	2.4	97.5	53.7	65.9	76.1	82.3	88.2
2017	421	74.3	12.4	25.7	97.7	56.0	68.0	76.5	82.6	88.9
2018	286	72.5	11.8	27.4	95.2	56.4	65.5	75.3	80.6	85.4
2019	200	73.3	11.8	28.5	96.6	57.4	66.7	75.3	81.8	86.3
1998-2019	9124	72.5	13.6	0.2	107	55.5	65.4	74.5	81.8	87.7

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	54	0.3	0.3	27	0.2	0.2	27	0.5	0.5
5-9	17	0.1	0.4	9	0.1	0.3	8	0.1	0.6
10-14	8	0.0	0.4	3	0.0	0.3	5	0.1	0.7
15-19	2	0.0	0.4	1	0.0	0.3	1	0.0	0.7
20-24	11	0.1	0.5	7	0.1	0.4	4	0.1	0.8
25-29	20	0.1	0.6	12	0.1	0.5	8	0.1	0.9
30-34	44	0.2	0.8	24	0.2	0.7	20	0.3	1.3
35-39	135	0.7	1.6	94	0.7	1.4	41	0.7	2.0
40-44	260	1.4	3.0	180	1.4	2.8	80	1.4	3.3
45-49	511	2.8	5.7	392	3.1	5.9	119	2.0	5.4
50-54	907	4.9	10.6	675	5.3	11.2	232	4.0	9.4
55-59	1266	6.8	17.5	946	7.5	18.7	320	5.5	14.8
60-64	1721	9.3	26.8	1270	10.0	28.7	451	7.7	22.6
65-69	2518	13.6	40.4	1793	14.2	42.9	725	12.4	35.0
70-74	3121	16.9	57.3	2217	17.5	60.4	904	15.5	50.5
75-79	3240	17.5	74.8	2199	17.4	77.7	1041	17.9	68.4
80-84	2517	13.6	88.4	1619	12.8	90.5	898	15.4	83.8
85+	2146	11.6	100.0	1202	9.5	100.0	944	16.2	100.0
All ages	18498	100.0		12670	100.0		5828	100.0	

Table 5

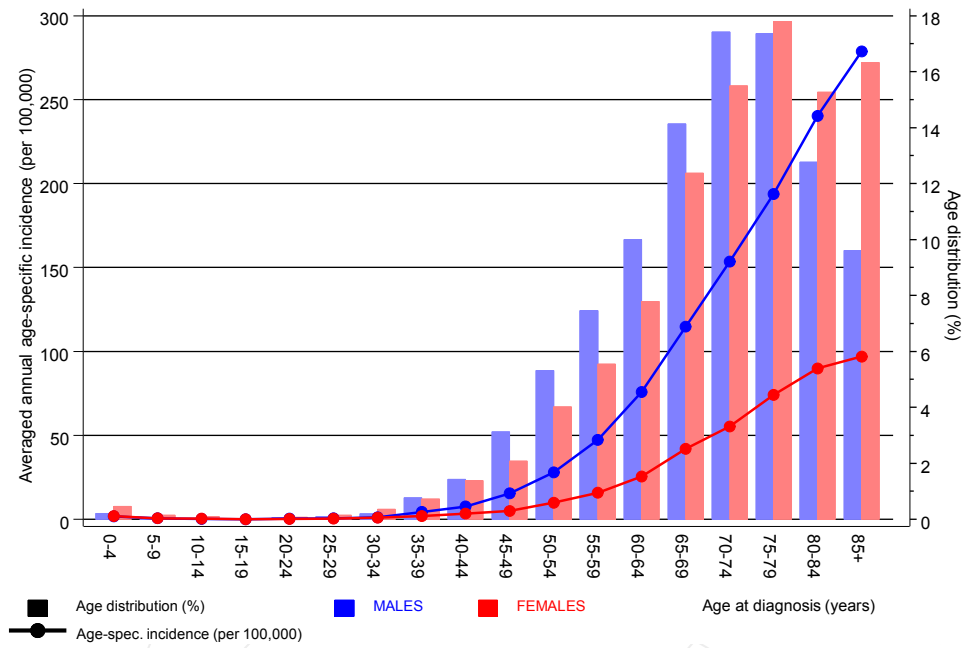
Age-specific incidence, DCO rate and proportion of all cancers  
for period 2007–2019

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=804 %	Females DCO rate n=649 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4	25	26	1.7	1.8			11.8	16.1
5- 9	9	8	0.6	0.6			7.9	8.6
10-14	3	5	0.2	0.4		20.0	2.3	4.3
15-19	1	1	0.1	0.1			0.3	0.4
20-24	7	4	0.4	0.2			1.2	0.8
25-29	12	8	0.6	0.4			1.4	0.7
30-34	24	20	1.1	0.9			2.0	1.0
35-39	94	41	4.4	1.9			5.5	1.3
40-44	176	79	7.5	3.5	0.6		6.8	1.4
45-49	386	119	15.4	4.9	0.8	0.8	8.1	1.4
50-54	656	230	28.0	10.0	1.1	3.0	8.4	2.0
55-59	921	317	47.4	15.9	1.5	1.6	7.8	2.6
60-64	1235	446	75.7	25.4	1.9	2.7	7.6	3.1
65-69	1746	708	114.8	42.0	2.7	2.5	7.7	4.0
70-74	2152	887	153.6	55.2	3.9	4.8	8.4	4.8
75-79	2145	1019	193.7	74.0	6.9	6.2	9.7	5.6
80-84	1578	874	240.4	89.8	11.4	15.8	11.2	6.2
85+	1188	935	278.6	96.9	24.9	38.6	12.1	6.0
All ages	12358	5727			6.5	11.3	8.6	4.0
Incidence								
Raw			41.0	18.4				
WS			19.4	7.2				
ES			29.1	10.7				
BRD-S			37.9	13.9				

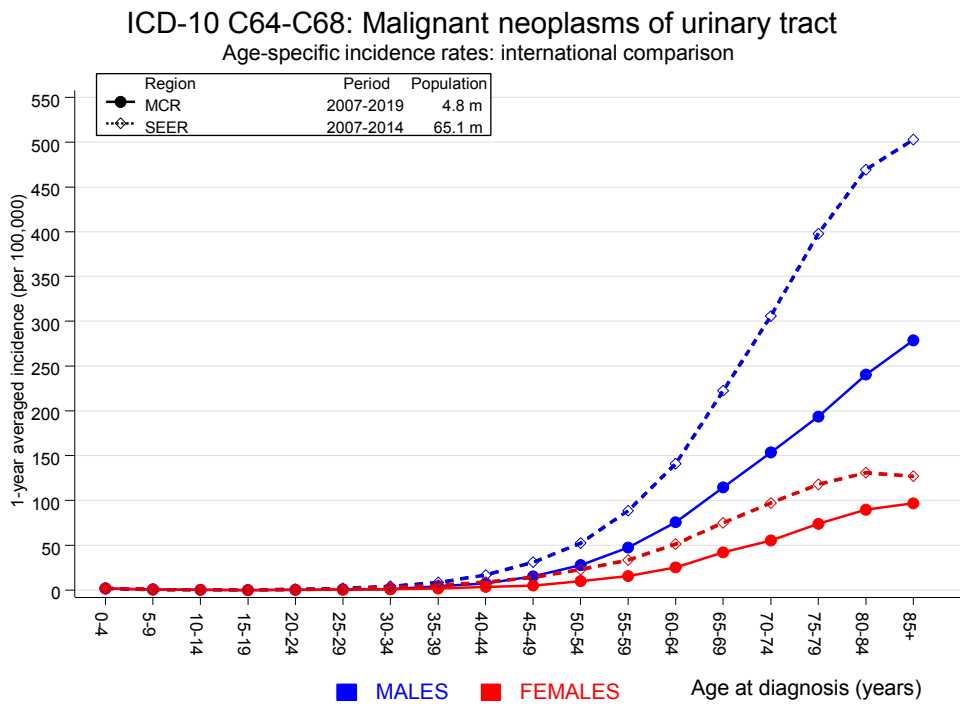
The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

ICD-10 C64-C68: Malignant neoplasms of urinary tract

Age distribution and age-specific incidence 2007 - 2019 (Males: 12358, Females: 5727)



**Figure 6.** Age distribution (males: mean=70.5 yrs, median=72.0 yrs; females: mean=72.8 yrs, median=74.8 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	21	7.9	2.7	1.6	4.1 #	2.2	4.8
C09-C10 Oropharynx	23	9.5	2.4	1.5	3.6 #	2.3	
C12-C13 Hypopharynx	12	5.2	2.3	1.2	4.0 #	1.2	
C15 Oesophagus	49	19.6	2.5	1.8	3.3 #	5.0	8.2
C16 Stomach	90	44.8	2.0	1.6	2.5 #	7.7	7.8
C17 Small intestine	25	6.2	4.1	2.6	6.0 #	3.2	
C18 Colon	243	108.0	2.3	2.0	2.6 #	23.0	7.8
C19-C20 Rectum	103	55.8	1.8	1.5	2.2 #	8.0	2.9
C22 Liver	82	30.5	2.7	2.1	3.3 #	8.8	11.0
C23-C24 Bile	21	11.4	1.8	1.1	2.8 #	1.6	14.3
C25 Pancreas	104	42.4	2.5	2.0	3.0 #	10.5	23.1
C32 Larynx	22	10.1	2.2	1.4	3.3 #	2.0	4.5
C33-C34 Lung	461	125.5	3.7	3.3	4.0 #	57.1	13.0
C38,C45 Mesothelioma	14	7.6	1.9	1.0	3.1 #	1.1	14.3
C43 Malign. melanoma	103	45.9	2.2	1.8	2.7 #	9.7	2.9
C46,C49 Soft tissue	18	6.1	3.0	1.8	4.7 #	2.0	
C48 Peritoneal	7	0.8	8.7	3.5	17.8 #	1.1	28.6
C60 Penis	10	2.7	3.7	1.8	6.7 #	1.2	
C61 Prostate	1739	304.1	5.7	5.5	6.0 #	244.0	4.5
C62 Testis	9	2.1	4.3	2.0	8.2 #	1.2	
C64 Kidney	293	36.2	8.1	7.2	9.1 #	43.7	9.2
C65 Renal pelvis	121	4.9	24.5	20.4	29.3 #	19.7	0.8
C66 Ureter	100	2.9	34.8	28.3	42.3 #	16.5	
C67 Bladder	234	53.2	4.4	3.9	5.0 #	30.7	10.7
C68 Urethra	80	1.0	81.6	64.7	101.6 #	13.4	
C68 Urinary org.	29	0.8	35.9	24.1	51.6 #	4.8	79.3
C70-C72 CNS cancer	29	13.2	2.2	1.5	3.2 #	2.7	6.9
C73 Thyroid	20	6.1	3.3	2.0	5.1 #	2.4	10.0
C76-C79 CUP	47	18.7	2.5	1.8	3.3 #	4.8	6.4
C81 Hodgkin lymphoma	7	2.3	3.1	1.2	6.3 #	0.8	
C82-C85 NHL	116	46.3	2.5	2.1	3.0 #	11.8	8.6
C90 Mult. myeloma	25	14.5	1.7	1.1	2.5 #	1.8	16.0
C91-C96 Leukaemia	27	17.2	1.6	1.0	2.3 #	1.7	25.9
Others, specified	32	18.1	1.8	1.2	2.5 #	2.4	12.5
Not observed	0	2.2	0.0	0.0	1.6	-0.4	
All further malignancies	4316	1083.7	4.0	3.9	4.1 #	549.7	7.5
Patients		16940					
Median age at next malignancy (years)		72.9					
Person-years		58802					
Mean observation time (years)		3.5					
Median observation time (years)		1.7					

# The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 4 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 %
C03-C06 Oral cavity	2	1.9	1.1	0.1	3.9	0.0	
C15 Oesophagus	8	2.1	3.8	1.6	7.4 #	2.2	25.0
C16 Stomach	28	13.0	2.2	1.4	3.1 #	5.6	3.6
C17 Small intestine	8	1.7	4.6	2.0	9.1 #	2.3	
C18 Colon	76	36.5	2.1	1.6	2.6 #	14.8	7.9
C19-C20 Rectum	32	14.4	2.2	1.5	3.1 #	6.6	6.3
C21 Anus/canal	3	1.8	1.7	0.3	4.9	0.4	
C22 Liver	13	4.5	2.9	1.6	5.0 #	3.2	15.4
C23-C24 Bile	18	5.4	3.3	2.0	5.3 #	4.7	16.7
C25 Pancreas	54	17.3	3.1	2.3	4.1 #	13.7	29.6
C26 GI cancer	2	0.7	2.8	0.3	10.1	0.5	
C32 Larynx	2	0.6	3.5	0.4	12.8	0.5	
C33-C34 Lung	117	24.9	4.7	3.9	5.6 #	34.5	14.5
C38,C45 Mesothelioma	3	0.7	4.4	0.9	12.8	0.9	
C43 Malign. melanoma	20	12.0	1.7	1.0	2.6 #	3.0	10.0
C46,C49 Soft tissue	5	2.0	2.5	0.8	5.9	1.1	
C50 Breast	243	96.9	2.5	2.2	2.8 #	54.7	7.0
C51 Vulva	10	3.9	2.6	1.2	4.8 #	2.3	10.0
C52 Vagina	4	0.7	5.8	1.6	15.0 #	1.2	
C53 Cervix uteri	19	3.8	5.0	3.0	7.8 #	5.7	5.3
C54 Corpus uteri	40	18.5	2.2	1.5	2.9 #	8.1	5.0
C55,C57 Fem. genitals un	5	0.9	5.6	1.8	13.1 #	1.5	40.0
C56 Ovary	25	13.7	1.8	1.2	2.7 #	4.2	28.0
C64 Kidney	114	8.5	13.4	11.1	16.2 #	39.5	14.9
C65 Renal pelvis	43	1.2	36.9	26.7	49.7 #	15.7	
C66 Ureter	44	0.6	71.2	51.7	95.5 #	16.2	
C67 Bladder	109	7.5	14.6	12.0	17.6 #	38.0	10.1
C68 Urethra	8	0.1	80.8	34.9	159.3 #	3.0	
C68 Urinary org.	8	0.2	50.8	21.9	100.2 #	2.9	62.5
C70-C72 CNS cancer	9	4.4	2.0	0.9	3.8	1.7	33.3
C73 Thyroid	27	4.5	6.0	4.0	8.7 #	8.4	3.7
C76-C79 CUP	16	7.0	2.3	1.3	3.7 #	3.4	6.3
C82-C85 NHL	39	14.1	2.8	2.0	3.8 #	9.3	15.4
C90 Mult. myeloma	7	4.6	1.5	0.6	3.2	0.9	14.3
C91-C96 Leukaemia	21	5.3	3.9	2.4	6.0 #	5.9	19.0
Others, specified	11	6.3	1.7	0.9	3.1	1.7	18.2
Not observed	0	1.3	0.0	0.0	2.8	-0.5	
All further malignancies	1193	343.3	3.5	3.3	3.7 #	317.9	11.1

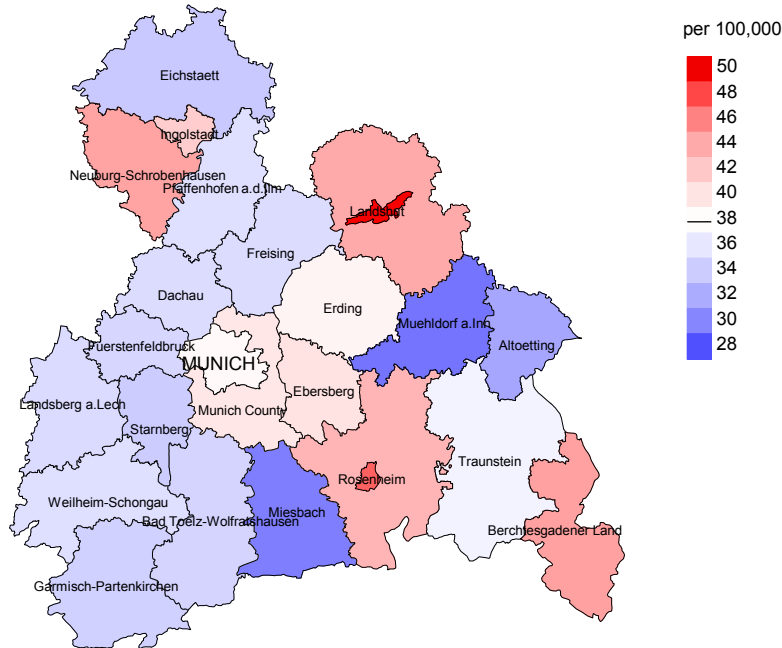
Patients	7835
Median age at next malignancy (years)	75.3
Person-years	26729
Mean observation time (years)	3.4
Median observation time (years)	1.5

# The occurrence of further specified malignancy is statistically significant.

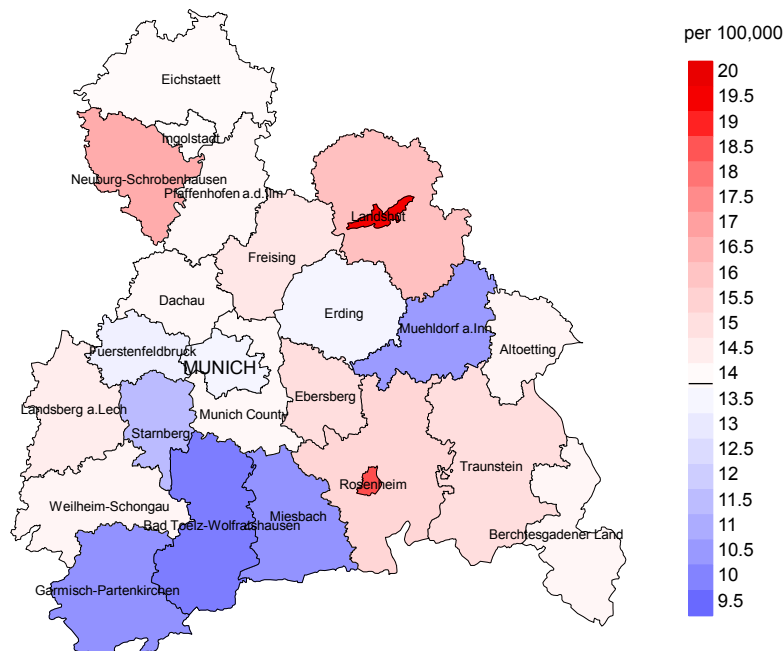
Further observed malignancies with count 1 are pooled in category "Others, specified".



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



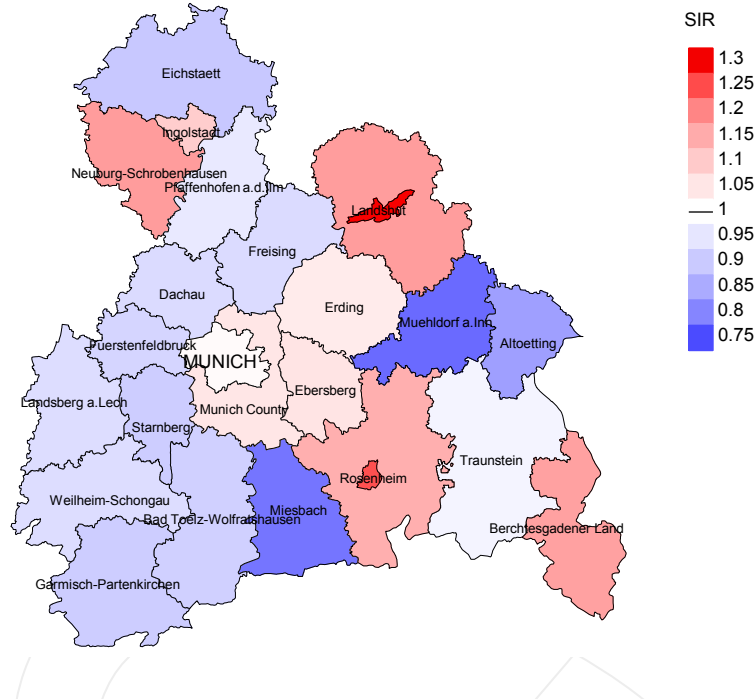
Average incidence (Germany 1987 standard population) 2007 - 2019: Females



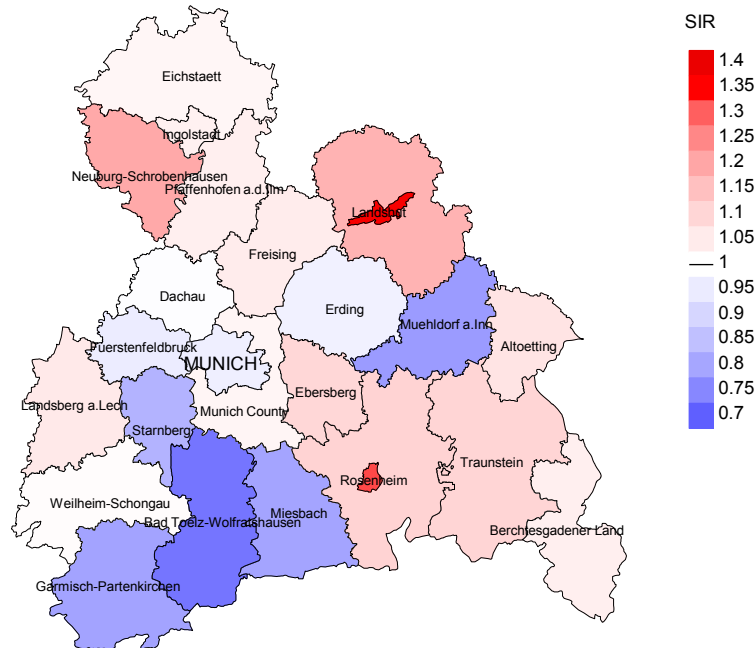
**Figure 8a.** Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 37.9/100,000 WS N=12,358, females 13.9/100,000 WS N=5,727).

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 170 women were identified with newly diagnosed urinary tract cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 15.1/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 12.2 and 18.4/100,000.

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=12,358, females N=5,727).

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 170 women were identified with newly diagnosed urinary tract cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.10. Though, the value of this parameter may vary with an underlying probability of 99% between 0.89 and 1.33, 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	788	97.2	10.7	601	76.3	94.0
1999	753	96.3	9.6	560	74.4	95.0
2000	727	97.4	12.7	555	76.3	95.7
2001	731	97.3	10.1	558	76.3	95.5
2002	1344	98.5	14.1	1071	79.7	96.0
2003	1328	96.2	11.6	1000	75.3	96.0
2004	1309	97.0	11.8	942	72.0	95.9
2005	1356	96.3	7.7	924	68.1	95.5
2006	1401	94.1	7.4	979	69.9	95.4
2007	1522	93.0	8.7	1019	67.0	95.0
2008	1592	97.8	9.0	1053	66.1	95.9
2009	1593	98.1	8.3	1029	64.6	94.7
2010	1605	97.5	8.0	979	61.0	95.3
2011	1562	98.1	7.4	940	60.2	94.0
2012	1583	97.9	7.6	933	58.9	93.2
2013	1592	97.8	8.0	889	55.8	93.4
2014	1575	97.3	8.0	837	53.1	91.5
2015	1495	93.6	10.8	767	51.3	91.4
2016	1337	99.1	10.7	676	50.6	86.2
2017	1324	99.5	9.3	535	40.4	76.6
2018	1040	99.0	2.2	262	25.2	51.9
2019	678	70.4	2.4	125	18.4	80.8
1998-2019	28235	96.4	8.9	17234	61.0	93.0

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	788	487	92.6	147	18.7
1999	753	458	95.2	156	20.7
2000	727	471	95.1	147	20.2
2001	731	477	95.8	128	17.5
2002	1344	702	96.6	301	22.4
2003	1328	811	96.8	290	21.8
2004	1309	793	97.0	265	20.2
2005	1356	785	96.6	219	16.2
2006	1401	835	97.4	237	16.9
2007	1522	948	97.8	274	18.0
2008	1592	949	98.8	278	17.5
2009	1593	1027	99.1	324	20.3
2010	1605	1069	98.7	296	18.4
2011	1562	1020	98.4	285	18.2
2012	1583	1112	98.3	304	19.2
2013	1592	1089	99.1	284	17.8
2014	1575	1120	98.2	284	18.0
2015	1495	1231	98.3	322	21.5
2016	1337	1241	99.3	322	24.1
2017	1324	1133	96.0	275	20.8
2018	1040	808	37.5	102	9.8
2019	678	729	53.6	80	11.8
1998–2019	28235	19295	93.5	5320	18.8

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	487	64.7	35.3	81.4
1999	458	70.1	29.9	83.0
2000	471	69.0	31.0	83.7
2001	477	70.0	30.0	85.1
2002	702	71.4	28.6	85.7
2003	811	70.8	29.2	84.5
2004	793	70.5	29.5	84.1
2005	785	71.2	28.8	83.1
2006	835	71.3	28.7	80.9
2007	948	72.9	27.1	82.5
2008	949	71.4	28.6	82.2
2009	1027	71.9	28.1	83.0
2010	1069	68.7	31.3	80.3
2011	1020	68.5	31.5	82.5
2012	1112	65.5	34.5	77.2
2013	1089	65.9	34.1	78.1
2014	1120	66.9	33.1	78.0
2015	1231	66.0	34.0	77.4
2016	1241	64.2	35.8	77.5
2017	1133	60.0	40.0	74.1
2018	808	42.5	57.5	67.0
2019	729	43.5	56.5	69.1
1998–2019	19295	66.2	33.8	80.1

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	321	76.0	74.5	78.0	75.6
1999	301	76.5	74.3	81.1	75.4
2000	310	76.8	73.7	80.4	76.5
2001	313	76.1	73.7	80.7	75.0
2002	443	76.4	75.1	78.9	76.0
2003	548	76.1	74.9	80.5	75.7
2004	508	76.7	75.6	79.9	76.3
2005	514	76.8	75.4	80.0	76.0
2006	536	75.8	74.1	79.7	75.0
2007	626	76.7	75.4	79.9	75.8
2008	643	77.2	75.7	80.3	76.2
2009	694	77.3	75.0	81.4	75.9
2010	693	77.8	76.1	81.9	77.1
2011	686	77.2	75.0	82.0	76.3
2012	735	79.0	77.3	82.2	78.0
2013	732	78.3	76.5	81.5	77.4
2014	770	78.5	75.8	83.5	76.9
2015	842	78.9	77.4	83.3	78.0
2016	849	79.5	77.9	82.8	78.6
2017	779	80.4	78.1	83.1	79.0
2018	571	79.4	76.6	81.8	78.9
2019	489	80.8	77.1	83.6	79.7
1998-2019	12903	78.0	76.0	81.5	76.9

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	166	81.7	79.6	82.7	81.8
1999	157	78.9	78.7	79.9	79.2
2000	161	78.7	78.6	80.4	78.9
2001	164	80.7	79.0	87.3	80.3
2002	259	79.8	78.5	83.4	79.4
2003	263	80.1	79.3	81.0	80.0
2004	285	81.2	80.0	83.7	80.8
2005	271	81.3	79.1	83.4	80.4
2006	299	81.1	79.7	84.0	80.0
2007	322	80.8	79.8	84.0	80.6
2008	306	80.8	79.0	85.6	80.0
2009	333	80.9	78.8	84.3	79.6
2010	376	82.2	80.2	85.7	81.2
2011	334	82.2	79.5	87.7	80.5
2012	377	81.4	78.4	85.5	79.7
2013	357	80.6	78.5	85.0	79.4
2014	350	82.2	80.1	87.2	80.8
2015	389	81.4	79.5	87.3	80.2
2016	392	82.0	78.4	86.8	79.8
2017	354	82.8	80.2	87.4	81.3
2018	237	82.3	79.5	85.5	81.4
2019	240	80.6	78.2	83.0	78.2
1998-2019	6392	81.2	79.2	85.4	80.2

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	209	18.9	0.41	10.6	0.38	17.4	0.42	24.8	0.46
1999	206	18.4	0.41	10.3	0.38	16.8	0.42	24.5	0.47
2000	206	18.1	0.44	10.0	0.41	16.3	0.44	23.3	0.48
2001	222	19.2	0.50	10.5	0.46	16.9	0.50	23.8	0.55
2002	315	16.9	0.36	8.7	0.34	14.3	0.36	20.4	0.39
2003	383	20.4	0.43	10.5	0.40	16.8	0.43	23.9	0.46
2004	356	18.9	0.42	9.3	0.37	15.2	0.41	21.8	0.45
2005	357	18.8	0.41	9.0	0.36	14.6	0.39	21.1	0.44
2006	389	20.3	0.42	9.8	0.38	15.6	0.41	21.8	0.44
2007	465	21.0	0.47	9.8	0.42	15.9	0.46	22.5	0.50
2008	457	20.5	0.43	9.0	0.37	14.9	0.41	21.6	0.46
2009	498	22.3	0.48	9.8	0.42	15.8	0.45	22.3	0.48
2010	481	21.3	0.46	9.1	0.40	14.8	0.43	21.2	0.48
2011	486	21.7	0.47	9.3	0.41	15.0	0.44	20.7	0.47
2012	486	21.4	0.46	8.7	0.39	14.4	0.43	20.3	0.46
2013	493	21.4	0.46	8.7	0.39	14.1	0.43	19.9	0.46
2014	513	22.0	0.49	9.0	0.42	14.5	0.46	20.0	0.49
2015	563	23.7	0.55	9.0	0.47	14.8	0.51	21.3	0.55
2016	560	23.3	0.63	8.9	0.53	14.5	0.57	20.6	0.62
2017	469	19.4	0.54	7.3	0.46	11.9	0.50	16.9	0.53
2018	235	9.7	0.32	3.9	0.29	6.1	0.30	8.4	0.32
2019	212	8.7	0.45	3.5	0.40	5.5	0.42	7.5	0.45
1998-2019	8561	19.4	0.46	8.5	0.40	13.7	0.43	19.4	0.47



Table 11b

Mortality measures (cancer-related death) and mortality-incidence-index  
by year of death  
FEMALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	107	9.1	0.39	3.0	0.29	4.9	0.32	7.2	0.37
1999	115	9.7	0.48	3.4	0.36	5.6	0.40	7.8	0.45
2000	119	9.9	0.48	3.4	0.40	5.5	0.43	7.9	0.47
2001	112	9.2	0.40	3.1	0.32	5.0	0.34	7.3	0.39
2002	186	9.5	0.41	3.3	0.34	5.3	0.36	7.3	0.39
2003	191	9.7	0.45	3.2	0.37	5.2	0.40	7.4	0.43
2004	203	10.3	0.47	3.2	0.36	5.2	0.39	7.5	0.43
2005	203	10.2	0.46	3.3	0.37	5.3	0.39	7.5	0.42
2006	207	10.3	0.45	3.4	0.34	5.4	0.38	7.6	0.42
2007	227	9.8	0.45	3.0	0.34	5.0	0.38	7.3	0.43
2008	222	9.6	0.44	3.1	0.33	5.0	0.37	7.0	0.40
2009	242	10.4	0.47	3.4	0.38	5.4	0.41	7.6	0.44
2010	254	10.9	0.49	3.3	0.40	5.3	0.43	7.7	0.47
2011	214	9.2	0.44	2.9	0.32	4.7	0.37	6.6	0.41
2012	243	10.3	0.51	3.2	0.42	5.2	0.45	7.4	0.48
2013	225	9.4	0.47	3.0	0.37	4.7	0.40	6.6	0.44
2014	238	9.9	0.49	2.9	0.37	4.7	0.40	6.9	0.45
2015	251	10.3	0.55	3.0	0.42	4.9	0.46	7.0	0.51
2016	237	9.7	0.58	3.1	0.49	4.9	0.52	6.7	0.55
2017	214	8.7	0.51	2.4	0.40	3.9	0.43	5.6	0.46
2018	112	4.5	0.40	1.3	0.30	2.1	0.33	3.1	0.36
2019	109	4.4	0.56	1.3	0.45	2.1	0.48	3.1	0.53
1998-2019	4231	9.2	0.47	2.9	0.37	4.7	0.40	6.6	0.44

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	3	0.0	0.0	3	0.1	0.1			0.0
10-14	3	0.0	0.1			0.1	3	0.1	0.1
15-19	1	0.0	0.1	1	0.0	0.1			0.1
20-24	2	0.0	0.1	1	0.0	0.1	1	0.0	0.1
25-29	3	0.0	0.1	2	0.0	0.1	1	0.0	0.2
30-34	2	0.0	0.2	2	0.0	0.2			0.2
35-39	14	0.2	0.3	6	0.1	0.3	8	0.3	0.5
40-44	34	0.4	0.7	20	0.3	0.6	14	0.5	1.0
45-49	103	1.2	1.9	69	1.2	1.8	34	1.2	2.2
50-54	214	2.5	4.4	147	2.5	4.2	67	2.4	4.6
55-59	343	3.9	8.3	259	4.4	8.6	84	3.0	7.6
60-64	549	6.3	14.6	421	7.1	15.7	128	4.6	12.2
65-69	897	10.3	24.9	640	10.8	26.5	257	9.2	21.4
70-74	1396	16.0	40.9	1037	17.5	44.1	359	12.9	34.3
75-79	1700	19.5	60.5	1162	19.6	63.7	538	19.3	53.6
80-84	1680	19.3	79.8	1084	18.3	82.0	596	21.4	75.0
85+	1762	20.2	100.0	1064	18.0	100.0	698	25.0	100.0
All ages	8706	100.0		5918	100.0		2788	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.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9	3		0.2	0.33			12.0	
10-14		3			0.2	0.60		13.0
15-19	1		0.1	1.00			2.1	
20-24	1	1	0.1	0.14	0.1	0.25	1.5	2.6
25-29	2	1	0.1	0.17	0.0	0.13	2.4	1.1
30-34	2		0.1	0.08			1.6	
35-39	6	8	0.3	0.06	0.4	0.20	2.5	2.2
40-44	20	14	0.9	0.11	0.6	0.18	3.5	1.7
45-49	69	34	2.7	0.18	1.4	0.29	5.1	2.2
50-54	147	67	6.3	0.22	2.9	0.29	5.9	2.7
55-59	259	84	13.3	0.28	4.2	0.26	6.3	2.4
60-64	421	128	25.8	0.34	7.3	0.29	7.1	2.8
65-69	640	257	42.1	0.37	15.3	0.36	7.4	4.0
70-74	1037	359	74.0	0.48	22.4	0.40	9.4	4.4
75-79	1162	538	105.0	0.54	39.1	0.53	10.2	6.0
80-84	1084	596	165.1	0.69	61.2	0.68	11.5	7.0
85+	1064	698	249.5	0.90	72.3	0.75	12.9	6.3
All ages	5918	2788					9.3	4.9
Mortality								
Raw			19.6	0.48	9.0	0.49		
WS			8.0	0.41	2.7	0.38		
ES			13.0	0.45	4.4	0.41		
BRD-S			18.3	0.48	6.3	0.45		
PYLL-70								
per 100,000			50.2		21.0			
ES			43.0		17.6			
AYLL-70			8.5		9.2			

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 ←%
C03-C06 Oral cavity	41	0.8	18	43.9	3	7.3	20	48.8
C07-C08 Salivary gland	8	0.1	5	62.5			3	37.5
C09-C10 Oropharynx	55	1.0	29	52.7	2	3.6	24	43.6
C12-C13 Hypopharynx	26	0.5	13	50.0	1	3.8	12	46.2
C15 Oesophagus	69	1.3	18	26.1	2	2.9	49	71.0
C16 Stomach	151	2.8	48	31.8	12	7.9	91	60.3
C17 Small intestine	24	0.4	12	50.0	1	4.2	11	45.8
C18 Colon	394	7.3	198	50.3	50	12.7	146	37.1
C19-C20 Rectum	191	3.5	90	47.1	28	14.7	73	38.2
C21 Anus/canal	9	0.2	4	44.4	2	22.2	3	33.3
C22 Liver	92	1.7	17	18.5	16	17.4	59	64.1
C23-C24 Bile	32	0.6	4	12.5	5	15.6	23	71.9
C25 Pancreas	133	2.5	6	4.5	21	15.8	106	79.7
C32 Larynx	57	1.1	40	70.2	1	1.8	16	28.1
C33-C34 Lung	623	11.6	104	16.7	54	8.7	465	74.6
C38,C45 Mesothelioma	18	0.3	1	5.6	2	11.1	15	83.3
C43 Malign. melanoma	143	2.7	95	66.4	6	4.2	42	29.4
C44 Skin others	249	4.6	125	50.2	10	4.0	114	45.8
C46,C49 Soft tissue	33	0.6	14	42.4	3	9.1	16	48.5
C48 Peritoneal	8	0.1	2	25.0			6	75.0
C60 Penis	11	0.2	4	36.4	1	9.1	6	54.5
C61 Prostate	1615	30.0	605	37.5	369	22.8	641	39.7
C62 Testis	25	0.5	24	96.0			1	4.0
C64 Kidney	221	4.1	69	31.2	54	24.4	98	44.3
C65 Renal pelvis	100	1.9	53	53.0	33	33.0	14	14.0
C66 Ureter	90	1.7	56	62.2	19	21.1	15	16.7
C67 Bladder	506	9.4	199	39.3	45	8.9	262	51.8
C68 Urethra	17	0.3	10	58.8	2	11.8	5	29.4
C68 Urinary org.	14	0.3	6	42.9	2	14.3	6	42.9
C69 Eye melanoma	8	0.1	6	75.0			2	25.0
C70-C72 CNS cancer	41	0.8	7	17.1	4	9.8	30	73.2
C73 Thyroid	33	0.6	19	57.6			14	42.4
C76-C79 CUP	74	1.4	23	31.1	8	10.8	43	58.1
C82-C85 NHL	147	2.7	59	40.1	20	13.6	68	46.3
C90 Mult. myeloma	44	0.8	21	47.7	4	9.1	19	43.2
C91-C96 Leukaemia	45	0.8	5	11.1	4	8.9	36	80.0
Others, specified	42	0.8	24	57.1	3	7.1	15	35.7
All further malignancies	5389	100.0	2033	37.7	787	14.6	2569	47.7

Further malignancies with number of cases 1 to 6 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	5	0.3	4	80.0			1	20.0
C09-C10 Oropharynx	7	0.4	4	57.1			3	42.9
C15 Oesophagus	12	0.6			1	8.3	11	91.7
C16 Stomach	48	2.5	17	35.4	9	18.8	22	45.8
C17 Small intestine	8	0.4	4	50.0	1	12.5	3	37.5
C18 Colon	142	7.3	63	44.4	13	9.2	66	46.5
C19-C20 Rectum	67	3.5	33	49.3	6	9.0	28	41.8
C21 Anus/canal	5	0.3	2	40.0	1	20.0	2	40.0
C22 Liver	15	0.8	2	13.3	5	33.3	8	53.3
C23-C24 Bile	23	1.2	1	4.3	4	17.4	18	78.3
C25 Pancreas	73	3.8	4	5.5	6	8.2	63	86.3
C33-C34 Lung	171	8.8	22	12.9	24	14.0	125	73.1
C43 Malign. melanoma	42	2.2	29	69.0	3	7.1	10	23.8
C44 Skin others	67	3.5	35	52.2	3	4.5	29	43.3
C46,C49 Soft tissue	13	0.7	5	38.5	2	15.4	6	46.2
C48 Peritoneal	5	0.3	2	40.0	1	20.0	2	40.0
C50 Breast	411	21.3	258	62.8	27	6.6	126	30.7
C51 Vulva	16	0.8	11	68.8	1	6.3	4	25.0
C52 Vagina	7	0.4	3	42.9			4	57.1
C53 Cervix uteri	91	4.7	71	78.0	9	9.9	11	12.1
C54 Corpus uteri	96	5.0	68	70.8	13	13.5	15	15.6
C55,C57 Fem. genitals un	12	0.6	7	58.3	2	16.7	3	25.0
C56 Ovary	62	3.2	26	41.9	6	9.7	30	48.4
C64 Kidney	88	4.6	19	21.6	22	25.0	47	53.4
C65 Renal pelvis	49	2.5	26	53.1	15	30.6	8	16.3
C66 Ureter	33	1.7	25	75.8	6	18.2	2	6.1
C67 Bladder	142	7.3	48	33.8	14	9.9	80	56.3
C68 Urinary org.	6	0.3	4	66.7			2	33.3
C70-C72 CNS cancer	17	0.9	5	29.4	2	11.8	10	58.8
C73 Thyroid	39	2.0	20	51.3	2	5.1	17	43.6
C74-C80 Cancer others	5	0.3	2	40.0	2	40.0	1	20.0
C76-C79 CUP	38	2.0	6	15.8	2	5.3	30	78.9
C82-C85 NHL	60	3.1	28	46.7	10	16.7	22	36.7
C90 Mult. myeloma	14	0.7	5	35.7	1	7.1	8	57.1
C91-C96 Leukaemia	20	1.0	2	10.0	4	20.0	14	70.0
Others, specified	25	1.3	11	44.0	4	16.0	10	40.0
All further malignancies	1934	100.0	872	45.1	221	11.4	841	43.5

Further malignancies with number of cases 1 to 4 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.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9	3		0.2	0.33			12.5	
10-14		1			0.1	0.33		5.3
15-19	1		0.1	1.00			2.2	
20-24	1	1	0.1	0.17	0.1	0.25	1.7	2.7
25-29	2	1	0.1	0.18	0.0	0.13	2.6	1.2
30-34	2		0.1	0.09			1.6	
35-39	5	8	0.2	0.06	0.4	0.20	2.2	2.4
40-44	18	13	0.8	0.12	0.6	0.19	3.4	1.8
45-49	61	29	2.4	0.17	1.2	0.28	5.0	2.1
50-54	113	50	4.8	0.20	2.2	0.27	5.1	2.4
55-59	199	64	10.2	0.27	3.2	0.26	5.5	2.2
60-64	317	87	19.4	0.34	5.0	0.26	6.4	2.3
65-69	438	193	28.8	0.37	11.5	0.36	6.4	3.8
70-74	661	247	47.2	0.48	15.4	0.40	7.8	3.9
75-79	724	381	65.4	0.56	27.7	0.52	8.6	5.5
80-84	645	420	98.2	0.73	43.1	0.70	9.5	6.4
85+	647	537	151.7	0.92	55.6	0.77	10.9	6.2
All ages	3837	2032					7.7	4.5
Mortality								
Raw			12.7	0.46	6.5	0.48		
WS			5.4	0.39	2.0	0.36		
ES			8.6	0.42	3.2	0.40		
BRD-S			11.8	0.46	4.5	0.44		
PYLL-70								
per 100,000			39.2		16.1			
ES			33.8		13.5			
AYLL-70			9.0		9.5			

\* See corresponding tables with multiple malignancies.

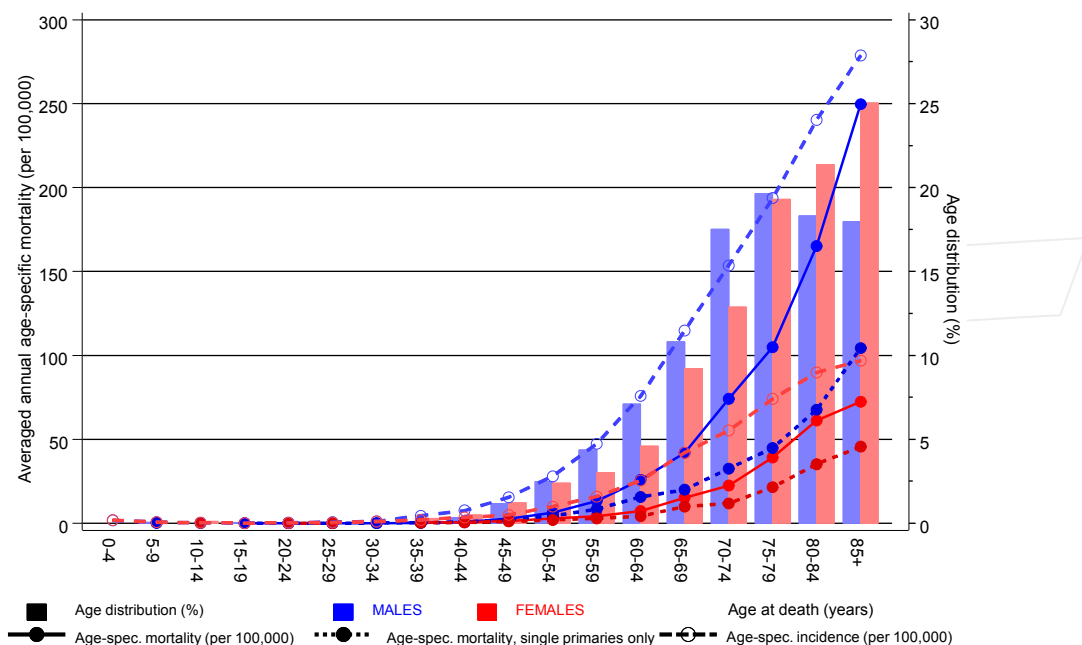
Table 16

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

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9	3		0.2	0.33			12.5	
10-14		1			0.1	0.33		5.3
15-19	1		0.1	1.00			2.2	
20-24	1	1	0.1	0.17	0.1	0.25	1.7	2.8
25-29	2	1	0.1	0.18	0.0	0.13	2.6	1.2
30-34	2		0.1	0.10			1.6	
35-39	5	6	0.2	0.06	0.3	0.15	2.2	1.8
40-44	18	11	0.8	0.12	0.5	0.17	3.4	1.6
45-49	54	26	2.2	0.17	1.1	0.28	4.5	1.9
50-54	101	45	4.3	0.21	1.9	0.26	4.6	2.2
55-59	162	58	8.3	0.27	2.9	0.26	4.6	2.0
60-64	255	73	15.6	0.34	4.2	0.25	5.2	2.0
65-69	303	168	19.9	0.33	10.0	0.37	4.5	3.4
70-74	456	190	32.5	0.43	11.8	0.36	5.6	3.1
75-79	496	295	44.8	0.47	21.4	0.46	6.2	4.4
80-84	444	343	67.6	0.61	35.2	0.64	7.0	5.4
85+	445	440	104.4	0.70	45.6	0.67	8.2	5.3
All ages	2748	1658					5.8	3.8
Mortality								
Raw			9.1	0.40	5.3	0.44		
WS			4.0	0.35	1.7	0.34		
ES			6.2	0.37	2.6	0.37		
BRD-S			8.5	0.40	3.7	0.41		
PYLL-70								
per 100,000			33.1		14.2			
ES			28.6		11.8			
AYLL-70			9.7		9.5			

\* See corresponding tables with multiple malignancies.

ICD-10 C64-C68: Malignant neoplasms of urinary tract  
 Age distribution and age-specific mortality 2007 - 2019 (Males: 5918, Females: 2788)

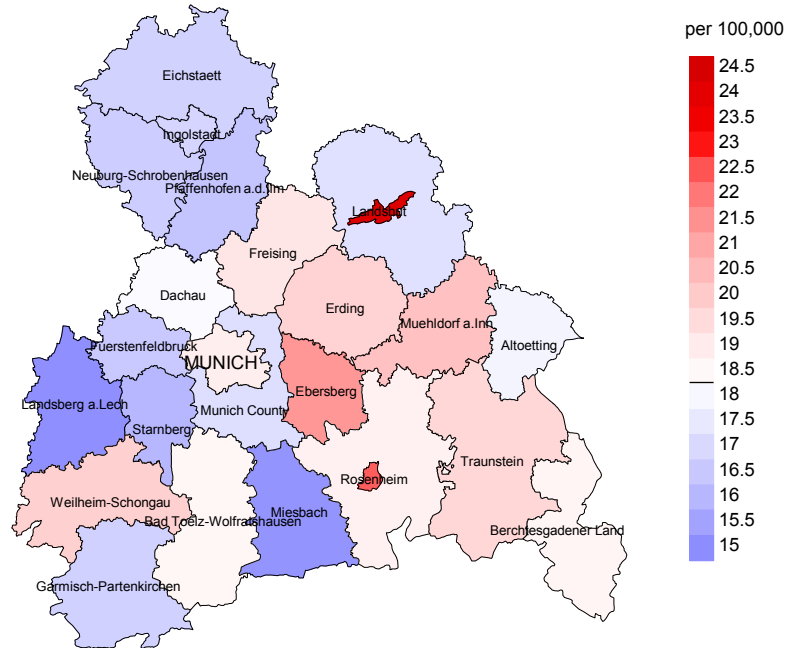


**Figure 17.** Distribution of age at death (bars; males: mean=71.1 yrs, median=72.1 yrs; females: mean=73.3 yrs, median=74.9 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

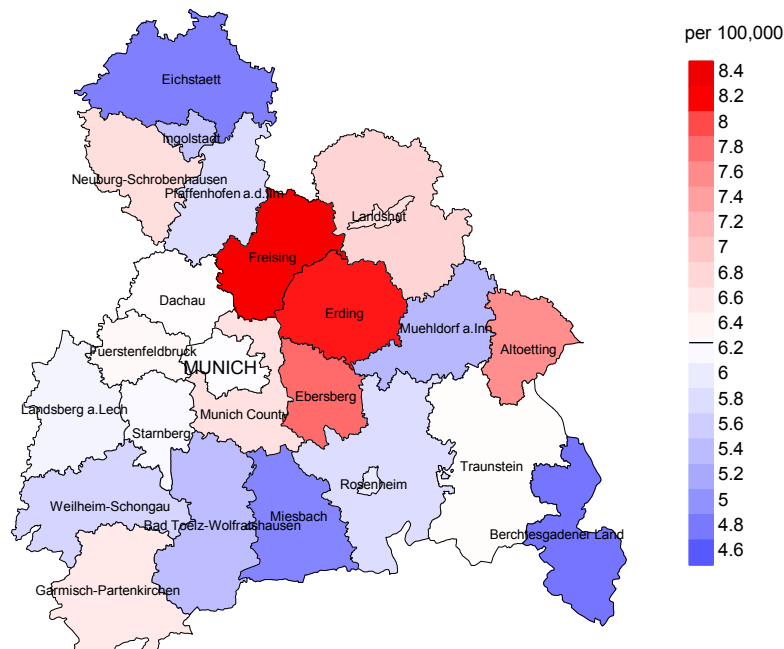
The difference between age at diagnosis (Table 3) and age at urinary tract cancer-related death (see Table 10) should be considered.



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



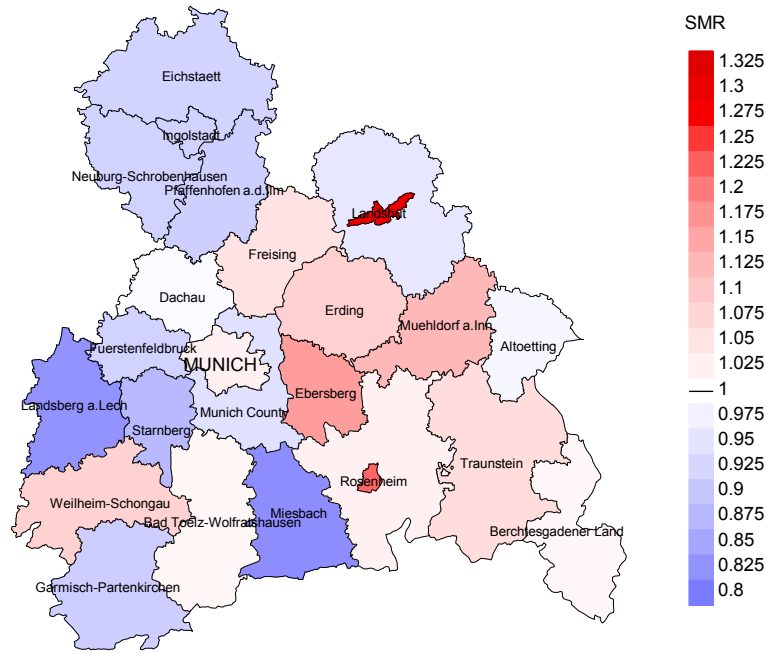
Average mortality (Germany 1987 standard population) 2007 - 2019: Females



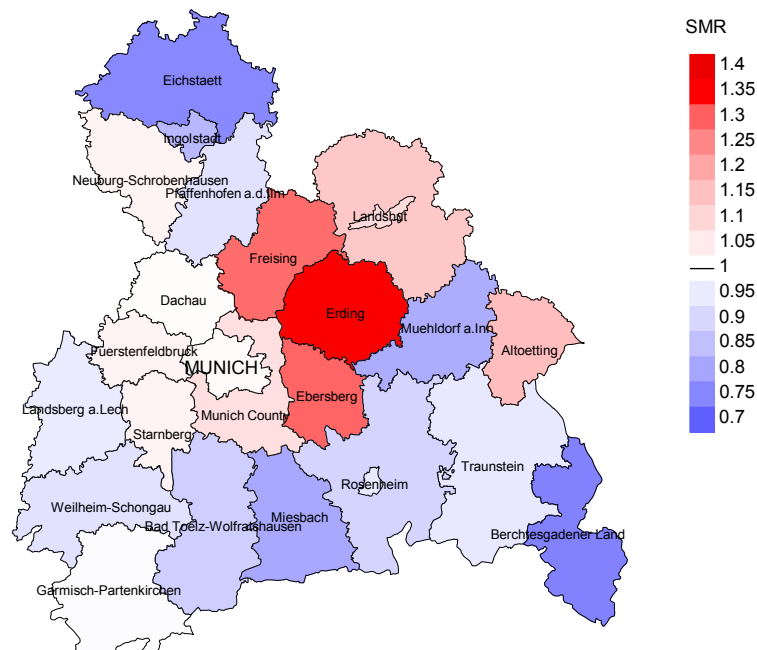
**Figure 18a.** Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 18.3/100,000 WS N=5,918, females 6.3/100,000 WS N=2,788).

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 96 women died from urinary tract cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 7.8/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 5.9 and 10.2/100,000.

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=5,918, females N=2,788).

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 96 women died from urinary tract cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.29. Though, the value of this parameter may vary with an underlying probability of 99% between 0.98 and 1.67, 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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