Munich Cancer Registry

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ICD-10 C64-C66, C68: Urinary tract cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	15,844
Diseases	16,400
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC6466E-ICD-10-C64-C66-C68-Urinary-tract-cancer-incidence-and-mortality.pdf

Index of figures and tables

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

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.69 million inhabitants, account for the frequency of cancer diseases[##] and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases[###] are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, December 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
C64	Malignant neoplasm of kidney, except renal pelvis
C65	Malignant neoplasm of renal pelvis
C66	Malignant neoplasm of ureter
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	469	55	11.7	16.6	17.1	71.9	96.6
1999	457	50	10.9	16.4	16.8	70.9	95.8
2000	425	53	12.5	17.5	16.7	71.8	97.2
2001	420	50	11.9	17.7	16.6	73.8	96.7
2002	717	106	14.8	18.9	16.6	77.0	98.5 #
2003	713	80	11.2	18.7	16.5	70.8	95.4
2004	718	86	12.0	19.1	16.3	67.3	96.7
2005	788	48	6.1	19.8	16.0	66.0	96.4
2006	763	52	6.8	19.9	15.7	64.7	93.1
2007	875	83	9.5	20.1	15.1	64.5	92.6 #
2008	917	80	8.7	20.6	14.6	59.9	97.5
2009	919	78	8.5	21.2	14.1	58.8	97.7
2010	926	67	7.2	21.7	13.5	55.6	97.8
2011	877	63	7.2	22.1	13.2	54.4	97.7
2012	883	66	7.5	22.6	12.5	54.7	98.2
2013	833	66	7.9	23.1	11.9	49.9	97.7
2014	922	75	8.1	23.6	11.5	48.7	97.3
2015	827	86	10.4	24.0	11.0	45.3	93.1
2016	748	79	10.6	24.5	10.4	46.0	98.8
2017	707	62	8.8	25.1	9.1	36.1	99.3
2018	633	36	5.7	25.4	8.0	29.4	99.4
2019	477	8	1.7	25.6	6.6	18.4	99.2
2020	386	1	0.3	25.7	5.6	20.7	99.2 ##
1998–2020	16400	1430	8.7	25.7	17.1	55.8	96.9

16,400 cases diagnosed 1998-2020 are related to a total of 15,844 patients. Currently, in 6,099 (38.5 %) of these 15,844 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 4,266 / 1,314 / 519 (26.9 % / 8.3 % / 3.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 633 cases has been diagnosed, of which 25.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	288	61.4	27	9.4	16.0	18.4	72.2	96.9
1999	281	61.5	30	10.7	16.7	18.2	70.8	95.7
2000	276	64.9	36	13.0	17.5	18.1	73.2	96.4
2001	245	58.3	25	10.2	17.9	18.0	71.8	97.1
2002	432	60.3	58	13.4	19.5	18.0	75.9	99.1 #
2003	445	62.4	43	9.7	19.7	17.8	69.4	94.4
2004	442	61.6	43	9.7	19.9	17.6	69.2	96.2
2005	503	63.8	23	4.6	20.6	17.2	65.2	97.2
2006	475	62.3	21	4.4	20.7	16.8	64.4	93.3
2007	567	64.8	39	6.9	21.0	16.2	64.7	92.2 #
2008	583	63.6	38	6.5	21.7	15.5	57.3	97.4
2009	576	62.7	46	8.0	22.5	14.9	57.5	97.7
2010	593	64.0	25	4.2	23.0	14.2	54.8	98.7
2011	566	64.5	43	7.6	23.5	13.7	55.3	97.9
2012	574	65.0	34	5.9	24.0	12.8	53.5	98.3
2013	545	65.4	32	5.9	24.6	12.1	49.9	98.0
2014	600	65.1	41	6.8	25.1	11.8	48.3	97.5
2015	560	67.7	47	8.4	25.5	11.6	44.1	94.1
2016	506	67.6	43	8.5	26.1	10.9	47.2	98.4
2017	466	65.9	33	7.1	26.8	9.3	35.8	99.1
2018	442	69.8	24	5.4	27.2	7.9	27.4	99.3
2019	318	66.7	3	0.9	27.3	7.8	19.2	98.7
2020	252	65.3	1	0.4	27.4	7.3	20.2	98.8 ##
1998-2020	10535	64.2	755	7.2	27.4	18.4	54.9	97.0

10,535 cases diagnosed 1998-2020 are related to a total of 10,141 patients. Currently, in 4,155 (41.0 %) of these 10,141 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,826 / 926 / 403 (27.9 % / 9.1 % / 4.0 %) 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 442 cases has been diagnosed, of which 27.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.9 % 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	181	38.6	28	15.5	17.7	14.6	71.3	96.1	
1999	176	38.5	20	11.4	16.0	14.4	71.0	96.0	
2000	149	35.1	17	11.4	17.4	14.3	69.1	98.7	
2001	175	41.7	25	14.3	17.3	14.2	76.6	96.0	
2002	285	39.7	48	16.8	18.0	14.1	78.6	97.5	#
2003	268	37.6	37	13.8	17.3	14.1	73.1	97.0	
2004	276	38.4	43	15.6	17.9	14.0	64.1	97.5	
2005	285	36.2	25	8.8	18.5	13.8	67.4	95.1	
2006	288	37.7	31	10.8	18.6	13.6	65.3	92.7	
2007	308	35.2	44	14.3	18.4	13.1	64.0	93.2	#
2008	334	36.4	42	12.6	18.8	12.9	64.4	97.6	
2009	343	37.3	32	9.3	18.9	12.6	60.9	97.7	
2010	333	36.0	42	12.6	19.7	12.2	57.1	96.4	
2011	311	35.5	20	6.4	19.9	12.3	52.7	97.4	
2012	309	35.0	32	10.4	20.2	12.0	57.0	98.1	
2013	288	34.6	34	11.8	20.6	11.5	50.0	97.2	
2014	322	34.9	34	10.6	21.0	10.8	49.4	96.9	
2015	267	32.3	39	14.6	21.4	9.8	47.9	91.0	
2016	242	32.4	36	14.9	21.7	9.4	43.4	99.6	
2017	241	34.1	29	12.0	22.1	8.7	36.5	99.6	
2018	191	30.2	12	6.3	22.3	8.1	34.0	99.5	
2019	159	33.3	5	3.1	22.5	4.3	17.0	100.0	
2020	134	34.7			22.6	2.3	21.6	100.0	##
1998-2020	5865	35.8	675	11.5	22.6	14.6	57.4	96.8	

5,865 cases diagnosed 1998-2020 are related to a total of 5,703 patients. Currently, in 1,944 (34.1 %) of these 5,703 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,440 / 388 / 116 (25.2 % / 6.8 % / 2.0 %) 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 191 cases has been diagnosed, of which 22.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.1 % 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 4.94 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	288	181	26.0	15.4	16.4	7.3	23.6	10.5	29.3	13.2
1999	281	176	25.1	14.8	15.5	7.5	22.5	10.5	28.0	12.8
2000	276	149	24.2	12.4	15.2	5.7	21.7	8.4	26.7	10.6
2001	245	175	21.1	14.4	12.6	6.7	18.3	9.8	23.2	12.4
2002	432	285	23.2	14.6	13.4	6.7	19.7	9.6	25.0	12.2
2003	445	268	23.7	13.6	14.0	6.0	19.8	8.7	24.5	11.1
2004	442	276	23.5	14.0	13.7	6.3	19.4	9.1	24.2	11.6
2005	503	285	26.6	14.3	15.0	6.6	21.6	9.3	26.4	11.9
2006	475	288	24.8	14.3	14.0	6.8	19.8	9.6	24.6	11.8
2007	567	308	25.6	13.3	14.1	5.9	20.2	8.3	25.1	10.7
2008	583	334	26.2	14.4	14.4	6.6	20.5	9.3	25.2	11.9
2009	576	343	25.8	14.7	13.9	6.6	19.9	9.4	24.9	12.1
2010	593	333	26.3	14.2	13.6	5.8	19.7	8.6	24.7	11.1
2011	566	311	25.3	13.3	13.2	6.4	18.9	8.6	23.5	10.6
2012	574	309	25.3	13.1	13.0	5.2	18.8	7.8	23.6	10.4
2013	545	288	23.7	12.1	12.1	5.2	17.3	7.4	21.9	9.5
2014	600	322	25.7	13.4	13.1	5.7	18.9	8.2	23.3	10.4
2015	560	267	23.5	11.0	11.6	4.8	16.8	6.6	21.2	8.2
2016	506	242	21.1	9.9	10.1	4.2	14.8	5.9	19.0	7.5
2017	466	241	19.3	9.8	9.6	3.8	13.7	5.6	17.3	7.3
2018	442	191	18.2	7.7	9.1	3.0	13.1	4.4	16.2	5.8
2019	318	159	13.1	6.4	6.6	2.7	9.5	3.9	11.7	5.0
2020	252	134	10.4	5.4	5.1	2.5	7.3	3.6	9.3	4.4
1998–2020	10535	5865	22.6	12.2	12.1	5.3	17.4	7.6	21.6	9.7

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	469	66.4	13.6	2.8	99.7	50.0	59.0	67.7	76.0	82.2
1999	457	66.0	13.3	1.1	94.3	51.0	58.2	66.1	76.0	82.0
2000	425	66.4	13.0	0.3	93.5	49.5	58.9	67.0	75.4	81.3
2001	420	67.4	12.1	1.9	96.4	52.5	60.7	67.6	76.8	81.2
2002	717	68.3	13.1	0.1	99.5	50.8	61.3	69.7	77.2	82.7
2003	713	67.8	13.5	0.4	99.6	51.5	60.8	68.6	76.8	83.2
2004	718	67.2	13.7	0.0	94.9	49.2	60.6	68.5	76.5	82.2
2005	788	67.3	13.2	0.7	95.1	51.5	60.3	68.2	76.6	82.1
2006	763	67.2	14.1	0.2	95.5	49.9	60.2	68.9	76.4	83.0
2007	875	68.0	14.1	1.2	99.1	50.2	61.6	69.8	77.0	83.6
2008	917	67.8	13.5	0.2	98.1	51.2	60.6	69.1	77.1	83.3
2009	919	67.9	14.2	0.5	96.9	50.3	60.6	70.2	77.8	83.1
2010	926	68.8	13.1	5.4	100	51.1	60.6	70.6	77.7	83.9
2011	877	68.3	14.5	0.5	96.9	50.9	61.3	70.4	77.5	84.4
2012	883	69.1	13.1	1.3	93.1	52.5	61.1	71.3	78.9	83.4
2013	833	68.7	13.8	0.3	101	51.0	61.2	71.0	78.3	83.4
2014	922	69.1	13.2	1.2	98.9	53.5	61.0	70.9	77.8	84.7
2015	827	69.6	14.2	0.5	98.9	52.0	61.5	72.3	78.4	84.8
2016	748	70.0	13.2	2.4	96.0	53.1	62.4	72.4	79.4	84.5
2017	707	69.9	13.1	0.9	96.8	53.3	62.9	72.4	78.5	83.6
2018	633	69.2	12.8	2.8	96.8	52.8	61.1	70.9	78.6	83.8
2019	477	68.3	12.2	23.8	93.6	52.0	60.4	70.5	77.4	82.3
2020	386	68.4	12.2	18.4	95.2	52.1	60.7	70.5	77.5	82.5
1998–2020	16400	68.3	13.5	0.0	101	51.5	60.8	70.0	77.6	83.4

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	288	64.9	13.5	5.0	91.9	49.0	58.0	65.9	74.7	79.7
1999	281	64.9	12.8	2.3	89.5	50.1	57.6	65.7	74.1	80.3
2000	276	64.7	13.2	0.3	93.5	48.0	57.1	65.9	73.2	79.9
2001	245	66.0	11.0	1.9	89.9	52.3	59.4	65.3	74.7	80.0
2002	432	66.7	12.8	0.1	96.2	48.9	59.1	68.3	75.7	81.3
2003	445	65.5	13.4	0.4	99.6	48.3	59.8	65.8	74.3	80.7
2004	442	65.6	13.7	0.0	94.9	49.0	58.8	67.4	74.7	80.1
2005	503	66.0	11.7	0.7	93.3	51.5	59.3	66.7	73.7	79.7
2006	475	65.9	13.1	0.8	95.4	49.5	59.8	67.2	74.6	80.3
2007	567	66.4	12.9	2.6	93.1	49.7	59.3	68.0	75.0	80.6
2008	583	66.5	13.0	0.2	98.1	49.9	58.9	68.2	74.6	81.9
2009	576	66.7	13.8	0.5	96.1	49.6	59.1	69.2	75.9	82.1
2010	593	66.9	12.8	5.4	93.5	48.5	59.1	69.4	76.0	81.5
2011	566	67.7	12.8	1.5	96.9	51.0	60.6	69.3	75.9	82.8
2012	574	67.4	13.6	1.3	93.1	50.3	59.3	69.8	77.2	83.0
2013	545	67.6	13.1	0.9	94.1	50.0	59.7	69.7	76.8	82.3
2014	600	68.2	13.2	1.2	97.0	53.1	60.4	70.2	77.1	83.7
2015	560	68.9	12.9	0.7	98.9	52.2	60.9	71.5	77.4	83.6
2016	506	69.6	12.3	13.7	94.8	53.7	61.4	71.5	78.7	83.7
2017	466	68.7	12.8	0.9	96.8	52.5	61.5	70.5	77.2	82.3
2018	442	68.1	12.7	2.8	96.8	51.7	60.0	69.3	77.6	82.3
2019	318	67.3	12.1	23.8	93.6	51.2	58.7	69.2	76.6	80.7
2020	252	68.6	12.2	18.4	90.3	53.4	61.1	71.1	77.7	82.2
1998–2020	10535	67.0	13.0	0.0	99.6	50.7	59.6	68.6	76.2	81.8

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	181	68.9	13.4	2.8	99.7	56.3	61.7	70.3	78.0	84.3
1999	176	67.7	14.0	1.1	94.3	51.8	58.8	68.8	77.7	85.5
2000	149	69.4	12.2	37.2	91.4	54.5	60.8	71.4	78.2	86.4
2001	175	69.4	13.3	30.6	96.4	53.1	61.7	71.2	78.9	85.1
2002	285	70.6	13.2	2.4	99.5	54.7	63.7	72.4	79.9	85.0
2003	268	71.4	12.9	2.5	96.5	56.3	64.3	72.4	80.9	85.8
2004	276	69.7	13.5	18.5	94.6	52.5	63.4	71.2	79.3	84.7
2005	285	69.6	15.1	3.8	95.1	51.8	62.9	72.6	80.2	84.4
2006	288	69.4	15.4	0.2	95.5	52.1	62.7	71.9	79.0	85.9
2007	308	70.8	15.8	1.2	99.1	53.0	66.3	73.1	80.4	85.8
2008	334	70.1	14.2	0.6	96.1	54.1	63.6	71.5	80.0	84.9
2009	343	70.1	14.7	1.7	96.9	51.4	64.5	72.6	79.9	84.5
2010	333	72.0	13.0	5.4	100	54.7	64.5	73.1	80.9	87.8
2011	311	69.4	17.1	0.5	96.5	50.8	64.3	72.7	79.7	85.7
2012	309	72.3	11.6	9.7	92.8	56.8	67.2	73.8	80.6	84.4
2013	288	70.9	14.7	0.3	101	52.6	64.9	73.6	79.9	85.0
2014	322	70.7	13.2	2.5	98.9	54.0	63.0	73.4	79.5	85.8
2015	267	70.9	16.4	0.5	98.0	50.9	63.9	74.3	80.8	88.1
2016	242	70.8	14.9	2.4	96.0	52.4	64.5	73.5	80.4	86.5
2017	241	72.2	13.6	1.8	96.8	54.7	66.6	75.0	81.2	86.6
2018	191	71.8	12.5	27.4	92.6	55.0	64.1	75.2	81.2	85.0
2019	159	70.2	12.2	28.5	93.4	52.8	62.6	72.5	79.0	83.9
2020	134	68.1	12.2	37.0	95.2	49.8	59.3	68.9	77.2	82.6
1998–2020	5865	70.4	14.1	0.2	101	53.3	63.7	72.7	79.9	85.5

Table 4

Age distribution by 5-year age group and sex for period 2007-2020 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	58	0.5	0.5	28	0.4	0.4	30	0.8	0.8
5-9	18	0.2	0.7	9	0.1	0.5	9	0.2	1.0
10-14	8	0.1	0.8	3	0.0	0.6	5	0.1	1.2
15-19	5	0.0	0.8	4	0.1	0.6	1	0.0	1.2
20-24	11	0.1	0.9	7	0.1	0.7	4	0.1	1.3
25-29	20	0.2	1.1	12	0.2	0.9	8	0.2	1.5
30-34	41	0.4	1.5	23	0.3	1.2	18	0.5	2.0
35-39	127	1.2	2.6	91	1.3	2.5	36	1.0	2.9
40-44	213	1.9	4.6	151	2.1	4.6	62	1.6	4.6
45-49	395	3.6	8.2	301	4.2	8.8	94	2.5	7.1
50-54	675	6.2	14.4	500	7.0	15.8	175	4.6	11.7
55-59	889	8.1	22.5	662	9.3	25.1	227	6.0	17.7
60-64	1125	10.3	32.8	815	11.4	36.5	310	8.2	25.9
65-69	1598	14.6	47.4	1059	14.8	51.3	539	14.3	40.1
70-74	1847	16.9	64.3	1268	17.7	69.0	579	15.3	55.4
75-79	1825	16.7	81.0	1114	15.6	84.6	711	18.8	74.2
80-84	1261	11.5	92.6	714	10.0	94.6	547	14.5	88.7
85+	814	7.4	100.0	387	5.4	100.0	427	11.3	100.0
All ages	10930	100.0		7148	100.0		3782	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007–2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=444 %	Females DCO rate n=397 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	25	28	1.5	1.8			11.4	16.4
5- 9	9	9	0.6	0.6			7.7	9.0
10-14	3	5	0.2	0.3		20.0	2.2	3.9
15-19	4	1	0.2	0.1			1.3	0.4
20-24	7	4	0.3	0.2			1.1	0.8
25-29	12	8	0.5	0.4			1.3	0.7
30-34	23	18	1.0	0.8			1.8	0.8
35-39	91	36	3.9	1.6			5.0	1.0
40-44	148	62	5.9	2.6	0.7		5.3	1.0
45-49	294	94	10.9	3.6	1.0	1.1	5.8	1.0
50-54	489	174	19.2	6.9	1.4	1.7	5.8	1.4
55-59	645	224	30.4	10.3	2.0	1.8	5.1	1.7
60-64	790	307	44.7	16.2	1.8	1.3	4.5	2.0
65-69	1037	531	63.5	29.3	3.0	2.4	4.3	2.8
70-74	1239	571	82.6	33.2	4.1	4.4	4.5	2.9
75-79	1095	696	90.5	46.4	7.0	7.3	4.6	3.6
80-84	695	538	96.0	50.5	15.0	16.7	4.5	3.5
85+	386	421	82.7	40.4	37.0	48.7	3.7	2.6
All ages	6992	3727			6.4	10.7	4.5	2.4
Incidence								
Raw			21.5	11.1				
WS			11.0	4.7				
ES			15.8	6.8				
BRD-S			19.7	8.6				

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

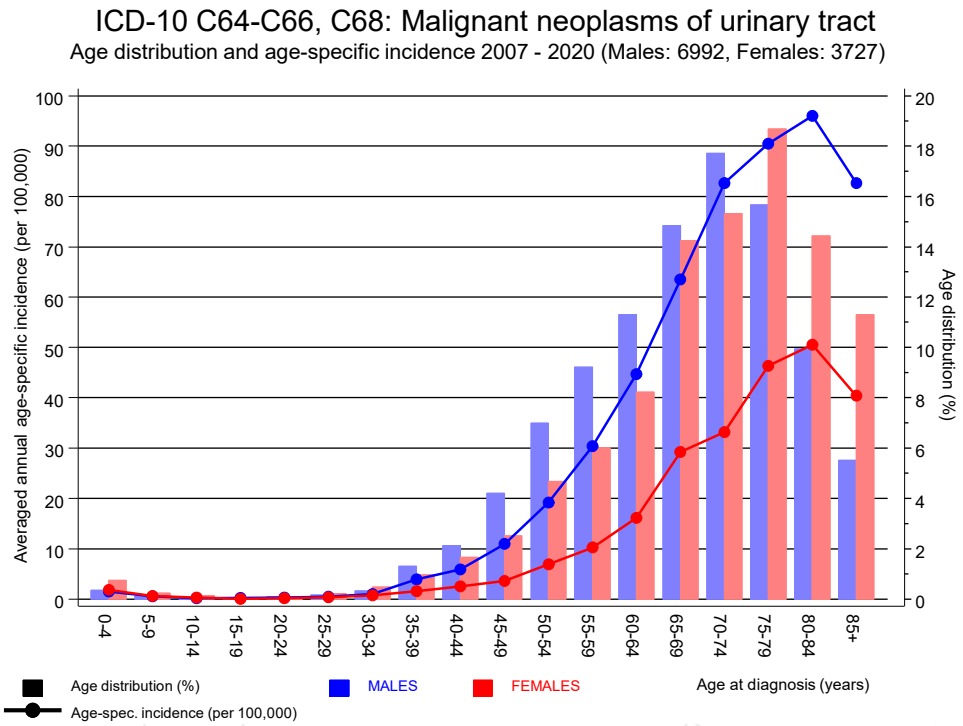


Figure 6. Age distribution (males: mean=67.7 yrs, median=69.6 yrs; females: mean=70.8 yrs, median=73.2 yrs) and age-specific incidence.

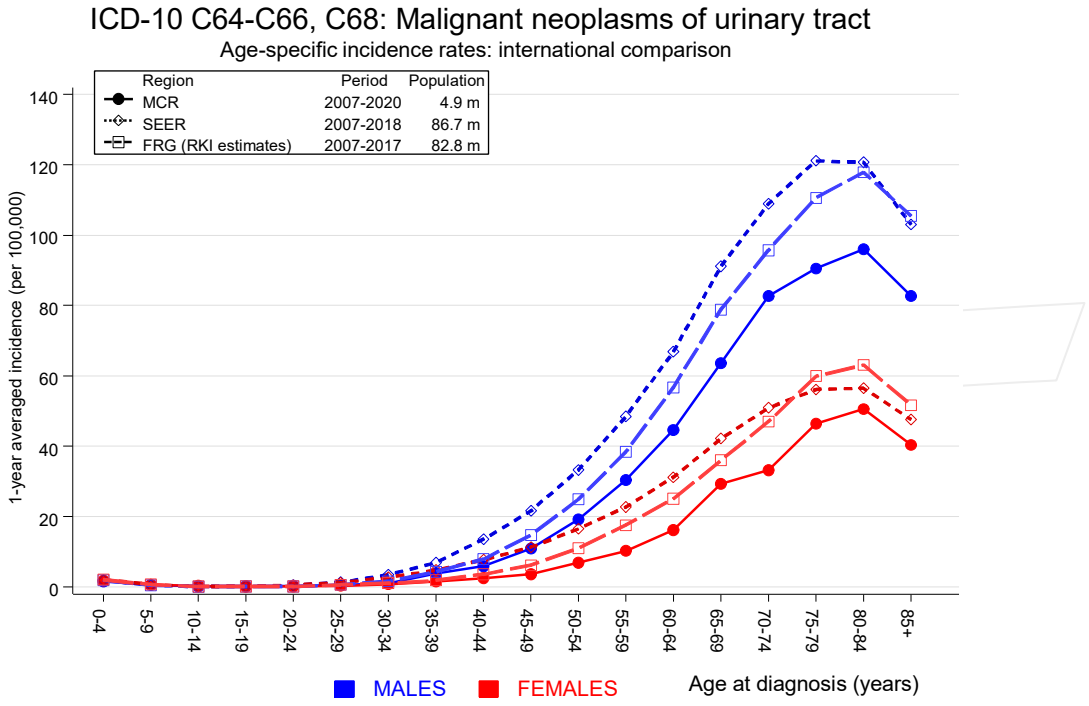


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Estimated age-specific patient population of Germany, latest update: 16 March 2021. German Centre for Cancer Registry Data, Robert Koch Institute (RKI), based on data of the population based cancer registries. http://www.krebsdaten.de. Last access: 08/17/2021
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 21 Regs Research Data, released April 2021, based on the November 2020 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 1998–2020

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	10	5.0	2.0	1.0	3.7		1.3	
C07–C08	Salivary gland	3	1.5	1.9	0.4	5.7		0.4	
C09–C10	Oropharynx	17	6.1	2.8	1.6	4.4	#	2.9	
C12–C13	Hypopharynx	8	3.3	2.4	1.0	4.7	#	1.2	
C15	Oesophagus	29	12.3	2.4	1.6	3.4	#	4.4	10.3
C16	Stomach	44	25.2	1.7	1.3	2.3	#	5.0	9.1
C17	Small intestine	15	3.8	3.9	2.2	6.5	#	3.0	
C18	Colon	138	62.2	2.2	1.9	2.6	#	20.1	8.0
C19–C20	Rectum	53	33.3	1.6	1.2	2.1	#	5.2	
C22	Liver	49	18.4	2.7	2.0	3.5	#	8.1	10.2
C23–C24	Bile	12	6.8	1.8	0.9	3.1		1.4	25.0
C25	Pancreas	65	25.0	2.6	2.0	3.3	#	10.6	16.9
C32	Larynx	16	6.2	2.6	1.5	4.2	#	2.6	6.3
C33–C34	Lung	226	74.3	3.0	2.7	3.5	#	40.1	12.8
C38,C45	Mesothelioma	8	4.5	1.8	0.8	3.5		0.9	12.5
C40–C41	Bone	3	0.5	5.9	1.2	17.3	#	0.7	
C43	Malign. melanoma	75	28.6	2.6	2.1	3.3	#	12.3	5.3
C46,C49	Soft tissue	15	3.7	4.1	2.3	6.8	#	3.0	
C48	Peritoneal	4	0.5	7.9	2.2	20.3	#	0.9	25.0
C50	Breast	3	1.8	1.7	0.4	5.0		0.3	
C60	Penis	6	1.6	3.7	1.4	8.1	#	1.2	
C61	Prostate	578	179.5	3.2	3.0	3.5	#	105.4	4.5
C62	Testis	10	1.5	6.8	3.3	12.5	#	2.3	
C64	Kidney	239	21.7	11.0	9.7	12.5	#	57.5	3.8
C65	Renal pelvis	58	2.9	20.0	15.2	25.8	#	14.6	
C66	Ureter	61	1.7	35.4	27.1	45.4	#	15.7	
C67	Bladder	293	30.5	9.6	8.5	10.8	#	69.5	8.5
C68	Urethra	19	0.6	30.6	18.4	47.8	#	4.9	
C68	Urinary org.	16	0.4	37.0	21.1	60.1	#	4.1	75.0
C70–C72	CNS cancer	20	7.9	2.5	1.5	3.9	#	3.2	10.0
C73	Thyroid	16	3.9	4.1	2.4	6.7	#	3.2	12.5
C76–C79	CUP	18	10.7	1.7	1.0	2.7		1.9	5.6
C82–C85	NHL	85	27.1	3.1	2.5	3.9	#	15.3	5.9
C90	Mult. myeloma	18	8.4	2.1	1.3	3.4	#	2.5	16.7
C91–C96	Leukaemia	20	9.8	2.0	1.2	3.1	#	2.7	20.0
Others, specified		16	8.6	1.9	1.1	3.0	#	1.9	12.5
Not observed		0	0.9	0.0	0.0	4.0		-0.2	
All further malignancies		2266	640.9	3.5	3.4	3.7	#	429.9	7.2

Patients	9562
Median age at next malignancy (years)	72.2
Person-years	37800
Mean observation time (years)	4.0
Median observation time (years)	2.1

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 2 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 1998–2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C15	Oesophagus	3	1.6	1.8	0.4	5.3		0.7	
C16	Stomach	21	9.3	2.3	1.4	3.5	#	5.7	
C17	Small intestine	4	1.3	3.0	0.8	7.7		1.3	
C18	Colon	54	26.4	2.0	1.5	2.7	#	13.4	5.6
C19–C20	Rectum	16	10.5	1.5	0.9	2.5		2.7	6.3
C22	Liver	9	3.3	2.7	1.2	5.2	#	2.8	11.1
C23–C24	Bile	15	3.9	3.9	2.2	6.4	#	5.4	13.3
C25	Pancreas	33	12.7	2.6	1.8	3.7	#	9.9	24.2
C32	Larynx	2	0.4	4.6	0.6	16.7		0.8	
C33–C34	Lung	76	18.9	4.0	3.2	5.0	#	27.7	11.8
C43	Malign. melanoma	19	9.3	2.0	1.2	3.2	#	4.7	5.3
C46,C49	Soft tissue	5	1.5	3.4	1.1	7.9	#	1.7	
C50	Breast	177	73.4	2.4	2.1	2.8	#	50.3	4.5
C51	Vulva	6	2.9	2.1	0.8	4.6		1.5	16.7
C53	Cervix uteri	5	2.8	1.8	0.6	4.1		1.0	
C54	Corpus uteri	30	13.9	2.2	1.5	3.1	#	7.8	3.3
C56	Ovary	15	10.2	1.5	0.8	2.4		2.3	13.3
C64	Kidney	105	6.3	16.7	13.7	20.3	#	47.9	10.5
C65	Renal pelvis	20	0.9	23.0	14.1	35.6	#	9.3	
C66	Ureter	27	0.5	56.8	37.4	82.7	#	12.9	
C67	Bladder	118	5.4	21.9	18.1	26.2	#	54.7	11.0
C68	Urethra	2	0.1	27.4	3.3	99.1	#	0.9	
C68	Urinary org.	6	0.1	56.3	20.6	122.5	#	2.9	50.0
C70–C72	CNS cancer	7	3.3	2.1	0.9	4.4		1.8	28.6
C73	Thyroid	27	3.4	7.9	5.2	11.5	#	11.4	3.7
C76–C79	CUP	10	5.0	2.0	1.0	3.7		2.4	10.0
C81	Hodgkin lymphoma	2	0.4	4.6	0.6	16.5		0.8	
C82–C85	NHL	25	10.4	2.4	1.6	3.6	#	7.1	8.0
C90	Mult. myeloma	7	3.3	2.1	0.8	4.3		1.8	14.3
C91–C96	Leukaemia	12	3.9	3.1	1.6	5.3	#	3.9	8.3
Others, specified		10	6.1	1.6	0.8	3.0		1.9	20.0
Not observed		0	4.0	0.0	0.0	0.9	#	−1.9	
All further malignancies		868	255.4	3.4	3.2	3.6	#	297.5	8.5

Patients	5167
Median age at next malignancy (years)	74.9
Person-years	20593
Mean observation time (years)	4.0
Median observation time (years)	1.9

The occurrence of further specified malignancy is statistically significant.

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

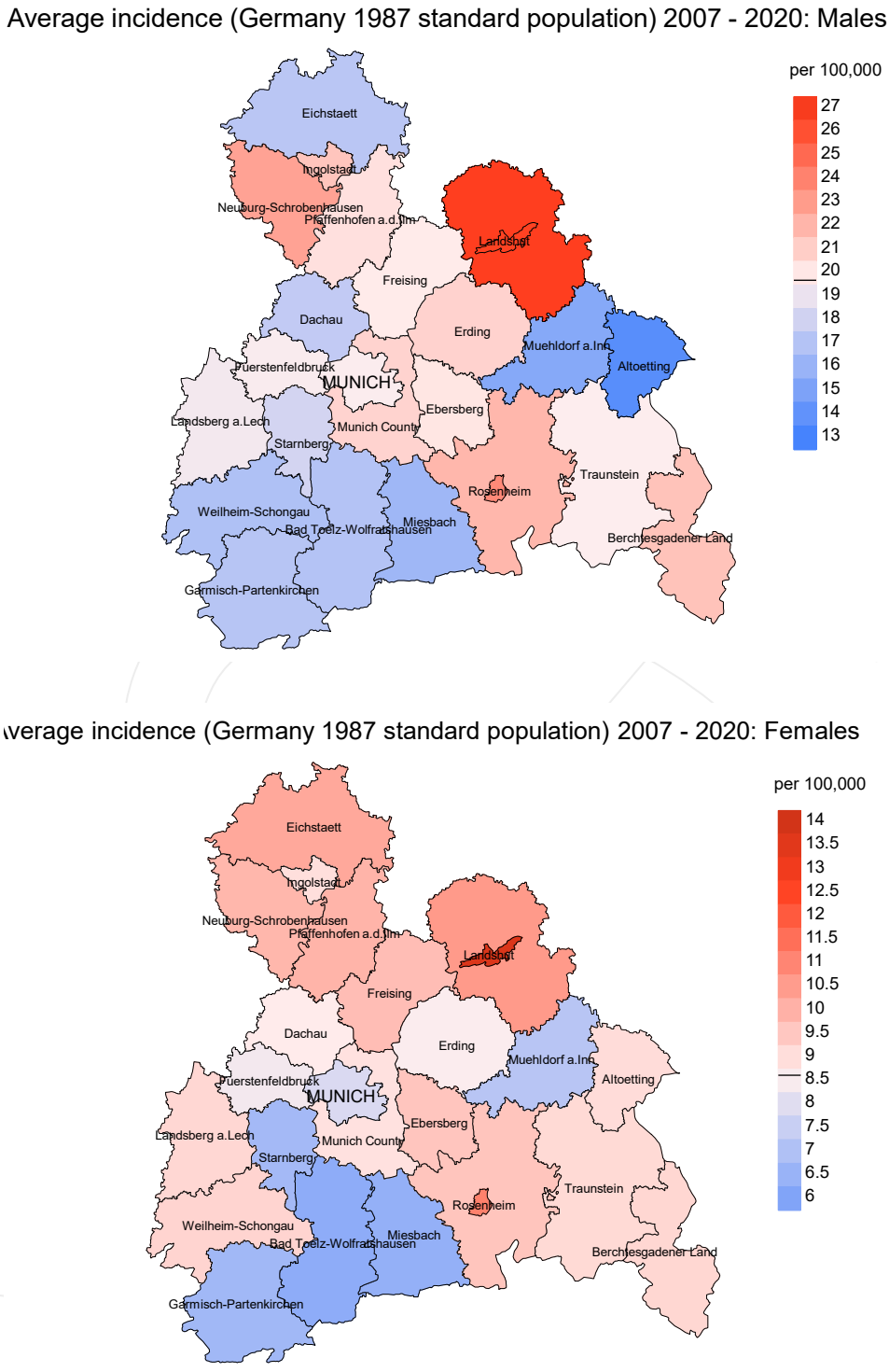


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 19.7/100,000 WS N=6,992, females 8.6/100,000 WS N=3,727).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 114 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 9.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 7.4 and 12.1/100,000.

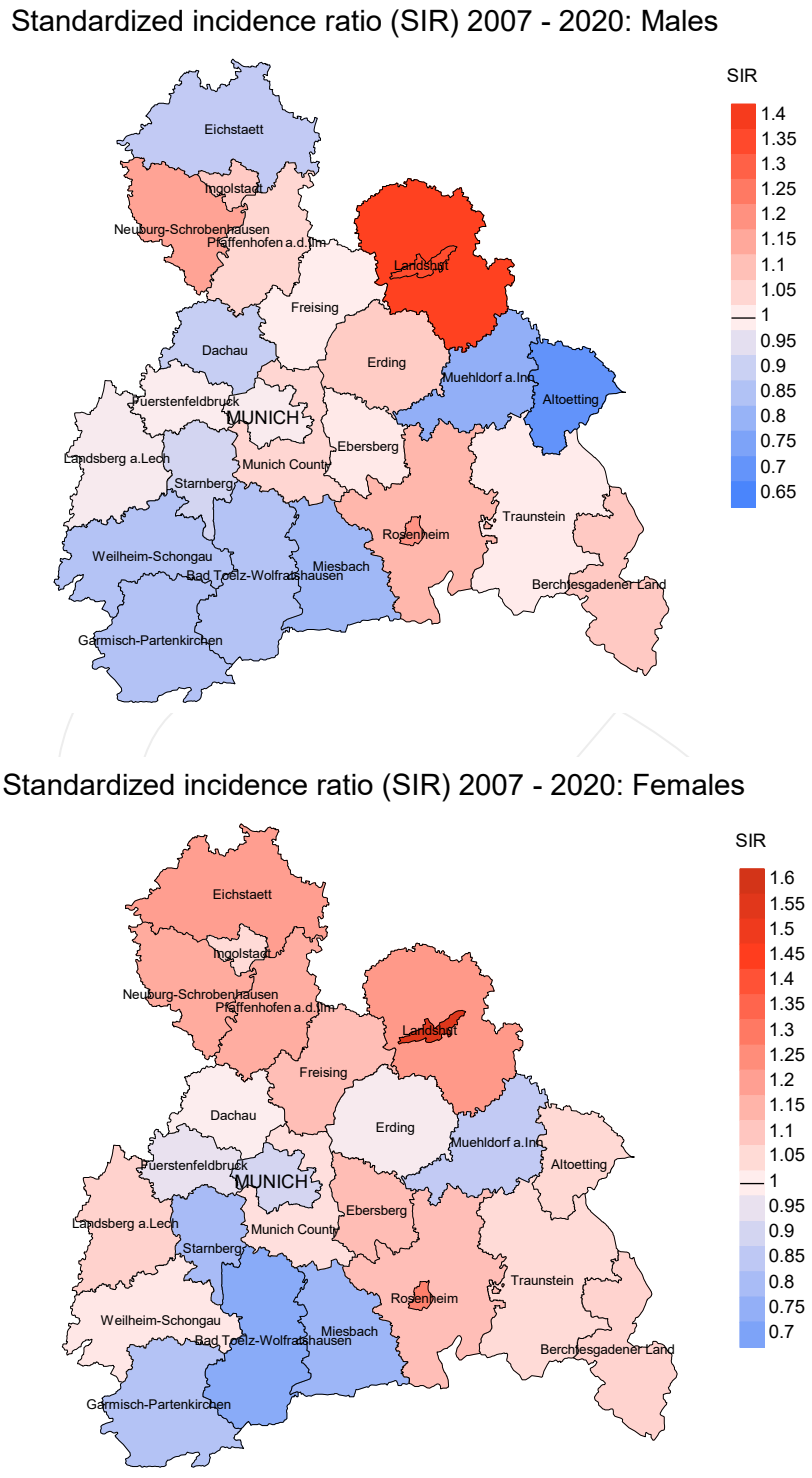


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=6,992, females N=3,727).

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 2020 a total of 114 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 1.12. Though, the value of this parameter may vary with an underlying probability of 99% between 0.87 and 1.42, 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 4.94 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	469	96.6	11.7	337	71.9	93.8
1999	457	95.8	10.9	324	70.9	93.8
2000	425	97.2	12.5	305	71.8	93.4
2001	420	96.7	11.9	310	73.8	97.1
2002	717	98.5	14.8	552	77.0	95.7
2003	713	95.4	11.2	505	70.8	96.0
2004	718	96.7	12.0	483	67.3	94.8
2005	788	96.4	6.1	520	66.0	95.6
2006	763	93.1	6.8	494	64.7	93.5
2007	875	92.6	9.5	564	64.5	94.5
2008	917	97.5	8.7	549	59.9	95.8
2009	919	97.7	8.5	540	58.8	94.8
2010	926	97.8	7.2	515	55.6	95.5
2011	877	97.7	7.2	477	54.4	94.1
2012	883	98.2	7.5	483	54.7	93.2
2013	833	97.7	7.9	416	49.9	94.2
2014	922	97.3	8.1	449	48.7	90.9
2015	827	93.1	10.4	375	45.3	91.7
2016	748	98.8	10.6	344	46.0	89.0
2017	707	99.3	8.8	255	36.1	86.3
2018	633	99.4	5.7	186	29.4	71.5
2019	477	99.2	1.7	88	18.4	81.8
2020	386	99.2	0.3	80	20.7	95.0
1998–2020	16400	96.9	8.7	9151	55.8	93.4

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 4.94 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	469	252	93.7	78	16.6
1999	457	251	96.0	88	19.3
2000	425	260	95.4	76	17.9
2001	420	258	95.7	75	17.9
2002	717	377	97.3	149	20.8
2003	713	411	96.4	140	19.6
2004	718	401	96.8	130	18.1
2005	788	378	95.8	102	12.9
2006	763	420	97.6	105	13.8
2007	875	467	97.6	140	16.0
2008	917	499	99.2	136	14.8
2009	919	511	99.2	153	16.6
2010	926	543	98.5	141	15.2
2011	877	550	98.2	144	16.4
2012	883	572	98.3	154	17.4
2013	833	566	99.1	130	15.6
2014	922	573	98.6	144	15.6
2015	827	664	98.3	143	17.3
2016	748	646	99.5	140	18.7
2017	707	585	95.4	120	17.0
2018	633	513	73.5	78	12.3
2019	477	442	47.1	35	7.3
2020	386	530	89.8	48	12.4
1998–2020	16400	10669	94.0	2649	16.2

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 4.94 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	252	65.1	34.9	79.2
1999	251	74.5	25.5	85.1
2000	260	72.3	27.7	83.9
2001	258	72.5	27.5	85.8
2002	377	71.4	28.6	85.8
2003	411	74.5	25.5	86.4
2004	401	70.3	29.7	82.2
2005	378	74.1	25.9	83.1
2006	420	71.2	28.8	78.5
2007	467	72.6	27.4	81.1
2008	499	71.5	28.5	81.4
2009	511	73.4	26.6	80.9
2010	543	68.9	31.1	77.9
2011	550	69.1	30.9	81.5
2012	572	62.2	37.8	72.2
2013	566	64.5	35.5	75.9
2014	573	66.5	33.5	75.2
2015	664	63.4	36.6	73.4
2016	646	61.5	38.5	74.3
2017	585	58.1	41.9	70.6
2018	513	53.6	46.4	60.2
2019	442	44.8	55.2	66.3
2020	530	44.0	56.0	56.9
1998-2020	10669	65.2	34.8	76.7

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	163	71.4	69.5	76.4	70.5
1999	157	73.7	72.4	83.2	73.0
2000	162	73.5	69.7	78.9	72.5
2001	169	70.5	69.5	76.2	70.2
2002	218	74.3	73.6	74.6	74.7
2003	250	74.6	72.9	79.1	73.9
2004	232	74.3	73.2	77.3	73.6
2005	223	73.6	71.8	79.7	72.4
2006	261	73.9	72.4	77.4	72.9
2007	292	74.7	72.6	79.8	73.6
2008	316	74.9	73.4	78.7	74.4
2009	324	74.4	73.4	79.2	73.2
2010	327	75.5	74.1	78.6	74.6
2011	357	75.9	73.6	82.5	74.9
2012	336	77.3	75.3	80.7	75.7
2013	350	77.5	74.9	81.7	76.5
2014	362	77.1	75.1	82.1	76.1
2015	426	77.5	75.6	83.1	76.3
2016	415	78.2	76.4	81.2	77.4
2017	397	78.7	77.1	82.6	77.9
2018	344	79.2	77.8	81.8	78.6
2019	291	79.2	75.5	81.1	76.4
2020	362	80.3	77.0	82.9	78.8
1998–2020	6734	76.4	74.3	80.7	75.1

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	89	80.8	77.7	82.4	80.9
1999	94	77.3	76.7	80.5	78.7
2000	98	76.7	76.3	77.8	77.4
2001	89	78.9	75.9	84.2	77.8
2002	159	78.5	75.6	82.5	76.9
2003	161	78.8	77.7	80.6	78.4
2004	169	81.1	80.0	83.1	80.7
2005	155	78.2	75.1	83.1	76.0
2006	159	78.9	78.2	81.6	77.8
2007	175	80.0	78.7	82.3	79.9
2008	183	80.4	78.1	85.0	78.4
2009	187	80.9	77.6	85.7	78.6
2010	216	81.0	78.5	85.6	79.5
2011	193	81.9	79.3	87.3	80.4
2012	236	80.1	77.3	84.1	77.6
2013	216	80.5	77.3	84.8	78.8
2014	211	81.6	79.5	86.1	80.2
2015	238	81.2	78.6	86.3	79.6
2016	231	82.5	78.6	86.5	79.9
2017	188	82.8	80.3	87.0	81.1
2018	169	83.5	82.3	85.7	82.6
2019	151	80.9	78.5	83.6	78.6
2020	168	84.8	80.0	86.4	81.3
1998–2020	3935	80.7	78.4	84.6	79.4

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	114	10.3	0.40	6.0	0.37	9.3	0.40	12.4	0.43
1999	118	10.5	0.43	6.0	0.39	9.5	0.43	13.3	0.48
2000	117	10.3	0.43	5.8	0.39	9.2	0.43	12.7	0.49
2001	125	10.8	0.52	6.1	0.50	9.4	0.52	12.3	0.54
2002	160	8.6	0.37	4.5	0.34	7.3	0.38	10.2	0.41
2003	191	10.2	0.44	5.4	0.39	8.4	0.43	11.7	0.49
2004	168	8.9	0.38	4.5	0.33	7.2	0.37	9.9	0.42
2005	162	8.6	0.33	4.3	0.30	6.7	0.32	9.1	0.36
2006	192	10.0	0.42	5.0	0.37	7.7	0.40	10.4	0.43
2007	222	10.0	0.40	4.9	0.36	7.7	0.39	10.5	0.43
2008	224	10.1	0.39	4.7	0.33	7.4	0.37	10.4	0.42
2009	242	10.8	0.43	5.0	0.37	7.8	0.40	10.7	0.44
2010	226	10.0	0.39	4.5	0.34	7.0	0.37	9.9	0.41
2011	257	11.5	0.46	5.1	0.40	8.0	0.43	10.8	0.47
2012	213	9.4	0.38	3.8	0.30	6.2	0.34	8.7	0.38
2013	236	10.3	0.44	4.3	0.37	6.8	0.40	9.6	0.45
2014	236	10.1	0.40	4.2	0.33	6.7	0.36	9.2	0.40
2015	285	12.0	0.52	4.9	0.43	7.7	0.46	10.8	0.52
2016	275	11.4	0.56	4.7	0.48	7.4	0.51	10.2	0.55
2017	238	9.9	0.53	3.8	0.42	6.1	0.46	8.7	0.52
2018	191	7.8	0.44	3.1	0.34	4.9	0.38	6.8	0.42
2019	136	5.6	0.44	2.4	0.37	3.6	0.39	4.9	0.43
2020	159	6.5	0.64	2.5	0.50	4.1	0.56	5.6	0.62
1998-2020	4487	9.6	0.44	4.4	0.37	6.9	0.40	9.5	0.45

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	50	4.3	0.28	1.5	0.21	2.4	0.23	3.3	0.26
1999	69	5.8	0.40	2.2	0.30	3.5	0.34	4.8	0.39
2000	71	5.9	0.48	2.2	0.38	3.5	0.42	4.9	0.46
2001	62	5.1	0.36	1.9	0.29	3.0	0.31	4.2	0.35
2002	109	5.6	0.38	2.1	0.31	3.3	0.34	4.5	0.37
2003	115	5.8	0.43	2.1	0.35	3.3	0.38	4.6	0.42
2004	114	5.8	0.42	1.9	0.30	3.0	0.34	4.3	0.38
2005	119	6.0	0.43	2.3	0.36	3.4	0.38	4.6	0.39
2006	107	5.3	0.38	1.8	0.27	2.9	0.31	4.0	0.34
2007	118	5.1	0.39	1.5	0.26	2.6	0.32	3.9	0.37
2008	133	5.7	0.41	1.9	0.29	3.0	0.32	4.2	0.36
2009	135	5.8	0.40	2.0	0.30	3.1	0.33	4.3	0.36
2010	148	6.3	0.45	2.0	0.35	3.2	0.38	4.8	0.44
2011	123	5.3	0.40	1.7	0.27	2.7	0.32	3.8	0.37
2012	143	6.1	0.48	1.9	0.38	3.1	0.41	4.5	0.45
2013	129	5.4	0.45	1.7	0.33	2.7	0.37	3.9	0.41
2014	146	6.1	0.46	1.9	0.33	3.0	0.37	4.3	0.43
2015	136	5.6	0.52	1.7	0.37	2.7	0.42	3.9	0.48
2016	122	5.0	0.51	1.6	0.38	2.4	0.42	3.5	0.47
2017	102	4.1	0.42	1.2	0.31	1.9	0.35	2.7	0.37
2018	85	3.4	0.45	0.8	0.28	1.4	0.32	2.1	0.37
2019	62	2.5	0.39	0.7	0.25	1.1	0.29	1.7	0.34
2020	74	3.0	0.56	0.9	0.34	1.4	0.40	1.9	0.44
1998-2020	2472	5.1	0.43	1.7	0.31	2.6	0.35	3.7	0.39

Table 12

Age distribution of age at death (cancer-related) for period 2007-2020
(**incl. multiple malignancies**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9	3	0.1	0.1	3	0.1	0.1			0.0
10-14	2	0.0	0.1			0.1	2	0.1	0.1
15-19	1	0.0	0.1	1	0.0	0.1			0.1
20-24	2	0.0	0.2	1	0.0	0.2	1	0.1	0.2
25-29	3	0.1	0.2	2	0.1	0.2	1	0.1	0.2
30-34	2	0.0	0.3	2	0.1	0.3			0.2
35-39	9	0.2	0.5	5	0.2	0.4	4	0.2	0.5
40-44	23	0.5	0.9	15	0.5	0.9	8	0.5	1.0
45-49	51	1.1	2.0	40	1.3	2.2	11	0.7	1.6
50-54	129	2.7	4.7	93	3.0	5.2	36	2.2	3.8
55-59	213	4.4	9.1	163	5.2	10.4	50	3.0	6.8
60-64	356	7.4	16.6	283	9.0	19.4	73	4.4	11.2
65-69	536	11.2	27.7	361	11.5	30.9	175	10.6	21.8
70-74	805	16.8	44.5	589	18.8	49.6	216	13.0	34.8
75-79	969	20.2	64.7	632	20.1	69.7	337	20.4	55.2
80-84	920	19.2	83.9	539	17.2	86.9	381	23.0	78.2
85+	772	16.1	100.0	411	13.1	100.0	361	21.8	100.0
All ages	4796	100.0		3140	100.0		1656	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers for period 2007-2020
(**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			10.7	
10-14		2			0.1	0.40		8.7
15-19	1		0.1	0.25			2.1	
20-24	1	1	0.0	0.14	0.1	0.25	1.4	2.3
25-29	2	1	0.1	0.17	0.0	0.13	2.2	1.0
30-34	2		0.1	0.09			1.4	
35-39	5	4	0.2	0.05	0.2	0.11	1.9	1.0
40-44	15	8	0.6	0.10	0.3	0.13	2.5	0.9
45-49	40	11	1.5	0.14	0.4	0.12	2.8	0.7
50-54	93	36	3.6	0.19	1.4	0.21	3.5	1.4
55-59	163	50	7.7	0.25	2.3	0.22	3.7	1.3
60-64	283	73	16.0	0.36	3.8	0.24	4.4	1.5
65-69	361	175	22.1	0.35	9.7	0.33	3.9	2.5
70-74	589	216	39.3	0.48	12.6	0.38	5.0	2.5
75-79	632	337	52.2	0.58	22.4	0.48	5.1	3.4
80-84	539	381	74.4	0.78	35.8	0.71	5.1	4.1
85+	411	361	88.0	1.06	34.6	0.86	4.5	3.0
All ages	3140	1656					4.5	2.7
Mortality								
Raw			9.6	0.45	4.9	0.44		
WS			4.1	0.37	1.5	0.32		
ES			6.4	0.41	2.4	0.36		
BRD-S			8.9	0.45	3.5	0.40		
PYLL-70								
per 100,000			30.0		10.8			
ES			26.0		9.1			
AYLL-70			8.9		8.4			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	20	0.7	10	50.0	2	10.0	8	40.0
C09–C10	Oropharynx	35	1.2	17	48.6	2	5.7	16	45.7
C12–C13	Hypopharynx	13	0.5	5	38.5	1	7.7	7	53.8
C15	Oesophagus	42	1.5	12	28.6	1	2.4	29	69.0
C16	Stomach	74	2.6	28	37.8	8	10.8	38	51.4
C17	Small intestine	13	0.5	7	53.8	1	7.7	5	38.5
C18	Colon	226	7.8	99	43.8	35	15.5	92	40.7
C19–C20	Rectum	95	3.3	33	34.7	21	22.1	41	43.2
C21	Anus/canal	6	0.2	3	50.0	1	16.7	2	33.3
C22	Liver	57	2.0	9	15.8	10	17.5	38	66.7
C23–C24	Bile	19	0.7	2	10.5	2	10.5	15	78.9
C25	Pancreas	80	2.8	3	3.8	12	15.0	65	81.3
C32	Larynx	33	1.1	20	60.6	2	6.1	11	33.3
C33–C34	Lung	288	10.0	55	19.1	32	11.1	201	69.8
C38,C45	Mesothelioma	13	0.5	1	7.7	1	7.7	11	84.6
C43	Malign. melanoma	86	3.0	53	61.6	6	7.0	27	31.4
C44	Skin others	130	4.5	52	40.0	5	3.8	73	56.2
C46,C49	Soft tissue	23	0.8	9	39.1	2	8.7	12	52.2
C48	Peritoneal	6	0.2	2	33.3			4	66.7
C60	Penis	5	0.2	1	20.0	1	20.0	3	60.0
C61	Prostate	605	21.0	267	44.1	90	14.9	248	41.0
C62	Testis	17	0.6	16	94.1			1	5.9
C64	Kidney	163	5.6	16	9.8	46	28.2	101	62.0
C65	Renal pelvis	59	2.0	18	30.5	30	50.8	11	18.6
C66	Ureter	52	1.8	28	53.8	14	26.9	10	19.2
C67	Bladder	440	15.3	216	49.1	69	15.7	155	35.2
C68	Urethra	12	0.4	6	50.0	1	8.3	5	41.7
C68	Urinary org.	7	0.2	3	42.9	1	14.3	3	42.9
C69	Eye melanoma	5	0.2	4	80.0			1	20.0
C70–C72	CNS cancer	30	1.0	7	23.3	2	6.7	21	70.0
C73	Thyroid	25	0.9	13	52.0			12	48.0
C76–C79	CUP	37	1.3	16	43.2	6	16.2	15	40.5
C82–C85	NHL	90	3.1	29	32.2	13	14.4	48	53.3
C90	Mult. myeloma	29	1.0	13	44.8	3	10.3	13	44.8
C91–C96	Leukaemia	25	0.9	3	12.0	1	4.0	21	84.0
Others, specified		25	0.9	14	56.0	2	8.0	9	36.0
All further malignancies		2885	100.0	1090	37.8	423	14.7	1372	47.6

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 14b

Further malignancies in deaths in period 1998-2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06	Oral cavity	3	0.2	1	33.3			2	66.7
C07-C08	Salivary gland	3	0.2	3	100.0				
C09-C10	Oropharynx	2	0.2	1	50.0			1	50.0
C15	Oesophagus	6	0.5	1	16.7	1	16.7	4	66.7
C16	Stomach	34	2.8	9	26.5	8	23.5	17	50.0
C17	Small intestine	4	0.3	2	50.0			2	50.0
C18	Colon	75	6.1	29	38.7	10	13.3	36	48.0
C19-C20	Rectum	36	2.9	15	41.7	5	13.9	16	44.4
C21	Anus/canal	2	0.2			1	50.0	1	50.0
C22	Liver	12	1.0	2	16.7	4	33.3	6	50.0
C23-C24	Bile	18	1.5	1	5.6	4	22.2	13	72.2
C25	Pancreas	52	4.3	4	7.7	7	13.5	41	78.8
C26	GI cancer	2	0.2					2	100.0
C33-C34	Lung	102	8.4	14	13.7	15	14.7	73	71.6
C38,C45	Mesothelioma	2	0.2					2	100.0
C43	Malign. melanoma	27	2.2	16	59.3	3	11.1	8	29.6
C44	Skin others	47	3.8	27	57.4	4	8.5	16	34.0
C46,C49	Soft tissue	10	0.8	4	40.0	1	10.0	5	50.0
C48	Peritoneal	3	0.2	1	33.3	1	33.3	1	33.3
C50	Breast	252	20.6	146	57.9	18	7.1	88	34.9
C51	Vulva	7	0.6	4	57.1			3	42.9
C53	Cervix uteri	36	2.9	27	75.0	1	2.8	8	22.2
C54	Corpus uteri	48	3.9	32	66.7	5	10.4	11	22.9
C55,C57	Fem. genitals un	7	0.6	5	71.4			2	28.6
C56	Ovary	40	3.3	16	40.0	6	15.0	18	45.0
C64	Kidney	64	5.2	3	4.7	17	26.6	44	68.8
C65	Renal pelvis	25	2.0	8	32.0	11	44.0	6	24.0
C66	Ureter	10	0.8	5	50.0	3	30.0	2	20.0
C67	Bladder	145	11.9	50	34.5	23	15.9	72	49.7
C68	Urethra	2	0.2	2	100.0				
C68	Urinary org.	4	0.3	3	75.0			1	25.0
C69	Eye melanoma	2	0.2	1	50.0	1	50.0		
C70-C72	CNS cancer	11	0.9			2	18.2	9	81.8
C73	Thyroid	33	2.7	14	42.4	2	6.1	17	51.5
C74-C80	Cancer others	3	0.2	1	33.3	1	33.3	1	33.3
C76-C79	CUP	23	1.9	4	17.4	2	8.7	17	73.9
C82-C85	NHL	41	3.4	17	41.5	8	19.5	16	39.0
C90	Mult. myeloma	11	0.9	2	18.2	1	9.1	8	72.7
C91-C96	Leukaemia	10	0.8	2	20.0	3	30.0	5	50.0
Others, specified		7	0.6	3	42.9	1	14.3	3	42.9

Table 14b

Further malignancies in deaths in period 1998–2020
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
All further malignancies	1221	100.0	475	38.9	169	13.8	577	47.3

Further malignancies with number of cases 1 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 2007-2020
(**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			11.1	
10-14								
15-19	1		0.1	0.25			2.2	
20-24	1	1	0.0	0.17	0.1	0.25	1.5	2.4
25-29	2	1	0.1	0.18	0.0	0.13	2.4	1.1
30-34	2		0.1	0.10			1.4	
35-39	4	4	0.2	0.05	0.2	0.12	1.6	1.1
40-44	12	7	0.5	0.09	0.3	0.13	2.1	0.9
45-49	36	9	1.3	0.13	0.3	0.11	2.8	0.6
50-54	68	25	2.7	0.17	1.0	0.17	2.9	1.1
55-59	119	38	5.6	0.24	1.7	0.22	3.1	1.2
60-64	213	46	12.0	0.35	2.4	0.21	4.0	1.1
65-69	256	137	15.7	0.37	7.6	0.34	3.5	2.5
70-74	389	149	25.9	0.50	8.7	0.37	4.3	2.2
75-79	390	240	32.2	0.61	16.0	0.49	4.3	3.2
80-84	328	274	45.3	0.87	25.7	0.77	4.4	3.8
85+	238	280	51.0	1.16	26.9	0.91	3.7	3.0
All ages	2062	1211					3.9	2.5
Mortality								
Raw			6.3	0.43	3.6	0.44		
WS			2.8	0.35	1.1	0.30		
ES			4.3	0.39	1.8	0.35		
BRD-S			5.9	0.44	2.5	0.39		
PYLL-70								
per 100,000			23.1		7.8			
ES			20.1		6.5			
AYLL-70			9.3		8.3			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**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	3		0.2	0.33			11.1	
10-14								
15-19	1		0.1	0.25			2.2	
20-24	1	1	0.0	0.17	0.1	0.25	1.5	2.5
25-29	2	1	0.1	0.18	0.0	0.13	2.4	1.1
30-34	2		0.1	0.11			1.5	
35-39	4	2	0.2	0.05	0.1	0.06	1.6	0.5
40-44	12	5	0.5	0.09	0.2	0.11	2.2	0.7
45-49	32	8	1.2	0.13	0.3	0.11	2.5	0.6
50-54	59	22	2.3	0.16	0.9	0.16	2.6	1.0
55-59	100	34	4.7	0.23	1.6	0.22	2.6	1.1
60-64	179	35	10.1	0.36	1.8	0.18	3.4	0.9
65-69	193	117	11.8	0.34	6.5	0.34	2.7	2.2
70-74	282	105	18.8	0.46	6.1	0.31	3.2	1.6
75-79	257	174	21.2	0.49	11.6	0.41	3.0	2.4
80-84	211	208	29.1	0.65	19.5	0.66	3.0	3.0
85+	141	205	30.2	0.76	19.7	0.71	2.4	2.3
All ages	1479	917					2.9	1.9
Mortality								
Raw			4.5	0.37	2.7	0.38		
WS			2.1	0.31	0.9	0.26		
ES			3.2	0.33	1.4	0.30		
BRD-S			4.2	0.37	1.9	0.34		
PYLL-70								
per 100,000			20.0		6.5			
ES			17.5		5.3			
AYLL-70			9.8		8.2			

* See corresponding tables with multiple malignancies.

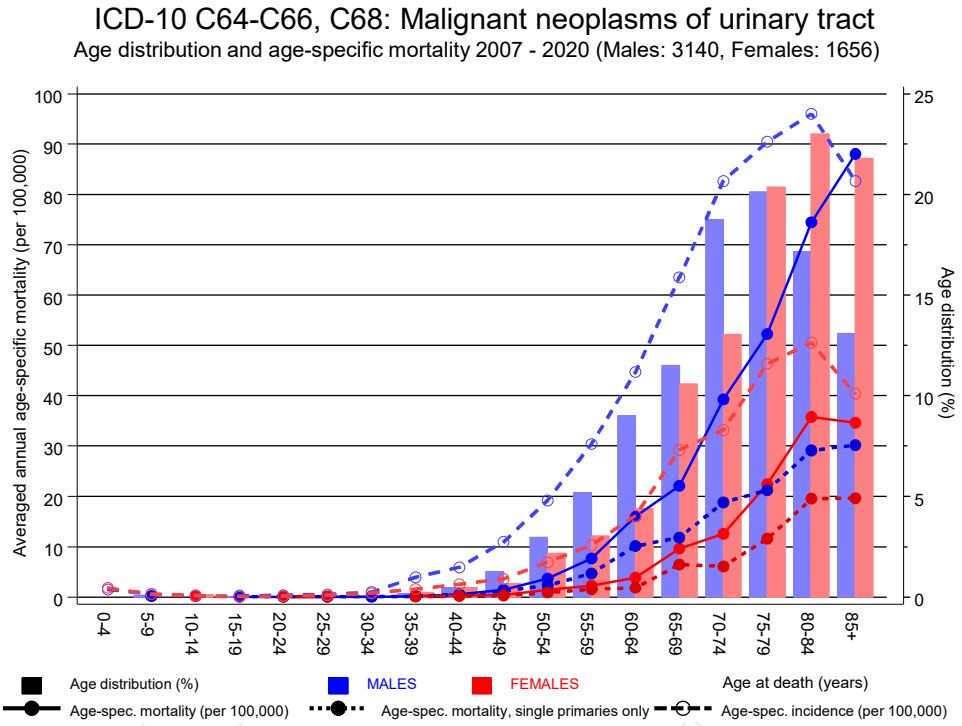


Figure 17. Distribution of age at death (bars; males: mean=68.6 yrs, median=69.8 yrs; females: mean=71.6 yrs, median=73.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

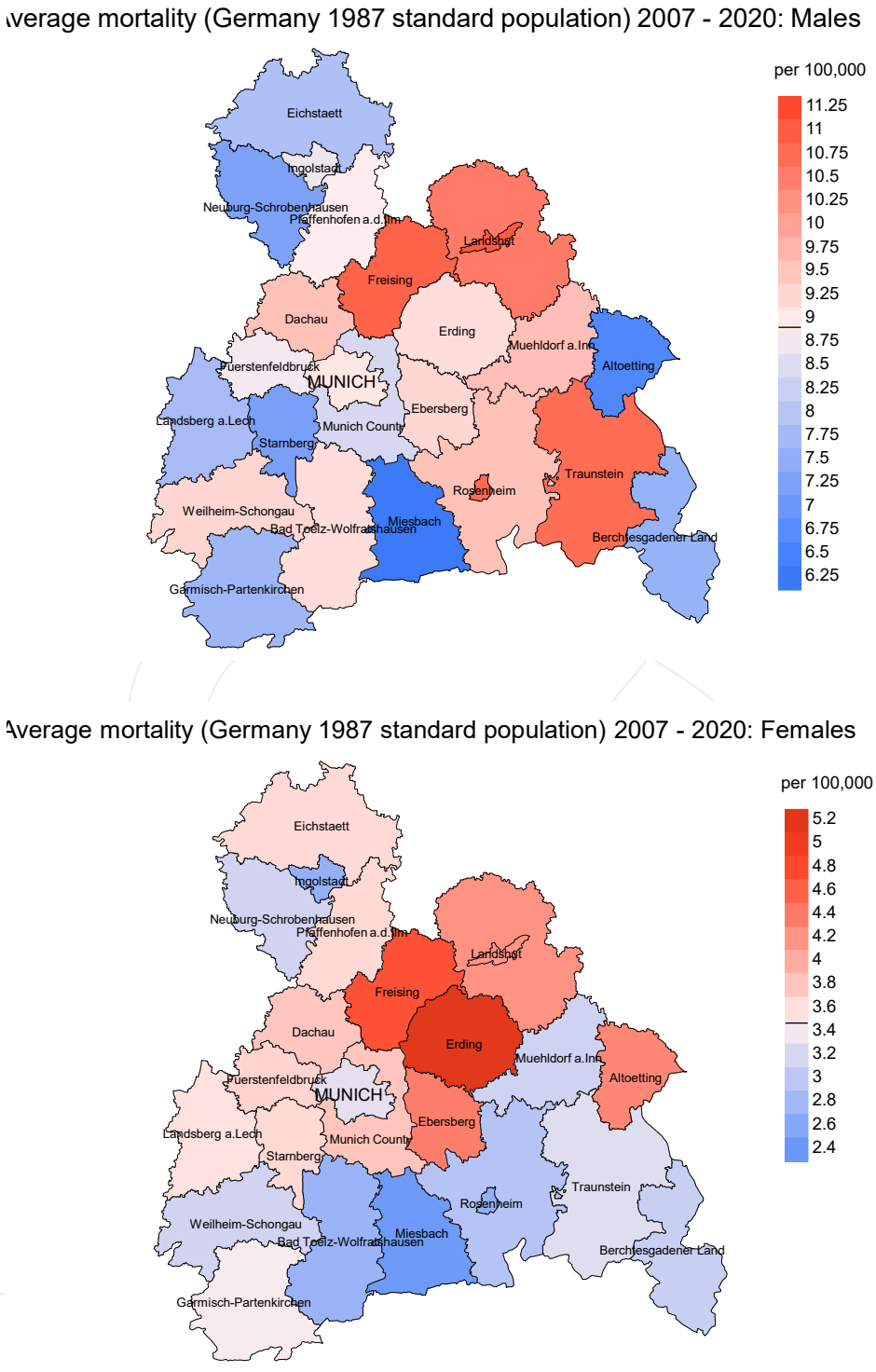
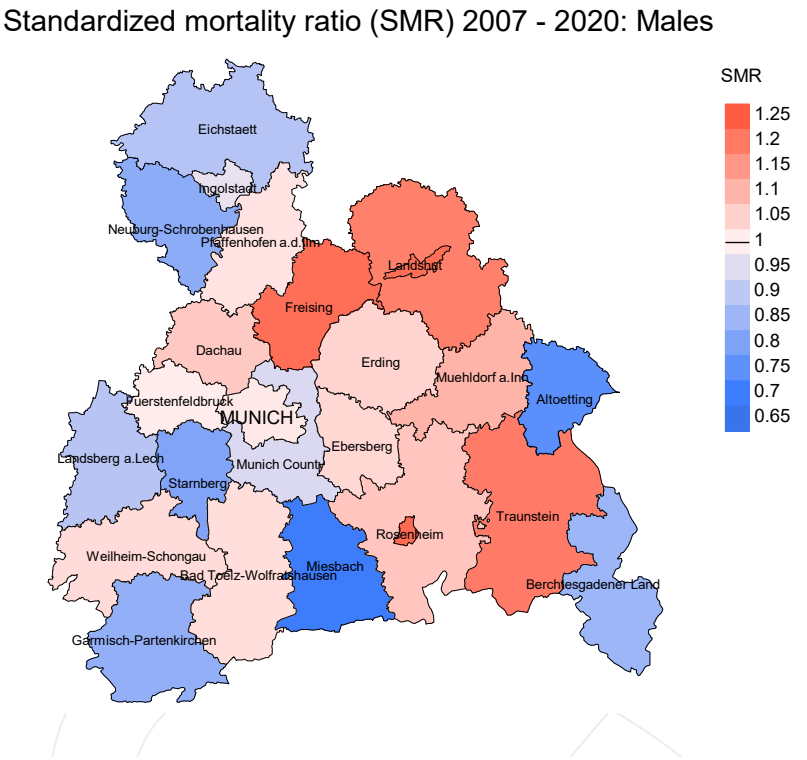


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 8.9/100,000 WS N=3,140, females 3.5/100,000 WS N=1,656).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 59 women died from urinary tract cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 4.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.0 and 6.1/100,000.



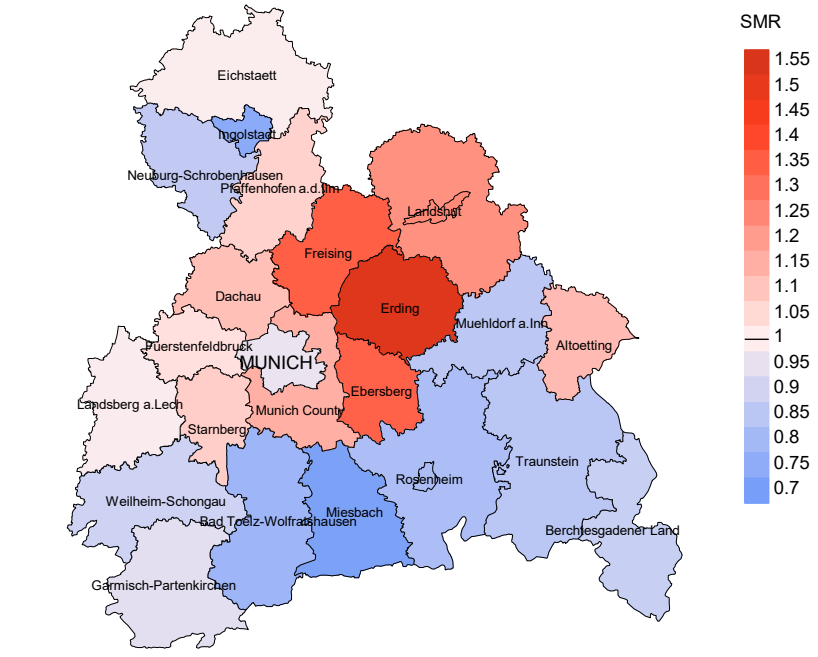


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,140, females N=1,656).

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 2020 a total of 59 women died from urinary tract cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.34. Though, the value of this parameter may vary with an underlying probability of 99% between 0.93 and 1.85, 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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