Munich Cancer Registry

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ICD-10 C60-C68: Urologic cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	92,022
Diseases	96,715
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/bC6068E-ICD-10-C60-C68-Urologic-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
C60.-	Malignant neoplasm of penis
C61	Malignant neoplasm of prostate
C62.-	Malignant neoplasm of testis
C63.-	Malignant neoplasm of other and unspecified male genital organs
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	2504	249	9.9	11.8	15.5	73.7	96.8
1999	2420	193	8.0	11.2	15.3	72.2	96.9
2000	2581	246	9.5	11.4	15.1	69.2	96.8
2001	2672	199	7.4	11.5	15.0	66.6	96.5
2002	4980	507	10.2	11.9	14.8	68.4	97.0 #
2003	4910	392	8.0	12.1	14.6	65.3	96.5
2004	4863	388	8.0	12.2	14.2	61.5	96.6
2005	4846	311	6.4	12.4	13.8	58.7	95.6
2006	4764	295	6.2	12.6	13.4	57.5	92.5
2007	5552	380	6.8	12.8	12.9	54.5	90.4 #
2008	5258	347	6.6	13.1	12.4	54.7	97.6
2009	5056	310	6.1	13.6	11.8	52.1	98.0
2010	4961	326	6.6	13.9	11.2	49.1	97.3
2011	5111	309	6.0	14.2	10.7	46.7	97.7
2012	5238	288	5.5	14.5	10.2	43.4	97.6
2013	4951	278	5.6	14.8	9.6	41.7	97.0
2014	4944	293	5.9	15.0	9.1	39.2	95.9
2015	4274	319	7.5	15.3	8.5	39.4	93.5
2016	4191	299	7.1	15.6	8.0	35.8	99.3
2017	4084	285	7.0	16.0	7.2	31.4	99.6
2018	3682	139	3.8	16.3	6.4	22.1	99.4
2019	2930	21	0.7	16.4	5.2	16.7	99.5
2020	1943	2	0.1	16.5	4.3	13.5	99.7 ##
1998-2020	96715	6376	6.6	16.5	15.5	49.6	96.6

96,715 cases diagnosed 1998-2020 are related to a total of 92,022 patients. Currently, in 25,274 (27.5 %) of these 92,022 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 19,415 / 4,347 / 1,512 (21.1 % / 4.7 % / 1.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 3,682 cases has been diagnosed, of which 16.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.4 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	2227	88.9	211	9.5	11.3	15.7	73.2	96.7
1999	2176	89.9	170	7.8	10.7	15.6	71.8	96.9
2000	2335	90.5	210	9.0	10.8	15.4	68.1	96.6
2001	2391	89.5	162	6.8	10.9	15.3	65.0	96.5
2002	4516	90.7	423	9.4	11.3	15.1	66.9	96.9 #
2003	4482	91.3	328	7.3	11.5	14.8	64.1	96.5
2004	4419	90.9	313	7.1	11.6	14.4	60.4	96.4
2005	4394	90.7	257	5.8	11.7	13.9	57.4	95.5
2006	4297	90.2	239	5.6	11.9	13.5	55.9	92.3
2007	5049	90.9	312	6.2	12.1	13.0	53.0	90.0 #
2008	4739	90.1	279	5.9	12.5	12.5	53.1	97.6
2009	4534	89.7	261	5.8	12.9	11.9	50.3	98.0
2010	4433	89.4	257	5.8	13.2	11.2	47.3	97.4
2011	4609	90.2	270	5.9	13.6	10.6	45.2	97.7
2012	4747	90.6	230	4.8	13.8	10.1	41.4	97.5
2013	4459	90.1	218	4.9	14.1	9.6	40.0	96.9
2014	4435	89.7	238	5.4	14.3	9.0	37.3	95.7
2015	3799	88.9	256	6.7	14.6	8.5	37.2	93.5
2016	3756	89.6	241	6.4	14.9	8.0	33.7	99.2
2017	3636	89.0	227	6.2	15.3	7.2	29.0	99.6
2018	3331	90.5	119	3.6	15.6	6.3	20.1	99.5
2019	2659	90.8	12	0.5	15.7	5.3	15.3	99.4
2020	1733	89.2	2	0.1	15.8	4.5	11.5	99.7 ##
1998-2020	87156	90.1	5235	6.0	15.8	15.7	48.1	96.6

87,156 cases diagnosed 1998-2020 are related to a total of 82,820 patients. Currently, in 22,286 (26.9 %) of these 82,820 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 17,178 / 3,757 / 1,351 (20.7 % / 4.5 % / 1.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 3,331 cases has been diagnosed, of which 15.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	11.1	38	13.7	15.9	13.2	77.6	97.1	
1999	244	10.1	23	9.4	15.5	13.1	75.4	96.3	
2000	246	9.5	36	14.6	16.4	12.9	79.7	98.8	
2001	281	10.5	37	13.2	16.6	12.8	80.4	96.8	
2002	464	9.3	84	18.1	17.7	12.7	82.5	98.1	#
2003	428	8.7	64	15.0	17.5	12.7	77.6	97.2	
2004	444	9.1	75	16.9	18.2	12.5	72.5	98.0	
2005	452	9.3	54	11.9	18.6	12.4	71.9	96.0	
2006	467	9.8	56	12.0	18.6	12.1	72.2	94.2	
2007	503	9.1	68	13.5	18.6	11.8	70.2	95.0	#
2008	519	9.9	68	13.1	19.1	11.7	69.2	97.7	
2009	522	10.3	49	9.4	19.5	11.5	67.2	98.5	
2010	528	10.6	69	13.1	20.2	11.0	64.8	97.2	
2011	502	9.8	39	7.8	20.5	11.0	60.2	98.0	
2012	491	9.4	58	11.8	20.8	10.6	62.3	98.4	
2013	492	9.9	60	12.2	21.1	10.1	57.3	97.8	
2014	509	10.3	55	10.8	21.4	9.7	56.2	97.2	
2015	475	11.1	63	13.3	21.8	8.9	57.3	93.7	
2016	435	10.4	58	13.3	22.1	8.7	53.8	99.5	
2017	448	11.0	58	12.9	22.4	7.8	50.4	99.6	
2018	351	9.5	20	5.7	22.8	7.3	41.6	98.3	
2019	271	9.2	9	3.3	23.0	4.5	30.3	100.0	
2020	210	10.8			23.1	2.5	29.5	100.0	##
1998-2020	9559	9.9	1141	11.9	23.1	13.2	64.1	97.4	

9,559 cases diagnosed 1998-2020 are related to a total of 9,202 patients. Currently, in 2,988 (32.5 %) of these 9,202 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,237 / 590 / 161 (24.3 % / 6.4 % / 1.7 %) 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 351 cases has been diagnosed, of which 22.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	2227	277	201.0	23.5	122.9	10.4	183.4	15.4	243.2	19.8
1999	2176	244	194.4	20.6	116.8	9.8	173.2	14.1	224.8	17.6
2000	2335	246	205.0	20.5	121.9	8.5	181.2	12.9	237.5	16.9
2001	2391	281	206.3	23.1	121.4	9.9	180.2	14.9	233.6	19.3
2002	4516	464	242.4	23.7	135.9	10.0	203.2	14.8	264.5	19.3
2003	4482	428	239.1	21.7	133.3	8.9	196.9	13.2	253.7	17.3
2004	4419	444	234.9	22.5	128.8	9.2	188.7	13.8	242.2	18.1
2005	4394	452	232.0	22.7	124.6	9.6	182.9	14.0	234.4	18.1
2006	4297	467	224.4	23.2	118.8	10.2	174.3	14.7	223.9	18.6
2007	5049	503	227.9	21.8	121.6	8.9	177.0	13.1	224.6	17.2
2008	4739	519	212.9	22.4	109.1	9.5	160.6	13.8	206.2	17.9
2009	4534	522	203.1	22.4	104.2	9.2	151.8	13.4	193.5	17.7
2010	4433	528	196.7	22.6	100.2	8.3	146.2	12.8	185.4	16.8
2011	4609	502	206.0	21.5	102.2	9.4	149.6	13.2	191.3	16.6
2012	4747	491	209.1	20.8	103.3	7.8	150.7	11.9	193.1	16.0
2013	4459	492	193.7	20.6	95.4	8.2	138.7	12.0	177.2	15.5
2014	4435	509	190.2	21.1	93.7	8.4	136.4	12.4	172.7	16.0
2015	3799	475	159.7	19.5	77.0	7.8	113.0	11.2	145.4	14.4
2016	3756	435	156.3	17.7	75.3	6.9	110.4	10.1	141.2	12.9
2017	3636	448	150.7	18.2	71.3	6.5	104.6	9.8	135.0	13.1
2018	3331	351	136.8	14.1	66.3	5.2	96.3	7.8	122.5	10.3
2019	2659	271	109.2	10.9	52.9	4.1	76.8	6.2	98.0	8.2
2020	1733	210	71.2	8.5	34.4	3.5	49.8	5.1	63.9	6.5
1998–2020	87156	9559	187.4	19.8	96.5	8.0	140.7	11.8	179.3	15.2

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	2504	68.3	13.4	1.3	99.8	53.3	61.6	69.6	77.4	84.3
1999	2420	67.8	13.0	1.1	99.5	54.1	60.8	69.0	76.2	83.7
2000	2581	68.4	12.8	0.3	99.7	55.0	61.8	69.4	76.9	83.6
2001	2672	68.2	12.6	1.9	100	54.5	61.8	69.0	76.6	82.5
2002	4980	69.2	12.4	0.1	102	55.9	62.7	69.9	77.3	83.8
2003	4910	68.8	12.3	0.4	103	55.5	62.9	69.1	76.5	82.9
2004	4863	68.5	12.5	0.0	100	55.4	62.7	68.9	76.6	82.9
2005	4846	68.6	12.3	0.7	101	55.1	62.9	69.1	76.6	82.9
2006	4764	69.0	12.3	0.2	101	55.5	63.7	69.4	76.6	83.3
2007	5552	68.7	12.7	0.1	101	54.5	63.4	69.5	76.5	83.3
2008	5258	69.4	12.1	0.2	101	55.2	64.1	70.2	77.0	83.4
2009	5056	69.0	12.5	0.5	105	54.1	63.4	70.2	76.8	83.3
2010	4961	69.4	12.6	5.4	102	54.5	63.3	70.6	77.3	84.1
2011	5111	69.6	12.7	0.5	109	54.1	64.0	71.0	77.2	84.0
2012	5238	69.7	12.2	1.3	103	55.4	64.2	71.3	77.3	83.2
2013	4951	69.5	12.9	0.3	103	53.7	63.6	71.5	77.3	83.6
2014	4944	69.6	12.6	1.2	107	54.7	63.4	71.5	77.3	83.8
2015	4274	70.2	13.0	0.5	103	54.3	63.7	72.3	78.3	84.5
2016	4191	70.3	12.6	2.4	103	54.6	63.9	72.3	78.4	84.4
2017	4084	70.7	12.6	0.9	102	55.4	64.4	72.9	78.7	84.3
2018	3682	69.7	12.8	2.8	98.1	54.1	63.2	71.8	78.3	83.4
2019	2930	69.6	12.0	16.6	96.6	55.1	63.2	71.5	77.9	82.4
2020	1943	69.7	12.1	17.3	95.3	55.1	63.3	71.6	78.4	82.6
1998–2020	96715	69.3	12.6	0.0	109	54.8	63.2	70.5	77.3	83.5

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	2227	68.0	13.4	1.3	99.8	52.9	61.4	69.3	77.0	83.9
1999	2176	67.6	12.9	2.3	99.5	54.3	60.8	68.7	75.7	83.4
2000	2335	68.0	12.8	0.3	99.7	54.4	61.6	69.0	76.3	82.8
2001	2391	67.8	12.4	1.9	100	54.5	61.7	68.6	75.9	81.6
2002	4516	68.9	12.3	0.1	102	55.7	62.6	69.4	76.6	83.0
2003	4482	68.4	12.1	0.4	101	55.4	62.7	68.8	75.9	82.2
2004	4419	68.1	12.4	0.0	100	55.3	62.5	68.5	76.1	82.1
2005	4394	68.3	12.0	0.7	101	55.3	62.8	68.8	76.0	82.3
2006	4297	68.7	12.0	0.8	101	55.8	63.7	69.2	76.2	82.6
2007	5049	68.3	12.5	0.1	101	54.4	63.2	69.1	76.0	82.3
2008	4739	69.1	11.9	0.2	101	55.2	64.0	70.0	76.4	82.9
2009	4534	68.7	12.3	0.5	105	54.0	63.2	69.9	76.1	82.6
2010	4433	68.8	12.4	5.4	102	54.2	63.0	70.2	76.5	83.1
2011	4609	69.4	12.3	1.5	109	54.2	63.9	70.8	76.6	83.5
2012	4747	69.3	12.2	1.3	103	55.1	63.9	71.1	76.7	82.7
2013	4459	69.2	12.7	0.9	103	53.7	63.3	71.2	76.9	83.1
2014	4435	69.3	12.5	1.2	104	54.6	63.3	71.2	77.0	83.3
2015	3799	69.8	12.7	0.7	103	54.3	63.5	72.0	77.9	84.1
2016	3756	70.0	12.4	3.6	103	54.6	63.6	71.9	77.9	83.7
2017	3636	70.3	12.5	0.9	102	55.4	64.0	72.4	78.2	83.6
2018	3331	69.3	12.8	2.8	98.1	53.7	62.8	71.4	78.0	82.8
2019	2659	69.3	12.0	16.6	96.3	55.0	63.1	71.2	77.7	81.9
2020	1733	69.6	12.1	17.3	95.3	55.6	63.3	71.5	78.2	82.4
1998–2020	87156	68.9	12.4	0.0	109	54.7	63.0	70.1	76.8	82.9

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	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	281	71.9	13.4	30.6	96.4	54.2	64.1	73.7	81.1	88.2
2002	464	72.8	12.8	2.4	99.5	57.9	65.3	74.2	81.9	87.7
2003	428	73.2	13.0	2.5	103	56.7	65.6	75.0	82.5	87.9
2004	444	72.6	13.3	18.5	99.0	56.4	64.8	74.5	82.0	87.9
2005	452	72.1	15.0	3.8	98.8	54.0	64.2	74.8	82.1	88.5
2006	467	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	522	72.2	14.0	1.7	103	55.5	66.0	74.3	82.1	86.8
2010	528	74.4	12.8	5.4	100	56.0	67.6	75.3	84.0	89.5
2011	502	71.2	15.9	0.5	97.6	53.6	64.9	73.8	81.5	87.9
2012	491	73.6	11.8	9.7	96.4	58.4	67.4	75.1	82.1	87.2
2013	492	72.7	14.0	0.3	101	55.1	66.5	74.5	81.8	88.1
2014	509	72.3	12.7	2.5	107	55.6	65.2	74.5	81.0	87.2
2015	475	72.6	14.9	0.5	98.0	53.4	66.2	75.0	82.3	88.4
2016	435	72.9	14.0	2.4	97.5	53.7	65.9	76.0	82.3	88.2
2017	448	74.1	12.7	1.8	97.7	56.0	67.5	76.3	82.6	88.7
2018	351	73.6	11.9	27.4	96.3	57.9	66.1	76.2	81.7	87.4
2019	271	72.5	11.8	28.5	96.6	55.7	65.3	74.8	80.6	84.8
2020	210	70.8	12.2	37.0	95.2	52.7	63.8	72.3	80.0	85.0
1998–2020	9559	72.5	13.6	0.2	107	55.4	65.3	74.5	81.8	87.6

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	66	0.1	0.1	36	0.1	0.1	30	0.5	0.5
5-9	19	0.0	0.1	9	0.0	0.1	10	0.2	0.6
10-14	11	0.0	0.2	5	0.0	0.1	6	0.1	0.7
15-19	74	0.1	0.3	73	0.1	0.2	1	0.0	0.8
20-24	245	0.4	0.7	241	0.4	0.7	4	0.1	0.8
25-29	423	0.7	1.3	415	0.7	1.4	8	0.1	0.9
30-34	514	0.8	2.2	494	0.9	2.3	20	0.3	1.3
35-39	635	1.0	3.2	592	1.1	3.3	43	0.7	2.0
40-44	751	1.2	4.4	666	1.2	4.5	85	1.4	3.3
45-49	1287	2.1	6.5	1152	2.1	6.6	135	2.2	5.5
50-54	2446	3.9	10.4	2195	3.9	10.5	251	4.0	9.5
55-59	4341	7.0	17.4	3988	7.1	17.6	353	5.6	15.1
60-64	6902	11.1	28.5	6417	11.5	29.1	485	7.8	22.9
65-69	10675	17.2	45.7	9899	17.7	46.8	776	12.4	35.3
70-74	12301	19.8	65.4	11334	20.3	67.1	967	15.5	50.7
75-79	10388	16.7	82.2	9279	16.6	83.7	1109	17.7	68.5
80-84	6261	10.1	92.2	5287	9.5	93.1	974	15.6	84.0
85+	4836	7.8	100.0	3837	6.9	100.0	999	16.0	100.0
All ages	62175	100.0		55919	100.0		6256	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=2835 %	Females DCO rate n=658 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	33	28	2.0	1.8	3.0		15.0	16.4
5- 9	9	10	0.6	0.7			7.7	10.0
10-14	5	6	0.3	0.4	20.0	16.7	3.6	4.7
15-19	73	1	4.3	0.1			22.9	0.4
20-24	239	4	11.8	0.2			38.0	0.8
25-29	410	8	18.0	0.4			43.0	0.7
30-34	485	20	21.0	0.9			37.4	0.9
35-39	589	43	25.5	1.9	0.2		32.2	1.2
40-44	653	84	26.1	3.5	0.3		23.4	1.4
45-49	1137	135	42.3	5.2	0.4	0.7	22.5	1.4
50-54	2141	249	84.0	9.9	0.6	2.8	25.4	2.0
55-59	3905	349	184.0	16.0	0.7	1.4	30.8	2.6
60-64	6288	480	355.7	25.3	0.9	2.5	35.7	3.1
65-69	9665	759	592.1	41.9	1.1	2.4	39.8	4.0
70-74	11048	948	736.9	55.1	1.9	4.5	40.3	4.8
75-79	8992	1086	743.1	72.3	4.1	5.5	37.4	5.6
80-84	5087	948	702.5	89.1	11.6	14.9	33.1	6.2
85+	3743	990	801.5	95.0	39.0	37.4	35.6	6.0
All ages	54502	6148			5.2	10.7	35.5	4.0
Incidence								
Raw			167.4	18.3				
WS			83.2	7.2				
ES			121.1	10.6				
BRD-S			153.8	13.8				

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

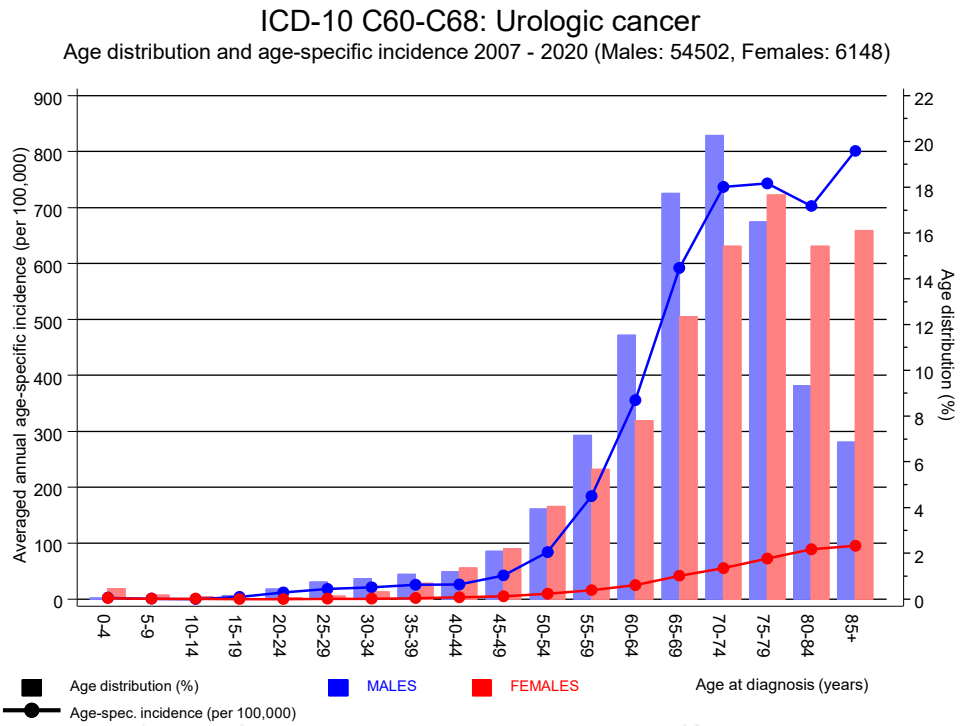


Figure 6. Age distribution (males: mean=69.2 yrs, median=70.7 yrs; females: mean=72.7 yrs, median=74.7 yrs) and age-specific incidence.

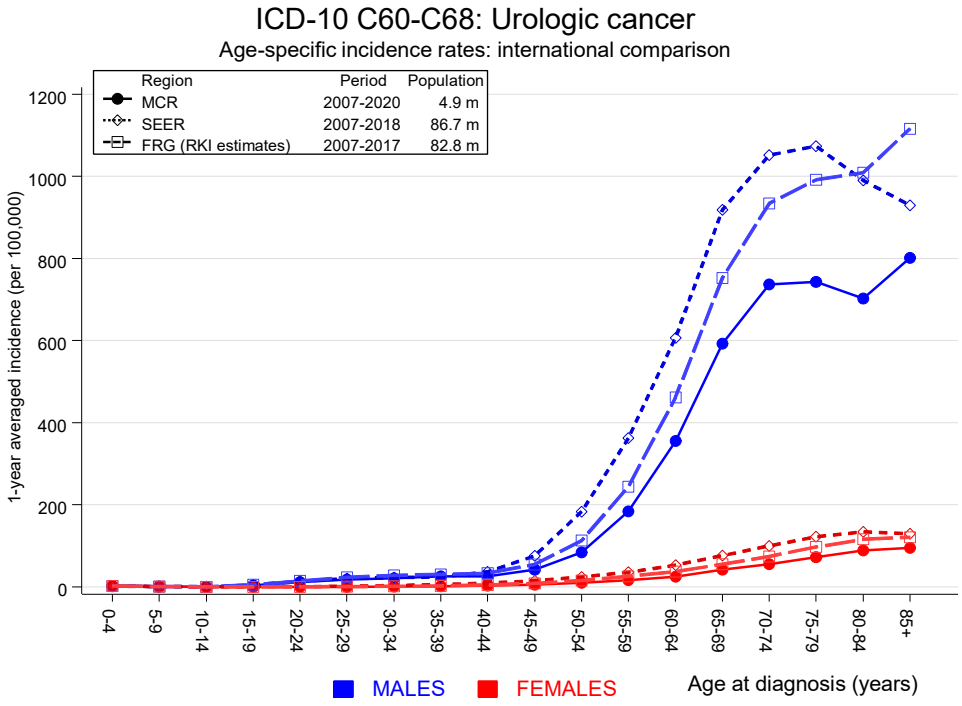


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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	67	48.9	1.4	1.1	1.7	#	0.5	1.5
C07–C08	Salivary gland	38	17.0	2.2	1.6	3.1	#	0.6	10.5
C09–C10	Oropharynx	99	58.4	1.7	1.4	2.1	#	1.1	
C12–C13	Hypopharynx	57	32.2	1.8	1.3	2.3	#	0.7	3.5
C15	Oesophagus	250	128.1	2.0	1.7	2.2	#	3.3	5.2
C16	Stomach	501	283.5	1.8	1.6	1.9	#	5.9	6.4
C17	Small intestine	127	40.4	3.1	2.6	3.7	#	2.3	2.4
C18	Colon	1256	695.8	1.8	1.7	1.9	#	15.1	5.0
C19–C20	Rectum	609	359.8	1.7	1.6	1.8	#	6.7	3.1
C21	Anus/canal	34	15.5	2.2	1.5	3.1	#	0.5	2.9
C22	Liver	306	199.2	1.5	1.4	1.7	#	2.9	13.1
C23–C24	Bile	133	75.0	1.8	1.5	2.1	#	1.6	9.8
C25	Pancreas	589	275.5	2.1	2.0	2.3	#	8.5	23.6
C32	Larynx	111	63.8	1.7	1.4	2.1	#	1.3	8.1
C33–C34	Lung	1545	805.6	1.9	1.8	2.0	#	19.9	10.2
C38,C45	Mesothelioma	108	50.0	2.2	1.8	2.6	#	1.6	5.6
C43	Malign. melanoma	706	304.8	2.3	2.1	2.5	#	10.8	1.6
C46,C49	Soft tissue	77	39.7	1.9	1.5	2.4	#	1.0	1.3
C50	Breast	40	18.9	2.1	1.5	2.9	#	0.6	7.5
C60	Penis	50	17.6	2.8	2.1	3.8	#	0.9	6.0
C61	Prostate	1780	1988.3	0.9	0.9	0.9	#	−5.6	4.6
C62	Testis	128	13.1	9.8	8.2	11.6	#	3.1	2.3
C64	Kidney	808	232.8	3.5	3.2	3.7	#	15.5	6.2
C65	Renal pelvis	186	32.5	5.7	4.9	6.6	#	4.1	0.5
C66	Ureter	146	19.2	7.6	6.4	8.9	#	3.4	
C67	Bladder	962	344.7	2.8	2.6	3.0	#	16.7	6.7
C68	Urethra	110	6.6	16.6	13.6	20.0	#	2.8	
C68	Urinary org.	40	4.9	8.1	5.8	11.0	#	0.9	77.5
C70–C72	CNS cancer	177	84.2	2.1	1.8	2.4	#	2.5	9.6
C73	Thyroid	96	37.7	2.5	2.1	3.1	#	1.6	3.1
C76–C79	CUP	215	118.8	1.8	1.6	2.1	#	2.6	4.2
C81	Hodgkin lymphoma	32	14.9	2.1	1.5	3.0	#	0.5	
C82–C85	NHL	639	298.6	2.1	2.0	2.3	#	9.2	6.7
C90	Mult. myeloma	190	94.1	2.0	1.7	2.3	#	2.6	11.6
C91–C96	Leukaemia	225	110.0	2.0	1.8	2.3	#	3.1	28.4
Others, specified		161	83.6	1.9	1.6	2.2	#	2.1	9.9
Not observed		0	0.5	0.0	0.0	7.9		−0.0	
All further malignancies		12598	7014.0	1.8	1.8	1.8	#	150.6	7.3

Patients	77994
Median age at next malignancy (years)	74.9
Person-years	370707
Mean observation time (years)	4.8
Median observation time (years)	3.2

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 21 are pooled in category “Others, specified”.

Table 7b

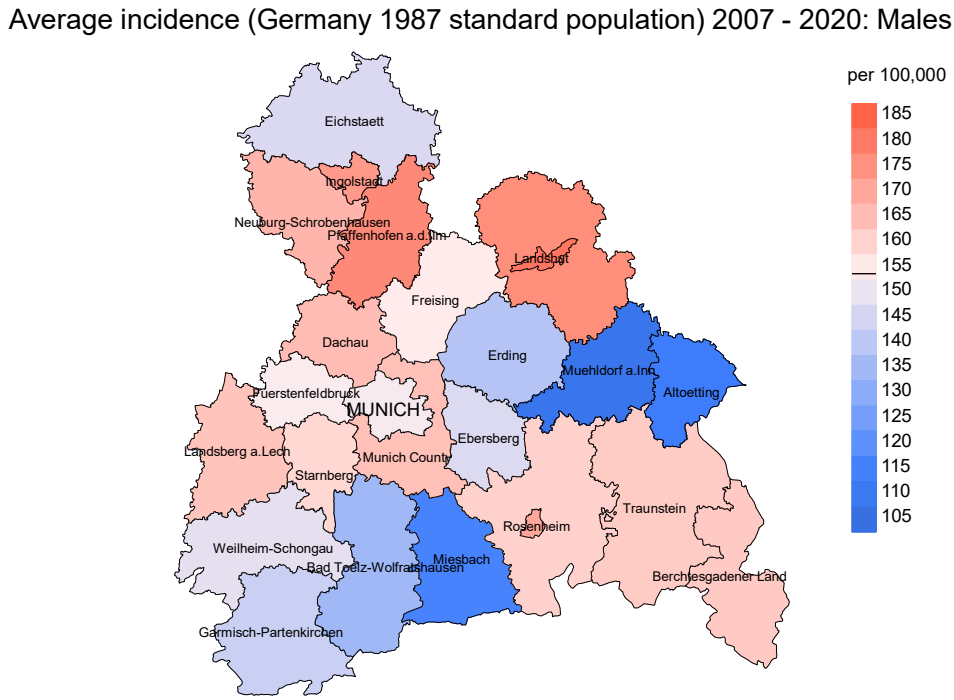
Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C15	Oesophagus	8	2.4	3.3	1.4	6.6	#	1.9	25.0
C16	Stomach	30	14.1	2.1	1.4	3.0	#	5.4	3.3
C17	Small intestine	10	1.9	5.2	2.5	9.6	#	2.7	
C18	Colon	83	39.9	2.1	1.7	2.6	#	14.6	7.2
C19–C20	Rectum	33	15.6	2.1	1.5	3.0	#	5.9	6.1
C21	Anus/canal	3	2.0	1.5	0.3	4.4		0.3	
C22	Liver	13	4.9	2.6	1.4	4.5	#	2.7	15.4
C23–C24	Bile	18	5.9	3.1	1.8	4.8	#	4.1	16.7
C25	Pancreas	58	19.1	3.0	2.3	3.9	#	13.2	27.6
C32	Larynx	3	0.6	4.8	1.0	14.1		0.8	
C33–C34	Lung	126	27.5	4.6	3.8	5.5	#	33.3	13.5
C38,C45	Mesothelioma	3	0.7	4.0	0.8	11.8		0.8	
C43	Malign. melanoma	22	13.5	1.6	1.0	2.5	#	2.9	9.1
C46,C49	Soft tissue	5	2.2	2.3	0.7	5.3		1.0	
C50	Breast	259	106.6	2.4	2.1	2.7	#	51.5	6.6
C51	Vulva	10	4.3	2.3	1.1	4.3	#	1.9	10.0
C52	Vagina	4	0.8	5.3	1.4	13.6	#	1.1	
C53	Cervix uteri	20	4.1	4.8	3.0	7.5	#	5.4	5.0
C54	Corpus uteri	44	20.2	2.2	1.6	2.9	#	8.0	4.5
C55,C57	Fem. genitals un	5	1.0	5.2	1.7	12.2	#	1.4	40.0
C56	Ovary	27	14.9	1.8	1.2	2.6	#	4.1	25.9
C64	Kidney	124	9.2	13.5	11.3	16.1	#	38.8	13.7
C65	Renal pelvis	46	1.3	35.9	26.3	47.9	#	15.1	
C66	Ureter	45	0.7	64.4	47.0	86.2	#	15.0	
C67	Bladder	118	8.2	14.3	11.8	17.1	#	37.1	11.0
C68	Urethra	8	0.1	74.8	32.3	147.4	#	2.7	
C68	Urinary org.	8	0.2	45.9	19.8	90.4	#	2.6	62.5
C70–C72	CNS cancer	9	4.8	1.9	0.9	3.6		1.4	33.3
C73	Thyroid	28	4.8	5.8	3.9	8.4	#	7.8	3.6
C76–C79	CUP	17	7.6	2.2	1.3	3.6	#	3.2	5.9
C82–C85	NHL	41	15.4	2.7	1.9	3.6	#	8.7	14.6
C90	Mult. myeloma	9	4.9	1.8	0.8	3.5		1.4	11.1
C91–C96	Leukaemia	24	5.8	4.1	2.6	6.1	#	6.1	16.7
Others, specified		17	9.8	1.7	1.0	2.8	#	2.4	11.8
Not observed		0	1.4	0.0	0.0	2.6		−0.5	
All further malignancies		1278	376.3	3.4	3.2	3.6	#	304.7	10.5

Patients	8315
Median age at next malignancy (years)	75.5
Person-years	29589
Mean observation time (years)	3.6
Median observation time (years)	1.5

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 2 are pooled in category “Others, specified”.



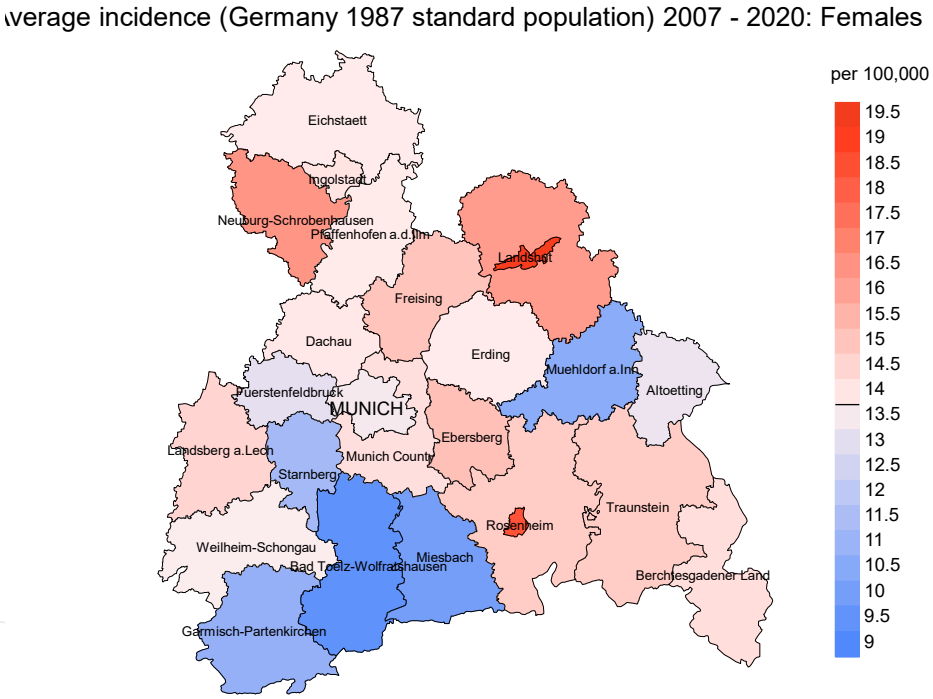
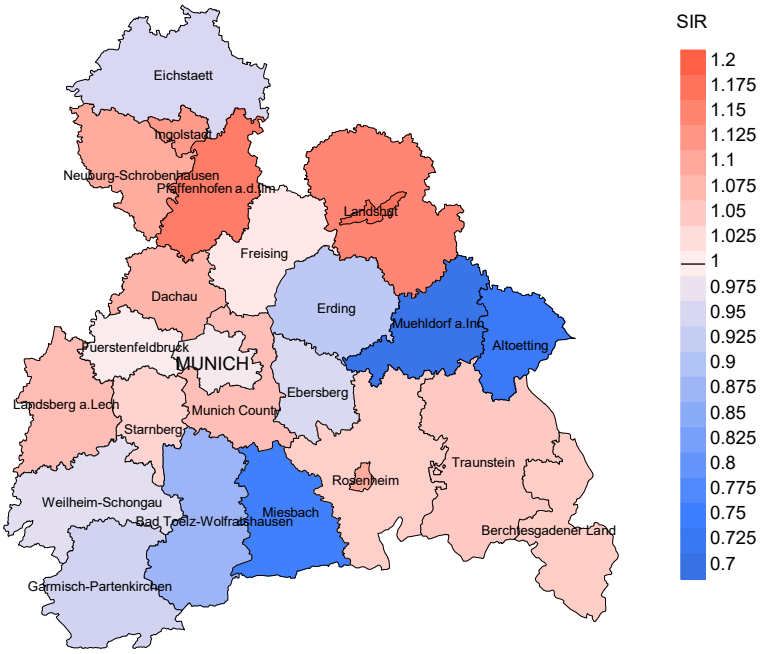


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 153.8/100,000 WS N=54,502, females 13.8/100,000 WS N=6,148).

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 185 women were identified with newly diagnosed urologic 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 12.4 and 18.3/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

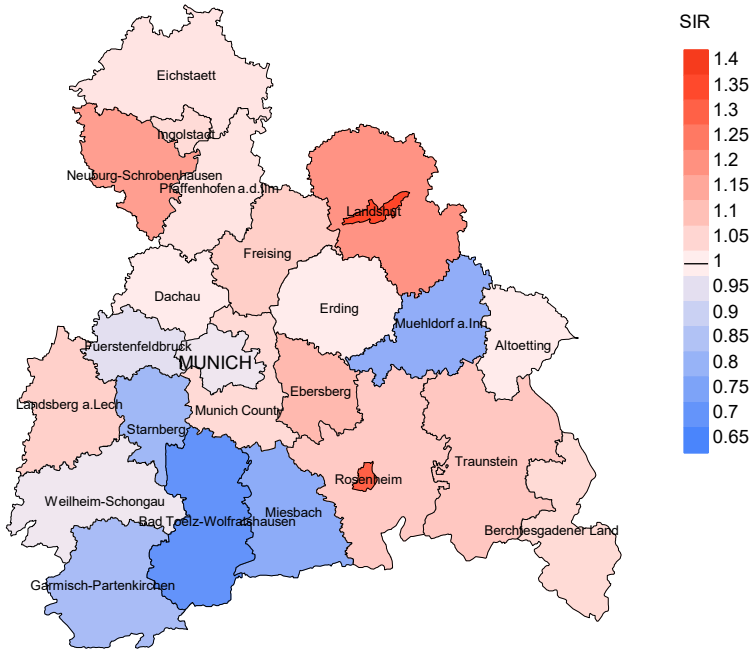


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=54,502, females N=6,148).

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 185 women were identified with newly diagnosed urologic cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.11. Though, the value of this parameter may vary with an underlying probability of 99% between 0.91 and 1.34, 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	2504	96.8	9.9	1845	73.7	94.1
1999	2420	96.9	8.0	1747	72.2	93.9
2000	2581	96.8	9.5	1787	69.2	93.7
2001	2672	96.5	7.4	1779	66.6	94.2
2002	4980	97.0	10.2	3406	68.4	94.9
2003	4910	96.5	8.0	3205	65.3	94.3
2004	4863	96.6	8.0	2992	61.5	95.0
2005	4846	95.6	6.4	2846	58.7	94.8
2006	4764	92.5	6.2	2737	57.5	93.9
2007	5552	90.4	6.8	3028	54.5	94.4
2008	5258	97.6	6.6	2876	54.7	94.4
2009	5056	98.0	6.1	2632	52.1	94.0
2010	4961	97.3	6.6	2438	49.1	94.4
2011	5111	97.7	6.0	2385	46.7	92.8
2012	5238	97.6	5.5	2273	43.4	92.7
2013	4951	97.0	5.6	2065	41.7	92.4
2014	4944	95.9	5.9	1939	39.2	90.6
2015	4274	93.5	7.5	1684	39.4	89.9
2016	4191	99.3	7.1	1501	35.8	89.0
2017	4084	99.6	7.0	1282	31.4	85.4
2018	3682	99.4	3.8	814	22.1	71.9
2019	2930	99.5	0.7	490	16.7	85.5
2020	1943	99.7	0.1	262	13.5	94.3
1998–2020	96715	96.6	6.6	48013	49.6	92.9

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	2504	1115	93.7	362	14.5
1999	2420	1054	94.1	310	12.8
2000	2581	1060	95.1	317	12.3
2001	2672	1123	93.8	297	11.1
2002	4980	1664	95.9	681	13.7
2003	4910	1805	97.1	575	11.7
2004	4863	1782	97.0	530	10.9
2005	4846	1903	96.6	466	9.6
2006	4764	2004	97.0	475	10.0
2007	5552	2273	97.4	585	10.5
2008	5258	2401	98.8	552	10.5
2009	5056	2484	98.6	563	11.1
2010	4961	2635	98.4	558	11.2
2011	5111	2698	98.6	550	10.8
2012	5238	2803	98.4	545	10.4
2013	4951	2861	98.5	508	10.3
2014	4944	2954	98.0	528	10.7
2015	4274	3120	98.3	541	12.7
2016	4191	3264	98.7	559	13.3
2017	4084	3296	96.5	516	12.6
2018	3682	2762	70.9	305	8.3
2019	2930	2466	46.3	148	5.1
2020	1943	3011	88.4	156	8.0
1998–2020	96715	52538	93.2	10627	11.0

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	1115	59.8	40.2	80.7
1999	1054	63.6	36.4	79.5
2000	1060	62.9	37.1	80.2
2001	1123	60.4	39.6	79.4
2002	1664	65.0	35.0	81.1
2003	1805	66.5	33.5	79.4
2004	1782	64.0	36.0	78.4
2005	1903	65.5	34.5	77.1
2006	2004	64.9	35.1	77.4
2007	2273	66.8	33.2	77.2
2008	2401	63.6	36.4	74.4
2009	2484	62.6	37.4	74.5
2010	2635	63.3	36.7	74.7
2011	2698	62.2	37.8	73.6
2012	2803	60.9	39.1	71.9
2013	2861	58.7	41.3	70.3
2014	2954	59.1	40.9	70.9
2015	3120	58.2	41.8	68.7
2016	3264	57.3	42.7	68.2
2017	3296	53.5	46.5	65.5
2018	2762	47.0	53.0	52.7
2019	2466	37.2	62.8	54.5
2020	3011	41.3	58.7	51.9
1998-2020	52538	58.3	41.7	71.2

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	949	79.1	77.3	82.1	78.9
1999	897	78.5	76.5	82.9	77.9
2000	899	79.7	78.0	82.3	79.6
2001	959	78.9	77.1	81.7	78.4
2002	1405	78.6	76.9	80.9	78.1
2003	1541	78.0	76.1	81.7	77.1
2004	1497	79.1	76.9	82.3	78.0
2005	1632	79.1	77.3	82.7	78.1
2006	1705	78.5	76.9	81.1	77.9
2007	1951	78.9	77.4	81.3	78.2
2008	2095	79.2	77.1	82.2	77.9
2009	2151	79.5	76.9	83.0	78.1
2010	2259	79.6	77.8	82.4	78.7
2011	2364	79.9	77.5	83.0	78.7
2012	2426	80.3	78.1	83.2	79.0
2013	2503	80.9	78.6	83.3	79.6
2014	2602	81.0	78.1	84.0	79.4
2015	2730	80.7	78.5	83.9	79.1
2016	2869	81.4	79.2	84.0	79.8
2017	2937	81.9	79.9	84.2	80.7
2018	2475	81.5	79.3	83.2	80.1
2019	2185	82.0	79.0	83.5	80.0
2020	2733	82.7	80.3	84.2	80.7
1998–2020	45764	80.4	78.1	83.1	79.0

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	264	80.2	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	358	80.6	78.4	85.0	79.4
2014	352	82.1	80.0	87.2	80.7
2015	389	81.4	79.5	87.3	80.2
2016	395	82.0	78.4	86.7	79.8
2017	359	82.9	80.2	87.4	81.3
2018	287	82.6	81.4	85.7	81.7
2019	281	80.6	77.5	84.3	78.2
2020	278	84.3	80.3	86.2	80.6
1998–2020	6773	81.3	79.3	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	563	50.8	0.26	28.2	0.23	47.7	0.26	71.0	0.30
1999	556	49.7	0.26	27.3	0.24	45.7	0.27	67.5	0.30
2000	549	48.2	0.24	25.8	0.22	44.0	0.25	65.3	0.28
2001	566	48.8	0.24	26.1	0.22	44.2	0.25	64.7	0.28
2002	897	48.1	0.20	24.3	0.18	40.9	0.21	59.4	0.23
2003	1012	54.0	0.23	26.7	0.20	44.4	0.23	65.1	0.26
2004	940	50.0	0.22	23.7	0.19	39.8	0.22	58.8	0.25
2005	1046	55.2	0.24	25.2	0.21	42.4	0.24	63.7	0.28
2006	1097	57.3	0.26	26.0	0.22	43.6	0.26	63.7	0.29
2007	1295	58.5	0.26	25.9	0.22	43.7	0.25	63.9	0.29
2008	1309	58.8	0.28	25.0	0.23	41.9	0.27	62.2	0.31
2009	1318	59.1	0.30	24.9	0.24	41.2	0.28	59.9	0.32
2010	1416	62.8	0.33	25.4	0.26	42.6	0.30	62.5	0.35
2011	1466	65.5	0.33	26.2	0.26	44.1	0.30	64.0	0.34
2012	1470	64.8	0.32	24.7	0.24	42.0	0.29	62.0	0.33
2013	1456	63.3	0.34	24.1	0.26	40.6	0.30	59.3	0.34
2014	1511	64.8	0.35	24.4	0.27	40.9	0.31	58.8	0.35
2015	1571	66.0	0.42	23.9	0.32	40.4	0.37	59.4	0.42
2016	1636	68.1	0.45	23.9	0.33	40.6	0.38	60.0	0.44
2017	1560	64.6	0.44	22.2	0.32	37.8	0.37	55.7	0.42
2018	1154	47.4	0.36	16.5	0.26	27.7	0.30	40.1	0.34
2019	807	33.1	0.31	11.6	0.22	19.3	0.26	28.2	0.30
2020	1133	46.5	0.67	15.4	0.46	26.4	0.54	39.2	0.63
1998-2020	26328	56.6	0.31	23.0	0.24	38.7	0.28	56.6	0.32

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	0.31	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	190	9.6	0.45	3.2	0.36	5.2	0.40	7.3	0.43
2004	203	10.3	0.47	3.2	0.36	5.2	0.39	7.5	0.42
2005	203	10.2	0.46	3.3	0.36	5.3	0.39	7.5	0.42
2006	207	10.3	0.45	3.4	0.33	5.4	0.37	7.6	0.41
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	226	9.5	0.47	3.0	0.37	4.7	0.40	6.6	0.44
2014	240	10.0	0.48	3.0	0.36	4.8	0.39	6.9	0.44
2015	251	10.3	0.54	3.0	0.40	4.9	0.44	7.0	0.50
2016	239	9.7	0.56	3.1	0.47	4.9	0.50	6.7	0.53
2017	217	8.8	0.49	2.4	0.37	4.0	0.41	5.7	0.44
2018	157	6.3	0.46	1.8	0.34	2.8	0.37	4.1	0.41
2019	126	5.1	0.47	1.5	0.38	2.5	0.41	3.6	0.45
2020	127	5.1	0.61	1.5	0.43	2.4	0.48	3.3	0.51
1998-2020	4427	9.2	0.47	2.9	0.36	4.6	0.40	6.5	0.44

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	0.0	0.0	3	0.0	0.0			0.0
10-14	3	0.0	0.0			0.0	3	0.1	0.1
15-19	2	0.0	0.0	2	0.0	0.0			0.1
20-24	6	0.0	0.1	5	0.0	0.1	1	0.0	0.1
25-29	8	0.0	0.1	7	0.0	0.1	1	0.0	0.2
30-34	12	0.1	0.2	12	0.1	0.2			0.2
35-39	31	0.1	0.3	23	0.1	0.3	8	0.3	0.4
40-44	56	0.3	0.5	42	0.2	0.5	14	0.5	0.9
45-49	143	0.6	1.2	107	0.6	1.1	36	1.2	2.1
50-54	318	1.4	2.6	246	1.3	2.3	72	2.4	4.5
55-59	579	2.6	5.3	485	2.5	4.9	94	3.1	7.7
60-64	1117	5.1	10.3	981	5.1	10.0	136	4.6	12.2
65-69	2035	9.2	19.5	1763	9.2	19.2	272	9.1	21.3
70-74	3467	15.7	35.2	3087	16.2	35.4	380	12.7	34.1
75-79	4607	20.9	56.1	4038	21.1	56.5	569	19.1	53.1
80-84	4679	21.2	77.3	4043	21.2	77.7	636	21.3	74.4
85+	5021	22.7	100.0	4258	22.3	100.0	763	25.6	100.0
All ages	22087	100.0		19102	100.0		2985	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.	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			10.7	
10-14		3			0.2	0.50		13.0
15-19	2		0.1	0.03			4.2	
20-24	5	1	0.2	0.02	0.1	0.25	6.8	2.3
25-29	7	1	0.3	0.02	0.0	0.13	7.5	1.0
30-34	12		0.5	0.02			8.4	
35-39	23	8	1.0	0.04	0.4	0.19	8.6	2.0
40-44	42	14	1.7	0.06	0.6	0.17	6.9	1.6
45-49	107	36	4.0	0.09	1.4	0.27	7.6	2.2
50-54	246	72	9.7	0.11	2.9	0.29	9.3	2.7
55-59	485	94	22.8	0.12	4.3	0.27	11.0	2.5
60-64	981	136	55.5	0.16	7.2	0.28	15.3	2.7
65-69	1763	272	108.0	0.18	15.0	0.36	19.2	3.9
70-74	3087	380	205.9	0.28	22.1	0.40	26.0	4.3
75-79	4038	569	333.7	0.45	37.9	0.52	32.3	5.8
80-84	4043	636	558.3	0.79	59.7	0.67	38.6	6.8
85+	4258	763	911.8	1.14	73.2	0.77	46.8	6.4
All ages	19102	2985					27.5	4.8
Mortality								
Raw			58.7	0.35	8.9	0.49		
WS			22.2	0.27	2.7	0.37		
ES			37.3	0.31	4.4	0.41		
BRD-S			54.4	0.35	6.2	0.45		
PYLL-70								
per 100,000			96.7		20.7			
ES			82.5		17.3			
AYLL-70			7.5		9.2			

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	99	0.8	43	43.4	5	5.1	51	51.5
C07–C08 Salivary gland	32	0.2	9	28.1	4	12.5	19	59.4
C09–C10 Oropharynx	132	1.0	65	49.2	4	3.0	63	47.7
C12–C13 Hypopharynx	64	0.5	25	39.1	3	4.7	36	56.3
C15 Oesophagus	247	1.9	52	21.1	15	6.1	180	72.9
C16 Stomach	558	4.2	136	24.4	40	7.2	382	68.5
C17 Small intestine	83	0.6	26	31.3	2	2.4	55	66.3
C18 Colon	1380	10.5	562	40.7	117	8.5	701	50.8
C19–C20 Rectum	756	5.7	311	41.1	78	10.3	367	48.5
C21 Anus/canal	31	0.2	13	41.9	3	9.7	15	48.4
C22 Liver	334	2.5	38	11.4	26	7.8	270	80.8
C23–C24 Bile	139	1.1	16	11.5	10	7.2	113	81.3
C25 Pancreas	654	5.0	42	6.4	44	6.7	568	86.9
C32 Larynx	157	1.2	85	54.1	6	3.8	66	42.0
C33–C34 Lung	1859	14.1	244	13.1	138	7.4	1477	79.5
C38,C45 Mesothelioma	119	0.9	7	5.9	6	5.0	106	89.1
C43 Malign. melanoma	544	4.1	288	52.9	27	5.0	229	42.1
C44 Skin others	996	7.6	333	33.4	29	2.9	634	63.7
C46,C49 Soft tissue	82	0.6	29	35.4	5	6.1	48	58.5
C50 Breast	36	0.3	18	50.0	3	8.3	15	41.7
C61 Prostate	975	7.4	686	70.4	172	17.6	117	12.0
C62 Testis	69	0.5	58	84.1	2	2.9	9	13.0
C64 Kidney	477	3.6	267	56.0	81	17.0	129	27.0
C65 Renal pelvis	126	1.0	72	57.1	40	31.7	14	11.1
C66 Ureter	122	0.9	74	60.7	25	20.5	23	18.9
C67 Bladder	1203	9.1	645	53.6	250	20.8	308	25.6
C68 Urethra	36	0.3	21	58.3	7	19.4	8	22.2
C70–C72 CNS cancer	202	1.5	16	7.9	14	6.9	172	85.1
C73 Thyroid	88	0.7	38	43.2			50	56.8
C76–C79 CUP	284	2.2	48	16.9	33	11.6	203	71.5
C81 Hodgkin lymphoma	34	0.3	16	47.1	1	2.9	17	50.0
C82–C85 NHL	585	4.4	198	33.8	65	11.1	322	55.0
C90 Mult. myeloma	202	1.5	53	26.2	16	7.9	133	65.8
C91–C96 Leukaemia	250	1.9	24	9.6	14	5.6	212	84.8
Others, specified	216	1.6	77	35.6	17	7.9	122	56.5
All further malignancies	13171	100.0	4635	35.2	1302	9.9	7234	54.9

Further malignancies with number of cases 1 to 27 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	7	0.3	4	57.1			3	42.9
C09–C10	Oropharynx	8	0.4	5	62.5			3	37.5
C15	Oesophagus	13	0.6	1	7.7	1	7.7	11	84.6
C16	Stomach	52	2.6	17	32.7	9	17.3	26	50.0
C17	Small intestine	8	0.4	4	50.0	1	12.5	3	37.5
C18	Colon	147	7.2	67	45.6	13	8.8	67	45.6
C19–C20	Rectum	71	3.5	35	49.3	7	9.9	29	40.8
C21	Anus/canal	6	0.3	3	50.0	1	16.7	2	33.3
C22	Liver	15	0.7	2	13.3	5	33.3	8	53.3
C23–C24	Bile	23	1.1	1	4.3	4	17.4	18	78.3
C25	Pancreas	77	3.8	4	5.2	8	10.4	65	84.4
C33–C34	Lung	177	8.7	25	14.1	24	13.6	128	72.3
C38,C45	Mesothelioma	5	0.2					5	100.0
C43	Malign. melanoma	43	2.1	30	69.8	3	7.0	10	23.3
C44	Skin others	76	3.7	38	50.0	5	6.6	33	43.4
C46,C49	Soft tissue	14	0.7	6	42.9	2	14.3	6	42.9
C48	Peritoneal	5	0.2	2	40.0	1	20.0	2	40.0
C50	Breast	429	21.1	271	63.2	27	6.3	131	30.5
C51	Vulva	18	0.9	12	66.7	1	5.6	5	27.8
C52	Vagina	7	0.3	3	42.9			4	57.1
C53	Cervix uteri	95	4.7	74	77.9	9	9.5	12	12.6
C54	Corpus uteri	103	5.1	75	72.8	13	12.6	15	14.6
C55,C57	Fem. genitals un	12	0.6	7	58.3	2	16.7	3	25.0
C56	Ovary	67	3.3	29	43.3	7	10.4	31	46.3
C64	Kidney	90	4.4	19	21.1	22	24.4	49	54.4
C65	Renal pelvis	51	2.5	28	54.9	15	29.4	8	15.7
C66	Ureter	35	1.7	26	74.3	7	20.0	2	5.7
C67	Bladder	149	7.3	50	33.6	14	9.4	85	57.0
C68	Urinary org.	6	0.3	4	66.7			2	33.3
C70–C72	CNS cancer	17	0.8	5	29.4	2	11.8	10	58.8
C73	Thyroid	42	2.1	22	52.4	2	4.8	18	42.9
C74–C80	Cancer others	5	0.2	2	40.0	2	40.0	1	20.0
C76–C79	CUP	39	1.9	6	15.4	2	5.1	31	79.5
C82–C85	NHL	60	3.0	27	45.0	10	16.7	23	38.3
C90	Mult. myeloma	14	0.7	5	35.7	1	7.1	8	57.1
C91–C96	Leukaemia	21	1.0	2	9.5	4	19.0	15	71.4
Others, specified		22	1.1	11	50.0	4	18.2	7	31.8
All further malignancies		2029	100.0	922	45.4	228	11.2	879	43.3

Further malignancies with number of cases 1 to 3 are pooled in category “Others, specified”.

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 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.	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		1			0.1	0.25		5.3
15-19	2		0.1	0.03			4.3	
20-24	5	1	0.2	0.02	0.1	0.25	7.6	2.4
25-29	5	1	0.2	0.01	0.0	0.13	5.9	1.1
30-34	12		0.5	0.03			8.7	
35-39	22	8	1.0	0.04	0.4	0.20	8.8	2.2
40-44	37	13	1.5	0.06	0.5	0.18	6.6	1.7
45-49	93	30	3.5	0.09	1.2	0.26	7.2	2.1
50-54	197	54	7.7	0.10	2.1	0.26	8.4	2.4
55-59	385	71	18.1	0.11	3.3	0.26	10.0	2.2
60-64	783	93	44.3	0.14	4.9	0.25	14.6	2.3
65-69	1355	203	83.0	0.17	11.2	0.35	18.5	3.7
70-74	2338	261	155.9	0.26	15.2	0.39	25.8	3.9
75-79	3077	401	254.3	0.44	26.7	0.52	33.7	5.3
80-84	3100	450	428.1	0.85	42.3	0.70	41.6	6.2
85+	3302	581	707.1	1.24	55.7	0.79	50.8	6.2
All ages	14716	2168					27.5	4.4
Mortality								
Raw			45.2	0.33	6.5	0.48		
WS			17.2	0.24	2.0	0.36		
ES			28.8	0.29	3.2	0.40		
BRD-S			41.9	0.33	4.5	0.44		
PYLL-70								
per 100,000			78.6		15.8			
ES			67.3		13.2			
AYLL-70			7.8		9.4			

* 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.	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		1			0.1	0.25		5.3
15-19	2		0.1	0.03			4.3	
20-24	5	1	0.2	0.02	0.1	0.25	7.6	2.5
25-29	5	1	0.2	0.01	0.0	0.13	5.9	1.1
30-34	11		0.5	0.02			8.0	
35-39	20	6	0.9	0.04	0.3	0.15	8.1	1.6
40-44	34	11	1.4	0.06	0.5	0.16	6.1	1.5
45-49	81	27	3.0	0.08	1.0	0.26	6.3	1.9
50-54	160	49	6.3	0.09	2.0	0.26	6.9	2.2
55-59	326	65	15.4	0.10	3.0	0.27	8.6	2.1
60-64	624	76	35.3	0.13	4.0	0.24	11.8	1.9
65-69	972	175	59.5	0.14	9.7	0.36	13.6	3.2
70-74	1645	202	109.7	0.22	11.7	0.36	18.8	3.1
75-79	2117	313	175.0	0.36	20.8	0.46	24.3	4.3
80-84	2161	366	298.4	0.69	34.4	0.64	31.0	5.3
85+	2406	480	515.2	0.98	46.0	0.68	40.4	5.3
All ages	10572	1773					20.6	3.7
Mortality								
Raw			32.5	0.27	5.3	0.44		
WS			12.5	0.20	1.6	0.33		
ES			20.9	0.24	2.6	0.37		
BRD-S			30.1	0.27	3.6	0.40		
PYLL-70								
per 100,000			64.7		13.9			
ES			55.6		11.6			
AYLL-70			8.3		9.5			

* See corresponding tables with multiple malignancies.

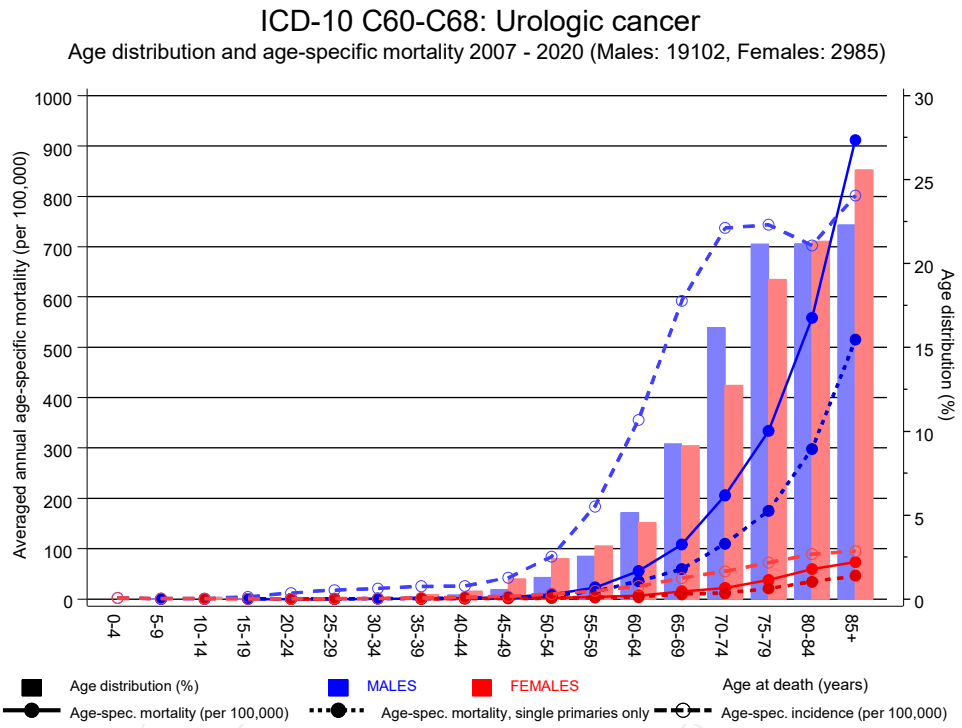


Figure 17. Distribution of age at death (bars; males: mean=71.5 yrs, median=72.1 yrs; females: mean=73.3 yrs, median=74.9 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

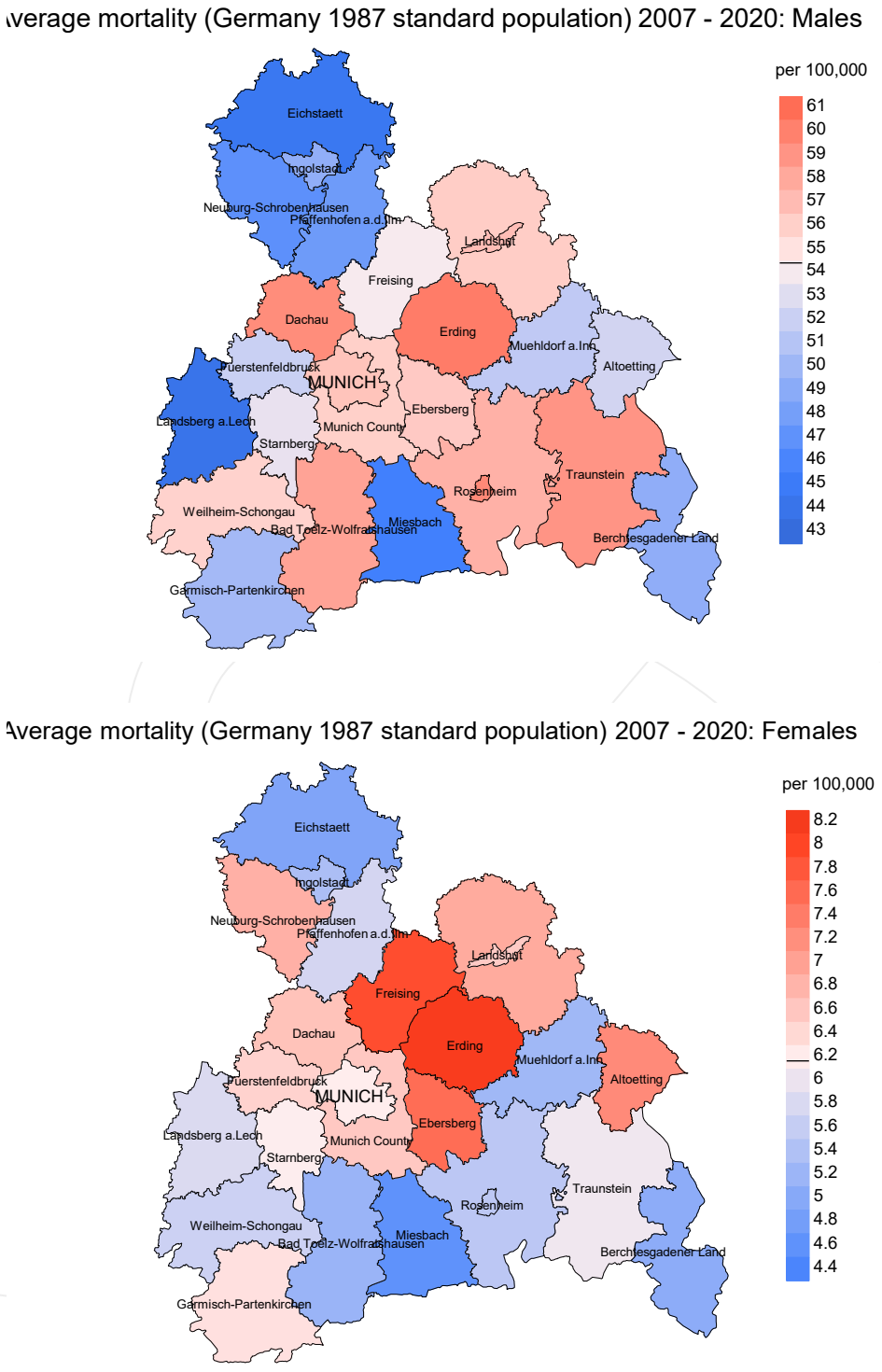
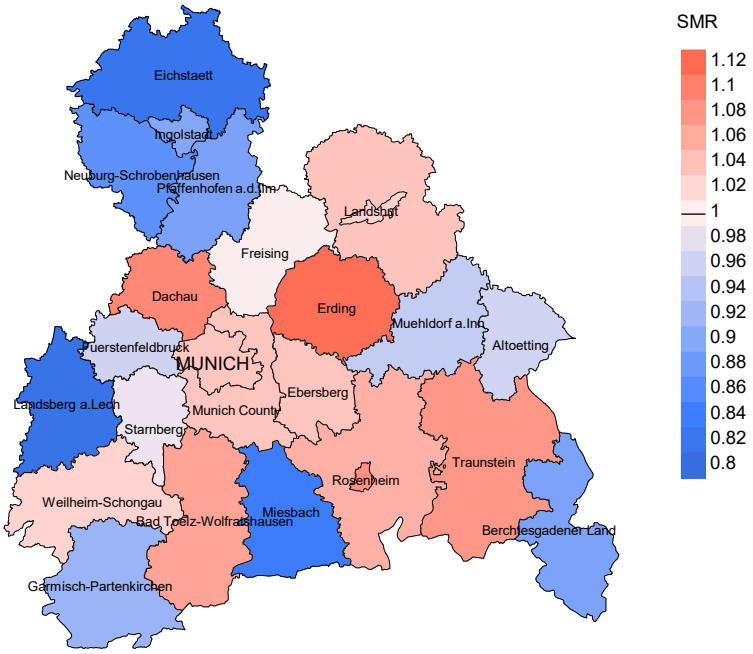


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 54.4/100,000 WS N=19,102, females 6.2/100,000 WS N=2,985).

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 101 women died from urologic cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 7.6/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 5.7 and 9.8/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

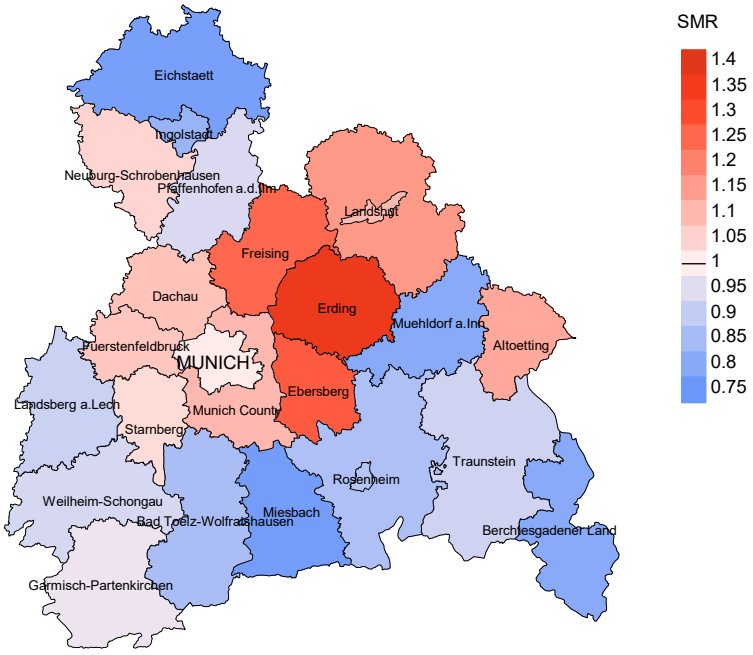


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=19,102, females N=2,985).

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 101 women died from urologic cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.27. Though, the value of this parameter may vary with an underlying probability of 99% between 0.97 and 1.64, 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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