Munich Cancer Registry

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ICD-10 C64: Kidney cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	13,268
Diseases	13,576
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/bC64__E-ICD-10-C64-Kidney-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

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	401	43	10.7	11.7	14.7	68.6	96.3
1999	393	34	8.7	11.7	14.5	67.4	95.2
2000	362	40	11.0	13.3	14.4	69.3	96.7
2001	354	47	13.3	13.9	14.3	70.6	96.0
2002	608	92	15.1	15.5	14.2	74.7	98.2 #
2003	623	70	11.2	15.5	14.0	69.0	95.3
2004	629	78	12.4	16.2	13.8	65.0	96.7
2005	658	43	6.5	16.7	13.4	62.3	96.0
2006	643	49	7.6	16.8	13.1	61.3	92.7
2007	753	76	10.1	17.1	12.4	60.8	91.8 #
2008	771	70	9.1	17.6	11.8	56.0	97.5
2009	789	77	9.8	18.2	11.3	55.3	97.6
2010	773	62	8.0	18.6	10.6	49.9	97.5
2011	710	48	6.8	18.7	10.2	49.7	97.2
2012	716	54	7.5	19.0	9.6	49.0	97.8
2013	652	53	8.1	19.4	9.1	42.6	97.5
2014	756	63	8.3	19.7	8.7	42.2	97.0
2015	684	79	11.5	20.1	8.1	39.9	92.1
2016	583	67	11.5	20.4	7.5	38.3	98.6
2017	555	53	9.5	20.9	6.0	29.9	99.1
2018	482	29	6.0	21.1	4.7	23.2	99.4
2019	374	3	0.8	21.2	3.3	14.4	99.2
2020	307			21.2	2.7	14.7	99.0 ##
1998-2020	13576	1230	9.1	21.2	14.7	51.7	96.6

13,576 cases diagnosed 1998-2020 are related to a total of 13,268 patients. Currently, in 4,423 (33.3 %) of these 13,268 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,337 / 824 / 262 (25.2 % / 6.2 % / 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 482 cases has been diagnosed, of which 21.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.7 % 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	248	61.8	21	8.5	10.1	16.2	69.0	96.4
1999	241	61.3	20	8.3	11.0	15.9	67.2	95.0
2000	237	65.5	26	11.0	12.4	15.8	70.0	95.8
2001	211	59.6	23	10.9	13.1	15.7	69.2	96.7
2002	364	59.9	48	13.2	14.8	15.6	73.1	98.9 #
2003	390	62.6	37	9.5	15.4	15.4	67.7	94.6
2004	388	61.7	40	10.3	16.0	15.0	67.0	96.1
2005	418	63.5	22	5.3	16.7	14.6	60.8	97.1
2006	411	63.9	20	4.9	17.1	14.2	60.8	92.7
2007	484	64.3	36	7.4	17.6	13.4	61.2	91.3 #
2008	497	64.5	34	6.8	18.3	12.6	54.1	97.6
2009	490	62.1	45	9.2	19.1	12.0	53.9	97.8
2010	494	63.9	22	4.5	19.4	11.2	47.8	98.4
2011	458	64.5	32	7.0	19.5	10.7	49.6	97.4
2012	471	65.8	28	5.9	19.9	9.8	47.3	97.9
2013	423	64.9	24	5.7	20.3	9.2	42.1	98.1
2014	491	64.9	35	7.1	20.6	9.0	41.3	97.4
2015	466	68.1	45	9.7	21.1	8.6	39.7	93.3
2016	388	66.6	33	8.5	21.5	7.8	37.9	97.9
2017	361	65.0	27	7.5	21.9	6.0	28.3	98.9
2018	344	71.4	19	5.5	22.2	4.8	23.0	99.1
2019	247	66.0			22.2	3.9	14.2	98.8
2020	199	64.8			22.2	3.6	14.1	98.5 ##
1998-2020	8721	64.2	637	7.3	22.2	16.2	50.6	96.7

8,721 cases diagnosed 1998-2020 are related to a total of 8,503 patients. Currently, in 3,005 (35.3 %) of these 8,503 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,224 / 585 / 196 (26.2 % / 6.9 % / 2.3 %) 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 344 cases has been diagnosed, of which 22.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.8 % 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	153	38.2	22	14.4	14.4	12.2	68.0	96.1	
1999	152	38.7	14	9.2	12.8	12.0	67.8	95.4	
2000	125	34.5	14	11.2	14.9	11.8	68.0	98.4	
2001	143	40.4	24	16.8	15.2	11.7	72.7	95.1	
2002	244	40.1	44	18.0	16.5	11.7	77.0	97.1	#
2003	233	37.4	33	14.2	15.8	11.6	71.2	96.6	
2004	241	38.3	38	15.8	16.6	11.5	61.8	97.5	
2005	240	36.5	21	8.8	16.7	11.3	65.0	94.2	
2006	232	36.1	29	12.5	16.5	11.1	62.1	92.7	
2007	269	35.7	40	14.9	16.2	10.4	60.2	92.6	#
2008	274	35.5	36	13.1	16.5	10.2	59.5	97.4	
2009	299	37.9	32	10.7	16.6	9.9	57.5	97.3	
2010	279	36.1	40	14.3	17.2	9.4	53.8	96.1	
2011	252	35.5	16	6.3	17.3	9.2	50.0	96.8	
2012	245	34.2	26	10.6	17.5	9.2	52.2	97.6	
2013	229	35.1	29	12.7	17.7	8.7	43.7	96.5	
2014	265	35.1	28	10.6	18.1	8.2	43.8	96.2	
2015	218	31.9	34	15.6	18.4	7.2	40.4	89.4	
2016	195	33.4	34	17.4	18.5	7.1	39.0	100.0	
2017	194	35.0	26	13.4	18.9	5.9	33.0	99.5	
2018	138	28.6	10	7.2	19.1	4.7	23.9	100.0	
2019	127	34.0	3	2.4	19.3	2.2	15.0	100.0	
2020	108	35.2			19.4	1.0	15.7	100.0	##
1998-2020	4855	35.8	593	12.2	19.4	12.2	53.8	96.4	

4,855 cases diagnosed 1998-2020 are related to a total of 4,765 patients. Currently, in 1,418 (29.8 %) of these 4,765 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,113 / 239 / 66 (23.4 % / 5.0 % / 1.4 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 138 cases has been diagnosed, of which 19.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.7 % 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	248	153	22.4	13.0	14.4	6.3	20.2	9.0	24.5	11.2
1999	241	152	21.5	12.8	13.3	6.6	19.2	9.2	23.6	11.1
2000	237	125	20.8	10.4	13.3	4.8	18.6	7.1	22.4	8.9
2001	211	143	18.2	11.8	10.9	5.5	15.7	8.1	19.7	10.1
2002	364	244	19.5	12.5	11.5	5.8	16.6	8.4	20.8	10.6
2003	390	233	20.8	11.8	12.5	5.4	17.5	7.7	21.2	9.8
2004	388	241	20.6	12.2	12.3	5.7	17.1	8.1	20.9	10.1
2005	418	240	22.1	12.1	12.7	5.7	18.0	8.0	21.6	10.2
2006	411	232	21.5	11.5	12.4	5.7	17.3	7.8	20.9	9.5
2007	484	269	21.8	11.6	12.3	5.3	17.4	7.4	21.3	9.4
2008	497	274	22.3	11.8	12.5	5.7	17.6	8.0	21.4	9.9
2009	490	299	22.0	12.9	12.0	6.0	17.0	8.4	21.2	10.6
2010	494	279	21.9	11.9	11.8	4.8	16.7	7.2	20.5	9.2
2011	458	252	20.5	10.8	11.0	5.4	15.6	7.2	18.9	8.8
2012	471	245	20.7	10.4	11.0	4.3	15.7	6.3	19.2	8.3
2013	423	229	18.4	9.6	9.8	4.4	13.8	6.1	16.9	7.6
2014	491	265	21.1	11.0	11.1	4.8	15.7	6.9	19.1	8.6
2015	466	218	19.6	9.0	9.9	4.2	14.3	5.6	17.7	6.9
2016	388	195	16.1	7.9	8.1	3.5	11.7	4.9	14.6	6.1
2017	361	194	15.0	7.9	7.7	3.2	10.9	4.6	13.5	5.9
2018	344	138	14.1	5.6	7.4	2.4	10.4	3.5	12.7	4.3
2019	247	127	10.1	5.1	5.4	2.3	7.6	3.3	9.1	4.1
2020	199	108	8.2	4.4	4.2	2.1	6.0	3.0	7.4	3.6
1998-2020	8721	4855	18.7	10.1	10.3	4.6	14.6	6.5	17.8	8.1

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	401	65.3	13.8	2.8	99.7	49.4	58.7	65.9	75.1	80.3
1999	393	65.3	13.5	1.1	94.3	49.7	57.6	65.5	75.3	81.8
2000	362	65.5	13.3	0.3	93.5	48.8	57.9	66.2	75.1	80.8
2001	354	66.5	12.4	1.9	96.4	51.8	59.0	66.4	75.6	80.6
2002	608	67.6	13.2	0.1	96.2	50.0	60.6	68.9	76.8	82.3
2003	623	66.9	13.6	0.4	96.2	50.6	60.3	67.8	75.8	82.6
2004	629	66.4	13.9	0.0	94.1	48.9	60.1	67.6	76.0	81.8
2005	658	66.6	13.1	0.7	95.1	51.2	59.7	67.7	75.4	81.4
2006	643	66.2	14.5	0.2	95.5	48.4	59.5	67.8	75.5	81.5
2007	753	67.1	14.5	1.2	99.1	48.9	60.5	69.0	76.3	82.6
2008	771	66.8	13.8	0.2	98.1	49.9	59.2	68.2	76.2	82.8
2009	789	67.3	14.5	0.5	96.9	49.9	59.6	69.7	77.1	82.7
2010	773	67.9	13.4	5.4	100	48.7	59.6	70.0	77.0	83.4
2011	710	67.1	15.1	0.5	96.9	49.8	60.3	69.6	76.5	83.0
2012	716	68.0	13.4	1.3	93.1	50.9	60.1	70.1	77.5	83.1
2013	652	67.3	14.3	0.3	97.3	49.8	59.1	69.7	77.0	82.5
2014	756	68.0	13.6	1.2	97.0	52.0	60.2	69.8	76.8	84.0
2015	684	68.6	14.6	0.5	98.9	50.7	60.6	71.5	77.9	84.3
2016	583	68.8	13.7	2.4	94.8	51.6	60.8	70.9	78.7	83.7
2017	555	68.8	13.7	0.9	96.8	51.5	61.0	70.8	78.1	83.2
2018	482	67.5	13.2	2.8	95.6	50.6	58.5	68.6	77.6	82.6
2019	374	66.6	12.4	23.8	92.2	50.2	58.4	67.5	76.2	81.2
2020	307	66.9	12.4	18.4	93.9	49.9	58.7	68.6	76.4	81.4
1998–2020	13576	67.2	13.8	0.0	100	50.1	59.7	68.8	76.7	82.6

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	248	63.4	13.5	5.0	91.9	46.7	56.4	64.5	72.7	78.5
1999	241	64.4	12.9	2.3	88.4	50.1	57.5	65.0	72.2	80.3
2000	237	63.6	13.4	0.3	93.5	47.6	56.2	65.0	72.0	78.5
2001	211	65.1	11.1	1.9	89.9	51.8	58.7	64.4	73.0	79.1
2002	364	65.9	13.0	0.1	96.2	47.2	58.6	67.6	74.6	80.4
2003	390	64.6	13.3	0.4	96.2	47.9	59.2	65.3	73.1	78.7
2004	388	64.8	13.8	0.0	93.6	48.6	58.0	66.3	73.6	79.9
2005	418	65.1	11.4	0.7	92.4	51.2	58.8	65.8	73.0	78.1
2006	411	64.8	13.2	0.8	95.4	48.4	58.8	66.5	73.5	78.5
2007	484	65.5	13.2	2.6	93.1	48.3	58.6	67.4	74.1	80.1
2008	497	65.7	13.3	0.2	98.1	49.1	57.9	67.5	74.4	81.2
2009	490	66.1	14.1	0.5	96.1	49.4	58.6	68.7	75.7	81.8
2010	494	65.5	12.9	5.4	93.5	47.2	56.7	68.3	74.8	80.7
2011	458	66.4	13.1	1.5	96.9	50.0	59.3	68.3	74.9	82.4
2012	471	66.2	13.8	1.3	93.1	48.5	57.4	68.6	75.8	82.4
2013	423	66.1	13.4	0.9	94.1	49.2	58.3	67.3	75.4	81.7
2014	491	66.8	13.4	1.2	97.0	51.6	58.9	68.1	75.8	81.9
2015	466	68.2	13.3	0.7	98.9	51.5	59.9	70.6	76.9	83.6
2016	388	68.2	12.7	13.7	94.8	51.9	59.7	69.6	77.6	83.4
2017	361	67.5	13.2	0.9	96.8	51.5	60.5	69.2	76.6	81.8
2018	344	66.6	13.1	2.8	95.6	49.9	57.8	67.5	76.5	81.9
2019	247	65.4	12.2	23.8	91.4	49.6	57.4	65.7	75.1	79.9
2020	199	66.9	12.4	18.4	90.1	51.4	58.9	69.1	76.4	81.1
1998-2020	8721	65.9	13.2	0.0	98.9	49.4	58.5	67.4	75.1	80.8

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	153	68.2	13.7	2.8	99.7	56.2	61.3	70.0	77.5	84.0
1999	152	66.6	14.3	1.1	94.3	49.4	57.9	66.6	77.6	83.9
2000	125	69.2	12.3	37.2	91.4	54.5	60.7	70.5	77.9	86.4
2001	143	68.7	13.9	30.6	96.4	51.2	60.6	70.4	78.8	85.1
2002	244	70.0	13.1	2.4	93.6	54.7	63.7	72.3	78.9	83.8
2003	233	70.6	13.2	2.5	95.2	54.3	63.8	72.0	80.1	85.3
2004	241	69.0	13.7	18.5	94.1	51.2	62.9	70.3	77.9	84.5
2005	240	69.1	15.4	3.8	95.1	51.5	62.4	72.4	79.8	83.8
2006	232	68.5	16.2	0.2	95.5	49.6	61.1	71.7	79.2	85.7
2007	269	70.0	16.2	1.2	99.1	49.3	66.0	72.3	79.7	85.8
2008	274	68.8	14.5	0.6	96.1	51.8	61.6	69.5	78.9	84.2
2009	299	69.2	15.0	1.7	96.9	50.7	62.9	71.3	79.7	84.5
2010	279	72.0	13.5	5.4	100	54.3	64.5	72.9	81.1	88.0
2011	252	68.3	18.2	0.5	96.5	47.2	63.3	72.7	79.3	85.1
2012	245	71.4	12.0	9.7	92.4	56.4	66.0	72.9	80.0	83.9
2013	229	69.5	15.6	0.3	97.3	51.0	61.9	72.3	79.3	84.7
2014	265	70.1	13.7	2.5	94.3	53.1	62.4	73.1	79.5	85.8
2015	218	69.4	17.0	0.5	98.0	49.1	61.8	73.9	79.3	86.5
2016	195	70.0	15.5	2.4	93.6	50.4	63.8	72.7	80.1	85.2
2017	194	71.2	14.4	1.8	96.8	51.7	64.4	74.2	81.1	86.6
2018	138	69.6	13.3	27.4	92.6	52.7	61.5	71.4	79.2	84.9
2019	127	68.9	12.4	28.5	92.2	52.1	61.5	71.3	77.5	83.8
2020	108	66.8	12.4	37.0	93.9	48.6	58.4	67.2	76.2	82.5
1998-2020	4855	69.5	14.6	0.2	100	51.7	62.5	71.9	79.3	85.0

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	0.7	0.7	28	0.5	0.5	30	1.0	1.0
5-9	18	0.2	0.9	9	0.2	0.6	9	0.3	1.3
10-14	8	0.1	0.9	3	0.1	0.7	5	0.2	1.4
15-19	5	0.1	1.0	4	0.1	0.8	1	0.0	1.5
20-24	10	0.1	1.1	7	0.1	0.9	3	0.1	1.6
25-29	19	0.2	1.3	11	0.2	1.1	8	0.3	1.8
30-34	41	0.5	1.8	23	0.4	1.5	18	0.6	2.4
35-39	124	1.4	3.2	88	1.5	3.0	36	1.2	3.6
40-44	201	2.3	5.4	144	2.5	5.5	57	1.8	5.4
45-49	374	4.2	9.6	283	4.9	10.3	91	2.9	8.3
50-54	613	6.9	16.5	455	7.8	18.1	158	5.1	13.5
55-59	788	8.8	25.4	590	10.1	28.3	198	6.4	19.9
60-64	950	10.7	36.0	683	11.7	40.0	267	8.6	28.5
65-69	1333	15.0	51.0	885	15.2	55.3	448	14.5	43.0
70-74	1465	16.5	67.5	989	17.0	72.3	476	15.4	58.4
75-79	1408	15.8	83.3	851	14.6	86.9	557	18.0	76.4
80-84	900	10.1	93.4	493	8.5	95.4	407	13.2	89.6
85+	590	6.6	100.0	267	4.6	100.0	323	10.4	100.0
All ages	8905	100.0		5813	100.0		3092	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=379 %	Females DCO rate n=353 %	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	3	0.3	0.2			1.1	0.6
25-29	11	8	0.5	0.4			1.2	0.7
30-34	23	18	1.0	0.8			1.8	0.8
35-39	88	36	3.8	1.6			4.8	1.0
40-44	141	57	5.6	2.4	0.7		5.1	0.9
45-49	277	91	10.3	3.5	1.1	1.1	5.5	1.0
50-54	447	158	17.5	6.3	1.6	1.9	5.3	1.3
55-59	576	197	27.1	9.0	1.6	2.0	4.5	1.5
60-64	672	265	38.0	14.0	1.8	0.8	3.8	1.7
65-69	871	445	53.4	24.5	3.4	2.2	3.6	2.3
70-74	982	473	65.5	27.5	4.2	4.4	3.6	2.4
75-79	848	549	70.1	36.6	7.7	8.7	3.5	2.8
80-84	487	405	67.3	38.0	18.9	20.2	3.2	2.6
85+	267	322	57.2	30.9	44.6	56.2	2.5	2.0
All ages	5738	3070			6.6	11.5	3.7	2.0
Incidence								
Raw			17.6	9.1				
WS			9.3	4.1				
ES			13.2	5.7				
BRD-S			16.1	7.2				

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

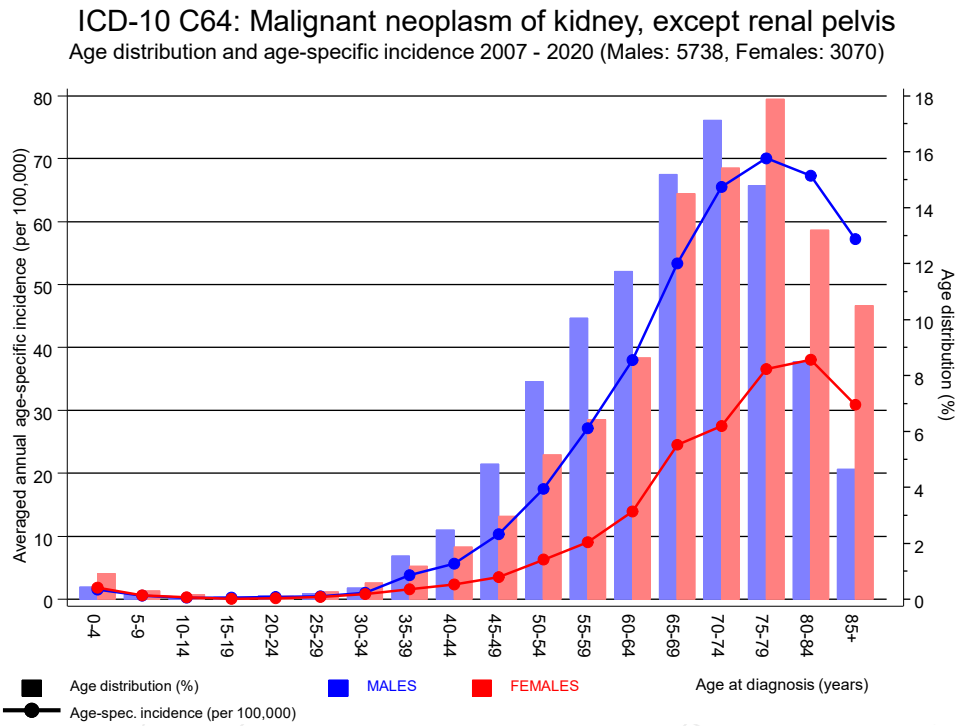


Figure 6. Age distribution (males: mean=66.6 yrs, median=68.4 yrs; females: mean=69.8 yrs, median=72.3 yrs) and age-specific incidence.

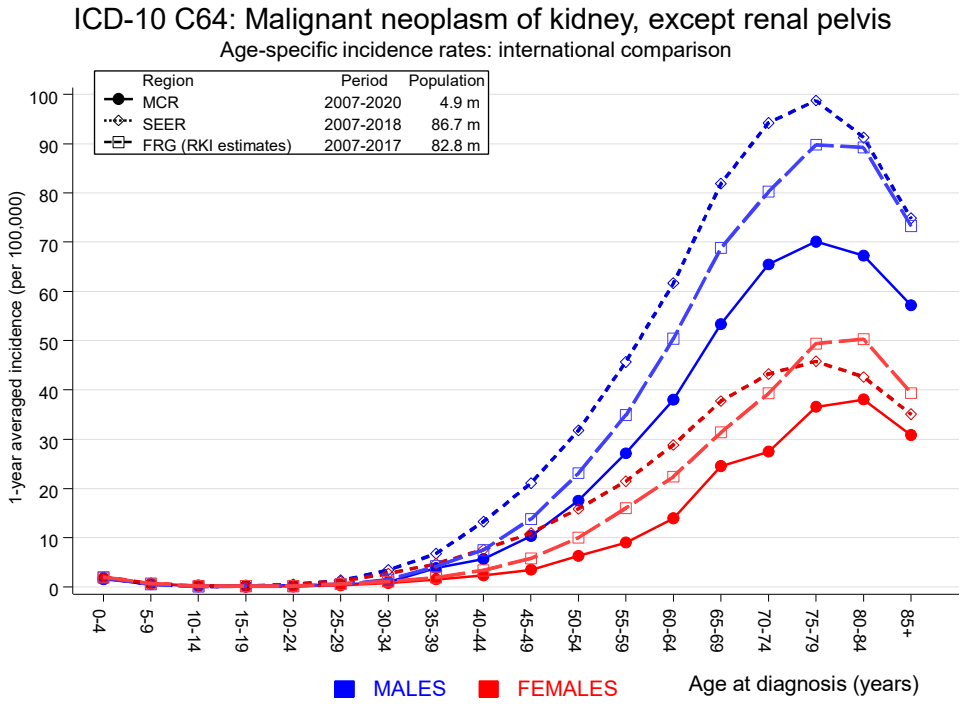


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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	4.4	2.3	1.1	4.2	#	1.7	
C09–C10	Oropharynx	17	5.4	3.1	1.8	5.0	#	3.5	
C12–C13	Hypopharynx	7	3.0	2.4	0.9	4.9		1.2	
C15	Oesophagus	25	10.7	2.3	1.5	3.5	#	4.3	8.0
C16	Stomach	35	21.5	1.6	1.1	2.3	#	4.1	11.4
C17	Small intestine	11	3.3	3.4	1.7	6.0	#	2.3	
C18	Colon	119	53.1	2.2	1.9	2.7	#	19.8	7.6
C19–C20	Rectum	49	28.9	1.7	1.3	2.2	#	6.1	
C22	Liver	45	15.8	2.8	2.1	3.8	#	8.8	8.9
C23–C24	Bile	11	5.8	1.9	1.0	3.4		1.6	27.3
C25	Pancreas	55	21.4	2.6	1.9	3.3	#	10.1	16.4
C32	Larynx	15	5.4	2.8	1.6	4.6	#	2.9	6.7
C33–C34	Lung	189	64.2	2.9	2.5	3.4	#	37.6	10.6
C38,C45	Mesothelioma	7	3.9	1.8	0.7	3.7		0.9	14.3
C40–C41	Bone	3	0.4	6.8	1.4	19.8	#	0.8	
C43	Malign. melanoma	64	24.7	2.6	2.0	3.3	#	11.8	4.7
C46,C49	Soft tissue	14	3.1	4.5	2.4	7.5	#	3.3	
C48	Peritoneal	4	0.4	9.2	2.5	23.5	#	1.1	25.0
C50	Breast	3	1.5	2.0	0.4	5.8		0.4	
C61	Prostate	432	155.3	2.8	2.5	3.1	#	83.3	3.2
C62	Testis	10	1.3	7.5	3.6	13.8	#	2.6	
C64	Kidney	218	18.9	11.6	10.1	13.2	#	59.9	0.9
C65	Renal pelvis	14	2.5	5.7	3.1	9.5	#	3.5	
C66	Ureter	10	1.5	6.8	3.3	12.5	#	2.6	
C67	Bladder	73	25.8	2.8	2.2	3.6	#	14.2	6.8
C70–C72	CNS cancer	17	6.9	2.5	1.4	3.9	#	3.0	5.9
C73	Thyroid	16	3.4	4.7	2.7	7.6	#	3.8	12.5
C76–C79	CUP	14	9.2	1.5	0.8	2.6		1.5	7.1
C82–C85	NHL	80	23.3	3.4	2.7	4.3	#	17.1	5.0
C90	Mult. myeloma	16	7.2	2.2	1.3	3.6	#	2.6	12.5
C91–C96	Leukaemia	19	8.4	2.3	1.4	3.5	#	3.2	21.1
	Others, specified	23	10.9	2.1	1.3	3.2	#	3.7	8.7
	Not observed	0	0.9	0.0	0.0	4.0		−0.3	
	All further malignancies	1625	552.4	2.9	2.8	3.1	#	322.9	5.8

Patients	7995
Median age at next malignancy (years)	71.5
Person-years	33218
Mean observation time (years)	4.2
Median observation time (years)	2.3

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	1.4	2.1	0.4	6.2		0.9	
C16	Stomach	18	8.0	2.3	1.3	3.6	#	5.6	
C17	Small intestine	3	1.1	2.6	0.5	7.6		1.0	
C18	Colon	47	22.7	2.1	1.5	2.8	#	13.5	4.3
C19–C20	Rectum	15	9.1	1.7	0.9	2.7		3.3	6.7
C22	Liver	9	2.9	3.2	1.4	6.0	#	3.4	11.1
C23–C24	Bile	14	3.3	4.2	2.3	7.0	#	5.9	14.3
C25	Pancreas	29	10.9	2.7	1.8	3.8	#	10.0	24.1
C32	Larynx	2	0.4	5.3	0.6	19.1		0.9	
C33–C34	Lung	58	16.4	3.5	2.7	4.6	#	23.1	10.3
C43	Malign. melanoma	18	8.1	2.2	1.3	3.5	#	5.5	
C46,C49	Soft tissue	3	1.3	2.3	0.5	6.8		1.0	
C50	Breast	155	63.9	2.4	2.1	2.8	#	50.5	2.6
C51	Vulva	6	2.5	2.4	0.9	5.3		2.0	16.7
C53	Cervix uteri	4	2.5	1.6	0.4	4.1		0.8	
C54	Corpus uteri	27	12.1	2.2	1.5	3.2	#	8.3	3.7
C56	Ovary	13	8.8	1.5	0.8	2.5		2.3	7.7
C64	Kidney	89	5.4	16.3	13.1	20.1	#	46.4	1.1
C65	Renal pelvis	4	0.7	5.3	1.5	13.7	#	1.8	
C66	Ureter	5	0.4	12.2	4.0	28.5	#	2.5	20.0
C67	Bladder	21	4.6	4.5	2.8	6.9	#	9.1	4.8
C70–C72	CNS cancer	6	2.9	2.1	0.8	4.5		1.7	33.3
C73	Thyroid	26	3.0	8.6	5.6	12.6	#	12.7	3.8
C76–C79	CUP	8	4.3	1.9	0.8	3.7		2.1	12.5
C81	Hodgkin lymphoma	2	0.4	5.2	0.6	18.8		0.9	
C82–C85	NHL	23	9.0	2.6	1.6	3.8	#	7.8	8.7
C90	Mult. myeloma	6	2.9	2.1	0.8	4.5		1.7	16.7
C91–C96	Leukaemia	11	3.4	3.2	1.6	5.8	#	4.2	9.1
Others, specified		9	4.0	2.2	1.0	4.2	#	2.7	22.2
Not observed		0	4.8	0.0	0.0	0.8	#	−2.7	
All further malignancies		634	221.3	2.9	2.6	3.1	#	228.9	6.2

Patients	4278
Median age at next malignancy (years)	74.3
Person-years	18025
Mean observation time (years)	4.2
Median observation time (years)	2.2

The occurrence of further specified malignancy is statistically significant.

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

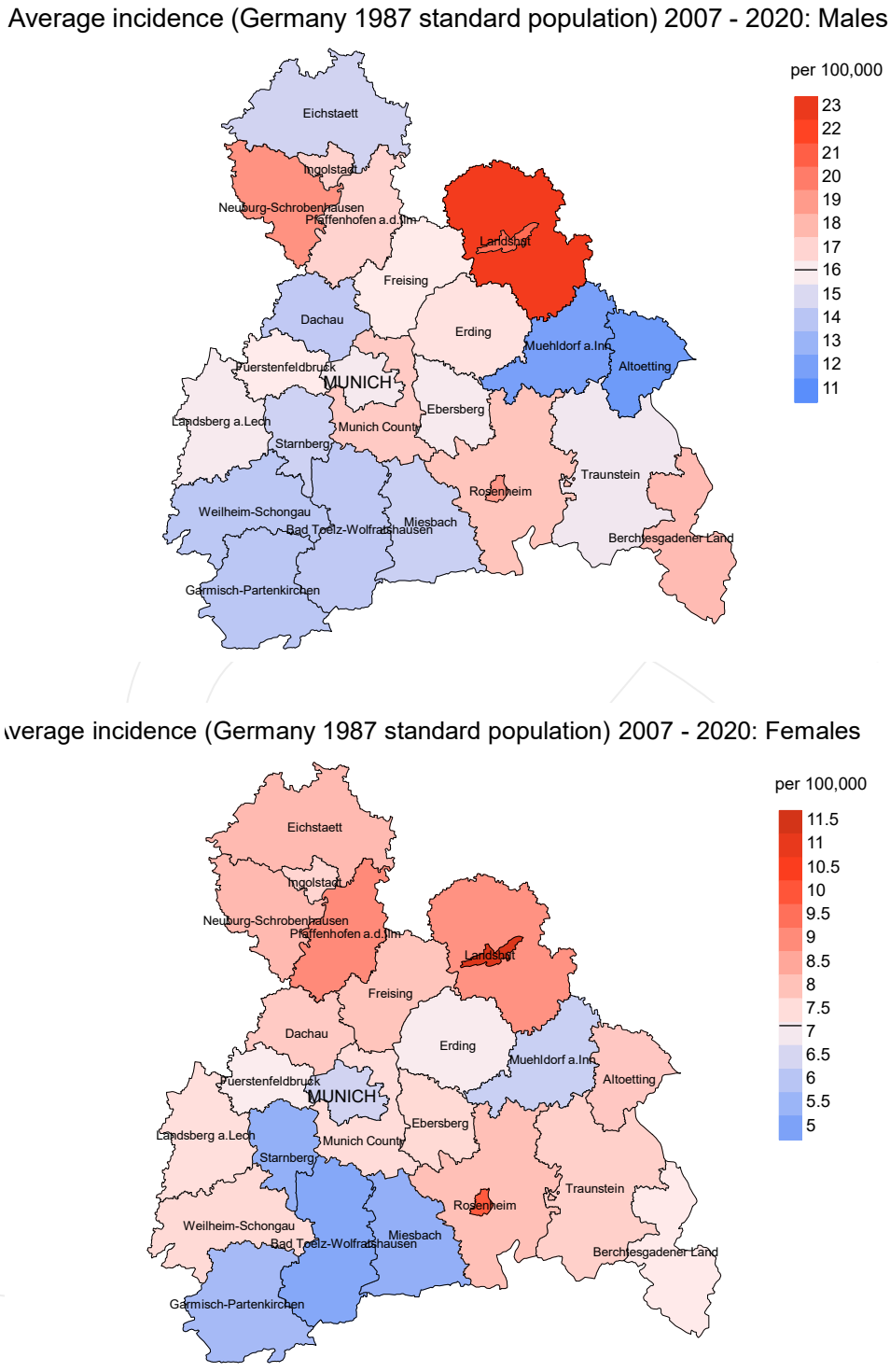
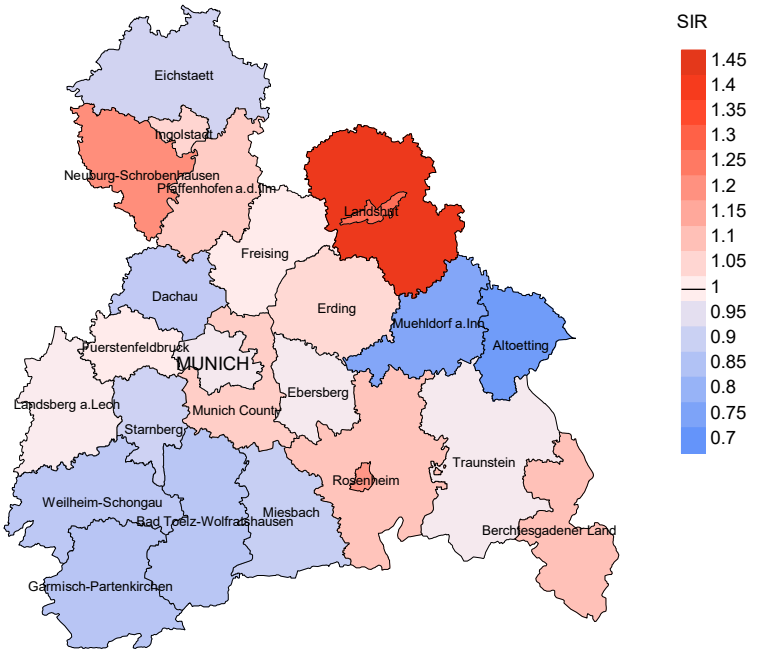


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 16.1/100,000 WS N=5,738, females 7.2/100,000 WS N=3,070).

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 90 women were identified with newly diagnosed kidney cancer. Therefore, the mean incidence 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 5.6 and 9.9/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

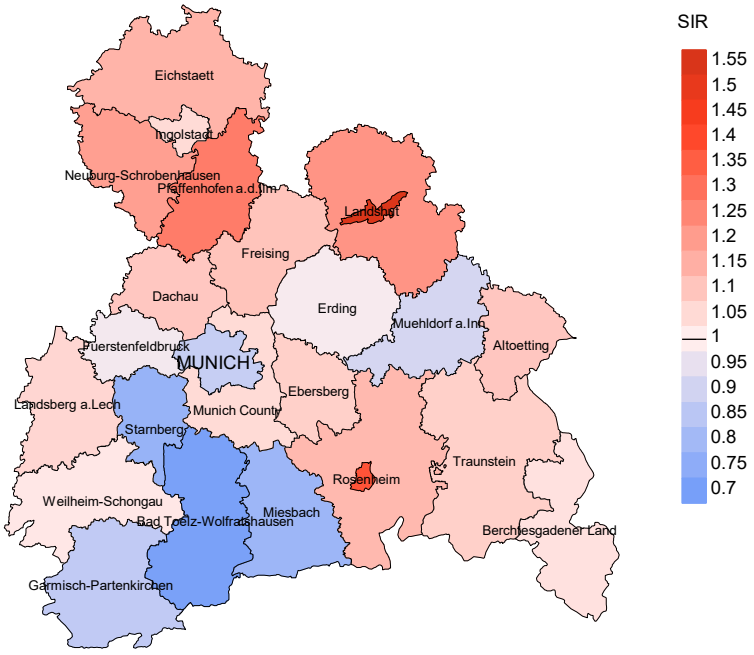


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=5,738, females N=3,070).

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 90 women were identified with newly diagnosed kidney cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.07. Though, the value of this parameter may vary with an underlying probability of 99% between 0.80 and 1.40, 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	401	96.3	10.7	275	68.6	92.7
1999	393	95.2	8.7	265	67.4	93.6
2000	362	96.7	11.0	251	69.3	93.2
2001	354	96.0	13.3	250	70.6	97.2
2002	608	98.2	15.1	454	74.7	95.4
2003	623	95.3	11.2	430	69.0	96.0
2004	629	96.7	12.4	409	65.0	94.9
2005	658	96.0	6.5	410	62.3	96.3
2006	643	92.7	7.6	394	61.3	93.1
2007	753	91.8	10.1	458	60.8	94.1
2008	771	97.5	9.1	432	56.0	95.1
2009	789	97.6	9.8	436	55.3	94.3
2010	773	97.5	8.0	386	49.9	95.1
2011	710	97.2	6.8	353	49.7	92.9
2012	716	97.8	7.5	351	49.0	92.3
2013	652	97.5	8.1	278	42.6	93.9
2014	756	97.0	8.3	319	42.2	90.3
2015	684	92.1	11.5	273	39.9	92.3
2016	583	98.6	11.5	223	38.3	91.5
2017	555	99.1	9.5	166	29.9	87.3
2018	482	99.4	6.0	112	23.2	74.1
2019	374	99.2	0.8	54	14.4	77.8
2020	307	99.0		45	14.7	95.6
1998-2020	13576	96.6	9.1	7024	51.7	93.5

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	401	214	93.9	63	15.7
1999	393	212	95.3	66	16.8
2000	362	206	95.1	54	14.9
2001	354	219	95.0	59	16.7
2002	608	322	96.9	125	20.6
2003	623	328	97.0	114	18.3
2004	629	342	96.8	110	17.5
2005	658	309	95.1	75	11.4
2006	643	345	97.7	91	14.2
2007	753	379	98.2	114	15.1
2008	771	408	99.0	108	14.0
2009	789	428	99.1	129	16.3
2010	773	455	98.5	119	15.4
2011	710	415	98.3	104	14.6
2012	716	479	98.1	119	16.6
2013	652	448	99.1	91	14.0
2014	756	442	98.2	108	14.3
2015	684	541	98.5	116	17.0
2016	583	514	99.4	101	17.3
2017	555	437	96.3	85	15.3
2018	482	413	75.3	52	10.8
2019	374	342	46.8	19	5.1
2020	307	427	89.0	26	8.5
1998–2020	13576	8625	94.1	2048	15.1

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	214	65.0	35.0	79.1
1999	212	71.7	28.3	84.7
2000	206	71.8	28.2	81.6
2001	219	73.1	26.9	85.6
2002	322	70.2	29.8	85.6
2003	328	73.8	26.2	86.2
2004	342	69.0	31.0	81.9
2005	309	72.2	27.8	82.3
2006	345	69.9	30.1	77.2
2007	379	71.8	28.2	79.6
2008	408	69.6	30.4	80.9
2009	428	72.4	27.6	80.7
2010	455	67.3	32.7	76.6
2011	415	64.6	35.4	78.7
2012	479	60.5	39.5	71.3
2013	448	62.1	37.9	73.6
2014	442	60.9	39.1	69.6
2015	541	61.2	38.8	71.9
2016	514	56.8	43.2	71.0
2017	437	54.5	45.5	67.2
2018	413	51.3	48.7	55.0
2019	342	43.0	57.0	60.6
2020	427	41.2	58.8	51.1
1998-2020	8625	63.1	36.9	74.7

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	143	70.7	69.4	76.6	70.1
1999	138	73.5	71.4	81.4	72.4
2000	123	72.4	68.7	79.2	71.2
2001	147	69.7	67.7	74.9	69.4
2002	188	73.8	73.2	74.6	73.8
2003	196	73.7	71.3	77.8	73.0
2004	203	73.7	72.4	77.2	73.6
2005	186	73.6	71.8	80.3	72.2
2006	220	73.1	71.3	77.0	72.3
2007	230	74.2	72.4	79.8	73.1
2008	265	74.5	72.7	78.1	73.9
2009	269	74.7	72.9	79.3	73.2
2010	276	75.4	74.0	78.6	74.4
2011	269	75.8	73.1	82.2	74.4
2012	277	77.0	74.9	80.7	75.5
2013	273	77.4	74.3	81.3	75.8
2014	280	77.3	74.6	81.9	75.9
2015	342	76.9	75.1	83.4	75.6
2016	327	78.2	76.3	81.0	77.4
2017	302	79.3	77.6	82.3	78.2
2018	278	79.6	78.4	81.8	79.2
2019	220	79.4	76.2	82.8	76.4
2020	285	80.2	77.3	82.8	78.8
1998-2020	5437	76.2	73.7	80.5	74.7

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	71	80.8	77.7	82.4	81.1
1999	74	77.8	76.5	84.4	78.3
2000	83	76.5	76.5	76.9	77.8
2001	72	79.0	77.8	82.3	78.0
2002	134	78.1	75.7	82.5	76.9
2003	132	78.3	77.3	80.4	77.9
2004	139	81.1	79.9	83.1	80.8
2005	123	78.7	75.3	82.6	76.2
2006	125	79.4	78.7	80.5	78.6
2007	149	80.1	79.0	82.2	80.1
2008	143	80.4	78.1	83.8	78.1
2009	159	81.1	77.6	85.7	78.9
2010	179	81.3	79.1	85.7	80.3
2011	146	81.7	78.7	87.4	79.8
2012	202	80.4	77.6	84.1	78.3
2013	175	80.6	77.5	85.0	78.8
2014	162	82.3	80.0	85.9	80.3
2015	199	81.4	78.7	86.1	79.6
2016	187	82.6	77.8	86.3	80.1
2017	135	83.5	80.8	86.6	82.2
2018	135	83.5	82.0	85.7	82.4
2019	122	81.0	78.3	82.8	78.2
2020	142	84.3	77.8	86.1	79.5
1998–2020	3188	80.8	78.4	84.5	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	99	8.9	0.40	5.2	0.37	8.1	0.40	10.9	0.44
1999	99	8.8	0.41	5.1	0.39	8.0	0.42	10.9	0.46
2000	89	7.8	0.38	4.5	0.34	6.9	0.38	9.5	0.43
2001	109	9.4	0.52	5.4	0.49	8.2	0.52	10.6	0.54
2002	136	7.3	0.38	3.9	0.34	6.3	0.38	8.7	0.42
2003	148	7.9	0.39	4.3	0.35	6.5	0.38	8.9	0.43
2004	144	7.7	0.38	4.0	0.33	6.2	0.37	8.4	0.41
2005	132	7.0	0.32	3.5	0.29	5.4	0.31	7.3	0.35
2006	162	8.5	0.41	4.3	0.35	6.4	0.38	8.6	0.42
2007	176	7.9	0.37	3.9	0.33	6.1	0.36	8.3	0.40
2008	183	8.2	0.37	3.9	0.32	6.1	0.35	8.4	0.39
2009	199	8.9	0.41	4.1	0.35	6.4	0.38	8.9	0.42
2010	185	8.2	0.38	3.7	0.32	5.8	0.35	8.1	0.40
2011	182	8.1	0.40	3.7	0.34	5.7	0.37	7.7	0.41
2012	169	7.4	0.37	3.1	0.28	5.0	0.32	6.9	0.37
2013	179	7.8	0.43	3.3	0.34	5.2	0.38	7.2	0.43
2014	163	7.0	0.33	3.0	0.27	4.7	0.30	6.3	0.33
2015	221	9.3	0.48	3.9	0.40	6.1	0.43	8.4	0.48
2016	201	8.4	0.52	3.5	0.44	5.4	0.47	7.5	0.52
2017	174	7.2	0.49	2.8	0.38	4.5	0.42	6.3	0.48
2018	146	6.0	0.43	2.2	0.31	3.6	0.35	5.2	0.41
2019	103	4.2	0.42	1.8	0.34	2.7	0.37	3.7	0.42
2020	116	4.8	0.59	1.8	0.44	2.9	0.49	4.1	0.56
1998-2020	3515	7.6	0.41	3.5	0.34	5.4	0.38	7.4	0.42

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	40	3.4	0.26	1.1	0.18	1.9	0.21	2.6	0.24
1999	53	4.5	0.35	1.7	0.26	2.7	0.30	3.7	0.34
2000	59	4.9	0.47	1.8	0.37	2.9	0.41	4.1	0.46
2001	51	4.2	0.36	1.5	0.28	2.5	0.31	3.5	0.35
2002	90	4.6	0.37	1.7	0.30	2.7	0.32	3.6	0.35
2003	94	4.8	0.41	1.7	0.32	2.7	0.35	3.8	0.39
2004	92	4.7	0.39	1.5	0.28	2.4	0.31	3.5	0.35
2005	92	4.6	0.39	1.7	0.32	2.6	0.34	3.5	0.36
2006	79	3.9	0.34	1.3	0.23	2.0	0.26	2.9	0.31
2007	97	4.2	0.36	1.3	0.24	2.1	0.29	3.2	0.34
2008	101	4.4	0.37	1.4	0.25	2.3	0.28	3.2	0.33
2009	112	4.8	0.38	1.7	0.28	2.6	0.31	3.6	0.34
2010	121	5.2	0.44	1.6	0.33	2.6	0.36	3.9	0.42
2011	86	3.7	0.34	1.2	0.23	1.9	0.27	2.7	0.31
2012	121	5.1	0.50	1.6	0.38	2.6	0.42	3.9	0.47
2013	99	4.2	0.44	1.3	0.30	2.1	0.35	3.0	0.39
2014	107	4.4	0.41	1.3	0.28	2.1	0.31	3.2	0.37
2015	110	4.5	0.51	1.3	0.33	2.1	0.39	3.1	0.46
2016	91	3.7	0.47	1.2	0.35	1.9	0.39	2.6	0.44
2017	64	2.6	0.33	0.8	0.25	1.2	0.27	1.7	0.28
2018	66	2.7	0.48	0.6	0.26	1.1	0.31	1.6	0.38
2019	44	1.8	0.35	0.4	0.19	0.8	0.24	1.2	0.29
2020	60	2.4	0.56	0.8	0.35	1.2	0.41	1.6	0.45
1998-2020	1929	4.0	0.40	1.3	0.29	2.1	0.32	2.9	0.36

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	0.1	0.1			0.1	2	0.2	0.2
15-19	1	0.0	0.2	1	0.0	0.2			0.2
20-24	1	0.0	0.2	1	0.0	0.2			0.2
25-29	3	0.1	0.3	2	0.1	0.3	1	0.1	0.2
30-34	2	0.1	0.3	2	0.1	0.4			0.2
35-39	8	0.2	0.5	4	0.2	0.5	4	0.3	0.5
40-44	19	0.5	1.1	13	0.5	1.1	6	0.5	1.0
45-49	45	1.2	2.3	35	1.5	2.5	10	0.8	1.8
50-54	100	2.7	5.0	72	3.0	5.5	28	2.2	4.0
55-59	167	4.5	9.5	128	5.3	10.9	39	3.0	7.0
60-64	281	7.6	17.2	224	9.3	20.2	57	4.5	11.5
65-69	432	11.8	28.9	291	12.1	32.4	141	11.0	22.5
70-74	598	16.3	45.2	442	18.4	50.8	156	12.2	34.7
75-79	748	20.3	65.6	484	20.2	71.0	264	20.6	55.4
80-84	689	18.7	84.3	397	16.6	87.6	292	22.8	78.2
85+	577	15.7	100.0	298	12.4	100.0	279	21.8	100.0
All ages	3676	100.0		2397	100.0		1279	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		2			0.1	0.40		8.7
15-19	1		0.1	0.25			2.1	
20-24	1		0.0	0.14			1.4	
25-29	2	1	0.1	0.18	0.0	0.13	2.2	1.0
30-34	2		0.1	0.09			1.4	
35-39	4	4	0.2	0.05	0.2	0.11	1.5	1.0
40-44	13	6	0.5	0.09	0.2	0.11	2.1	0.7
45-49	35	10	1.3	0.13	0.4	0.11	2.5	0.6
50-54	72	28	2.8	0.16	1.1	0.18	2.7	1.1
55-59	128	39	6.0	0.22	1.8	0.20	2.9	1.0
60-64	224	57	12.7	0.33	3.0	0.22	3.5	1.1
65-69	291	141	17.8	0.33	7.8	0.32	3.2	2.0
70-74	442	156	29.5	0.45	9.1	0.33	3.7	1.8
75-79	484	264	40.0	0.57	17.6	0.48	3.9	2.7
80-84	397	292	54.8	0.82	27.4	0.72	3.8	3.1
85+	298	279	63.8	1.12	26.8	0.87	3.3	2.3
All ages	2397	1279					3.5	2.1
Mortality								
Raw			7.4	0.42	3.8	0.42		
WS			3.2	0.34	1.2	0.29		
ES			4.9	0.37	1.9	0.33		
BRD-S			6.8	0.42	2.7	0.38		
PYLL-70								
per 100,000			24.4		8.6			
ES			21.2		7.3			
AYLL-70			9.0		8.5			

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	17	0.8	8	47.1	2	11.8	7	41.2
C09–C10	Oropharynx	28	1.4	11	39.3	2	7.1	15	53.6
C12–C13	Hypopharynx	10	0.5	3	30.0	1	10.0	6	60.0
C15	Oesophagus	37	1.8	10	27.0	1	2.7	26	70.3
C16	Stomach	65	3.2	25	38.5	8	12.3	32	49.2
C17	Small intestine	10	0.5	4	40.0	1	10.0	5	50.0
C18	Colon	175	8.7	64	36.6	33	18.9	78	44.6
C19–C20	Rectum	75	3.7	19	25.3	19	25.3	37	49.3
C22	Liver	54	2.7	8	14.8	10	18.5	36	66.7
C23–C24	Bile	17	0.8	2	11.8	1	5.9	14	82.4
C25	Pancreas	70	3.5	2	2.9	11	15.7	57	81.4
C32	Larynx	28	1.4	17	60.7	1	3.6	10	35.7
C33–C34	Lung	239	11.9	39	16.3	29	12.1	171	71.5
C38,C45	Mesothelioma	13	0.6	1	7.7	1	7.7	11	84.6
C40–C41	Bone	4	0.2	3	75.0			1	25.0
C43	Malign. melanoma	72	3.6	41	56.9	6	8.3	25	34.7
C44	Skin others	97	4.8	30	30.9	5	5.2	62	63.9
C46,C49	Soft tissue	20	1.0	7	35.0	2	10.0	11	55.0
C48	Peritoneal	5	0.2	1	20.0			4	80.0
C60	Penis	4	0.2	1	25.0	1	25.0	2	50.0
C61	Prostate	435	21.6	171	39.3	55	12.6	209	48.0
C62	Testis	12	0.6	11	91.7			1	8.3
C64	Kidney	137	6.8			38	27.7	99	72.3
C65	Renal pelvis	23	1.1	5	21.7	11	47.8	7	30.4
C66	Ureter	18	0.9	6	33.3	4	22.2	8	44.4
C67	Bladder	121	6.0	45	37.2	16	13.2	60	49.6
C69	Eye melanoma	4	0.2	3	75.0			1	25.0
C70–C72	CNS cancer	24	1.2	5	20.8	2	8.3	17	70.8
C73	Thyroid	24	1.2	12	50.0			12	50.0
C76–C79	CUP	29	1.4	12	41.4	3	10.3	14	48.3
C81	Hodgkin lymphoma	4	0.2	3	75.0			1	25.0
C82–C85	NHL	71	3.5	17	23.9	10	14.1	44	62.0
C90	Mult. myeloma	27	1.3	12	44.4	3	11.1	12	44.4
C91–C96	Leukaemia	24	1.2	3	12.5	1	4.2	20	83.3
Others, specified		23	1.1	9	39.1	3	13.0	11	47.8
All further malignancies		2016	100.0	610	30.3	280	13.9	1126	55.9

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

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

Table 14b

Further malignancies in deaths in period 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C07–C08	Salivary gland	3	0.4	3	100.0				
C15	Oesophagus	5	0.6	1	20.0	1	20.0	3	60.0
C16	Stomach	28	3.3	6	21.4	8	28.6	14	50.0
C18	Colon	55	6.5	15	27.3	8	14.5	32	58.2
C19–C20	Rectum	28	3.3	8	28.6	5	17.9	15	53.6
C21	Anus/canal	2	0.2			1	50.0	1	50.0
C22	Liver	12	1.4	2	16.7	4	33.3	6	50.0
C23–C24	Bile	18	2.1	1	5.6	4	22.2	13	72.2
C25	Pancreas	47	5.5	3	6.4	6	12.8	38	80.9
C26	GI cancer	2	0.2					2	100.0
C33–C34	Lung	78	9.2	9	11.5	11	14.1	58	74.4
C38,C45	Mesothelioma	2	0.2					2	100.0
C43	Malign. melanoma	22	2.6	12	54.5	3	13.6	7	31.8
C44	Skin others	28	3.3	16	57.1	2	7.1	10	35.7
C46,C49	Soft tissue	8	0.9	4	50.0	1	12.5	3	37.5
C48	Peritoneal	2	0.2			1	50.0	1	50.0
C50	Breast	196	23.0	102	52.0	18	9.2	76	38.8
C51	Vulva	2	0.2					2	100.0
C53	Cervix uteri	19	2.2	11	57.9	1	5.3	7	36.8
C54	Corpus uteri	35	4.1	20	57.1	5	14.3	10	28.6
C55,C57	Fem. genitals un	4	0.5	3	75.0			1	25.0
C56	Ovary	31	3.6	10	32.3	5	16.1	16	51.6
C64	Kidney	54	6.3			14	25.9	40	74.1
C65	Renal pelvis	3	0.4	1	33.3	1	33.3	1	33.3
C66	Ureter	3	0.4	1	33.3	2	66.7		
C67	Bladder	35	4.1	9	25.7	9	25.7	17	48.6
C68	Urinary org.	2	0.2	1	50.0			1	50.0
C69	Eye melanoma	2	0.2	1	50.0	1	50.0		
C70–C72	CNS cancer	10	1.2			2	20.0	8	80.0
C73	Thyroid	30	3.5	11	36.7	2	6.7	17	56.7
C74–C80	Cancer others	3	0.4	1	33.3	1	33.3	1	33.3
C76–C79	CUP	19	2.2	3	15.8	1	5.3	15	78.9
C82–C85	NHL	35	4.1	13	37.1	7	20.0	15	42.9
C90	Mult. myeloma	9	1.1	1	11.1	1	11.1	7	77.8
C91–C96	Leukaemia	9	1.1	1	11.1	3	33.3	5	55.6
Others, specified		10	1.2	5	50.0	1	10.0	4	40.0
All further malignancies		851	100.0	274	32.2	129	15.2	448	52.6

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.	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		0.0	0.17			1.5	
25-29	2	1	0.1	0.20	0.0	0.13	2.4	1.1
30-34	2		0.1	0.10			1.4	
35-39	3	4	0.1	0.04	0.2	0.12	1.2	1.1
40-44	11	5	0.4	0.08	0.2	0.10	2.0	0.7
45-49	32	8	1.2	0.12	0.3	0.10	2.5	0.6
50-54	58	23	2.3	0.15	0.9	0.17	2.5	1.0
55-59	103	33	4.9	0.22	1.5	0.21	2.7	1.0
60-64	181	41	10.2	0.33	2.2	0.20	3.4	1.0
65-69	220	109	13.5	0.36	6.0	0.31	3.0	2.0
70-74	325	116	21.7	0.49	6.7	0.32	3.6	1.7
75-79	331	200	27.4	0.60	13.3	0.49	3.6	2.7
80-84	272	222	37.6	0.89	20.9	0.79	3.7	3.1
85+	196	229	42.0	1.20	22.0	0.93	3.0	2.4
All ages	1741	991					3.3	2.0
Mortality								
Raw			5.3	0.41	3.0	0.42		
WS			2.4	0.33	0.9	0.27		
ES			3.7	0.36	1.5	0.32		
BRD-S			4.9	0.41	2.1	0.37		
PYLL-70								
per 100,000			20.2		6.7			
ES			17.6		5.5			
AYLL-70			9.4		8.4			

* 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.	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		0.0	0.17			1.5	
25-29	2	1	0.1	0.20	0.0	0.13	2.4	1.1
30-34	2		0.1	0.11			1.5	
35-39	3	2	0.1	0.04	0.1	0.06	1.2	0.5
40-44	11	3	0.4	0.09	0.1	0.07	2.0	0.4
45-49	28	8	1.0	0.12	0.3	0.11	2.2	0.6
50-54	51	20	2.0	0.15	0.8	0.15	2.2	0.9
55-59	88	30	4.1	0.21	1.4	0.21	2.3	1.0
60-64	151	32	8.5	0.33	1.7	0.17	2.9	0.8
65-69	172	95	10.5	0.33	5.2	0.31	2.4	1.8
70-74	238	85	15.9	0.44	4.9	0.28	2.7	1.3
75-79	221	148	18.3	0.47	9.9	0.41	2.5	2.0
80-84	172	167	23.8	0.64	15.7	0.64	2.5	2.4
85+	115	174	24.6	0.75	16.7	0.74	1.9	1.9
All ages	1259	765					2.5	1.6
Mortality								
Raw			3.9	0.34	2.3	0.36		
WS			1.8	0.29	0.7	0.24		
ES			2.7	0.31	1.1	0.28		
BRD-S			3.6	0.34	1.6	0.32		
PYLL-70								
per 100,000			17.6		5.6			
ES			15.4		4.5			
AYLL-70			9.8		8.2			

* See corresponding tables with multiple malignancies.

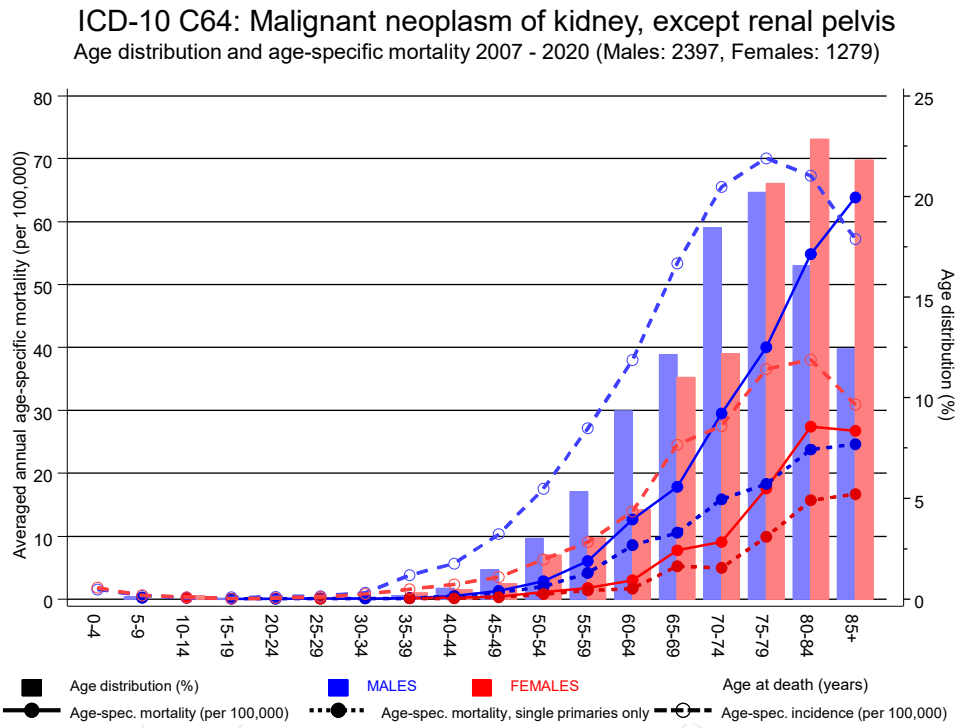
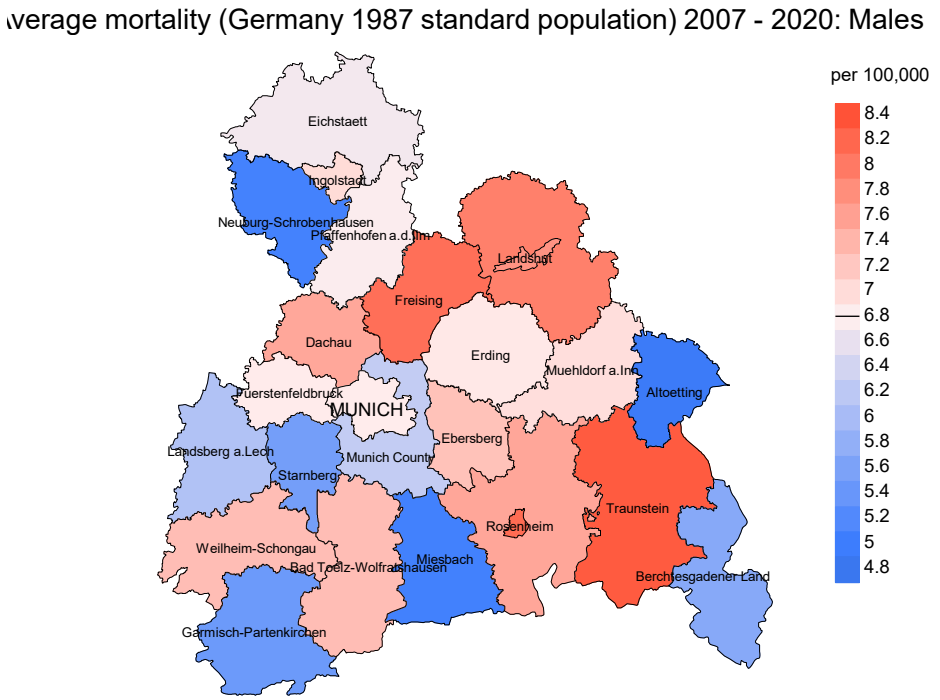


Figure 17. Distribution of age at death (bars; males: mean=67.4 yrs, median=68.5 yrs; females: mean=70.6 yrs, median=72.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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



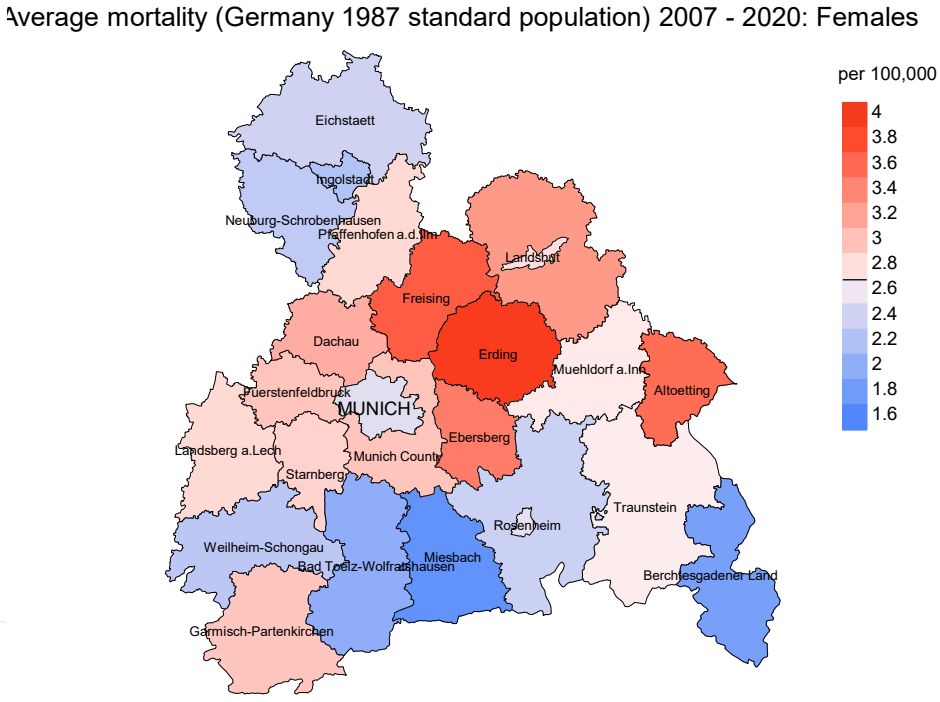
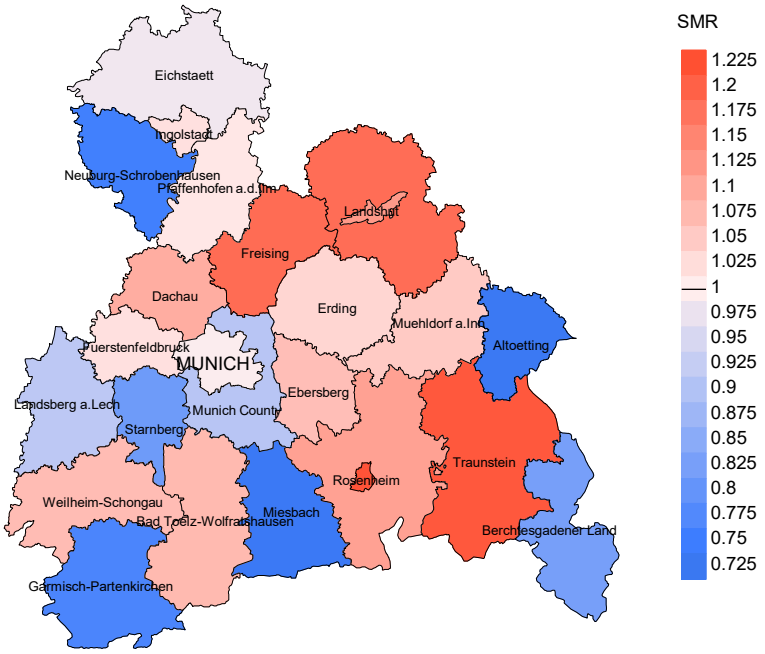


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.8/100,000 WS N=2,397, females 2.7/100,000 WS N=1,279).

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 47 women died from kidney cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.3 and 5.1/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

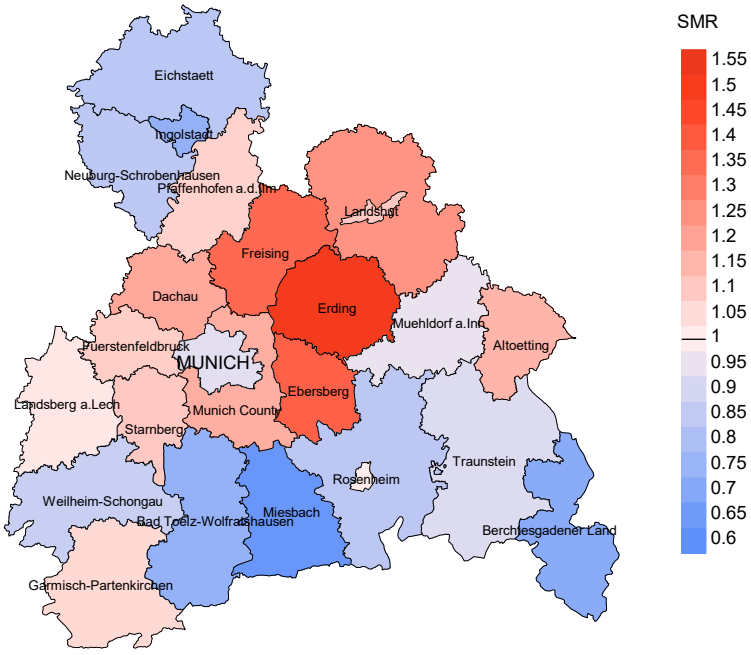


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,397, females N=1,279).

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 47 women died from kidney cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.38. Though, the value of this parameter may vary with an underlying probability of 99% between 0.92 and 1.99, 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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