

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C22: Liver cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	8,518
Diseases	8,523
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m





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

https://www.tumorregister-muenchen.de/en/facts/base/bC22__E-ICD-10-C22-Liver-cancer-incidence-and-mortality.pdf

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

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

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

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

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

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

Munich Cancer Registry, January 2021

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

^{##} Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

^{###} DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

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

Code	Description
C22.-	Malignant neoplasm of liver and intrahepatic bile ducts
C22.0	Liver cell carcinoma
C22.1	Intrahepatic bile duct carcinoma
C22.2	Hepatoblastoma
C22.3	Angiosarcoma of liver
C22.4	Other sarcomas of liver
C22.7	Other specified carcinomas of liver
C22.9	Liver, unspecified

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	192	73	38.0	9.4	3.9	97.9	100.0
1999	215	88	40.9	8.4	3.9	97.7	99.1
2000	225	98	43.6	8.1	3.9	96.0	100.0
2001	195	74	37.9	8.8	3.9	97.9	99.0
2002	352	152	43.2	9.9	4.0	98.9	100.0 #
2003	333	137	41.1	10.6	4.0	96.7	99.4
2004	339	139	41.0	11.5	4.0	95.9	99.1
2005	353	129	36.5	12.3	4.0	96.3	99.4
2006	398	129	32.4	12.9	4.0	95.0	98.7
2007	455	136	29.9	13.2	4.0	94.7	98.7 #
2008	480	114	23.8	13.5	4.0	92.3	99.4
2009	469	116	24.7	14.0	3.8	90.6	99.8
2010	448	105	23.4	14.5	3.6	92.9	100.0
2011	450	102	22.7	14.9	3.6	90.2	99.6
2012	519	113	21.8	15.3	3.5	91.1	99.4
2013	510	100	19.6	15.4	3.3	88.6	99.0
2014	506	109	21.5	15.9	3.3	86.6	99.4
2015	531	117	22.0	16.1	3.0	83.4	97.6
2016	485	122	25.2	16.2	2.7	85.2	99.8
2017	427	103	24.1	16.6	2.3	74.7	99.5
2018	336	22	6.5	16.8	1.7	55.1	100.0
2019	305	6	2.0	17.0	2.0	41.6	84.6 ##
1998-2019	8523	2284	26.8	17.0	3.9	87.9	98.8

8,523 cases diagnosed 1998-2019 are related to a total of 8,518 patients. Currently, in 1,795 (21.1 %) of these 8,518 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,447 / 266 / 82 (17.0 % / 3.1 % / 1.0 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 427 cases has been diagnosed, of which 16.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	135	70.3	53	39.3	10.4	4.3	98.5	100.0
1999	144	67.0	61	42.4	9.0	4.4	97.9	98.6
2000	161	71.6	59	36.6	8.6	4.4	96.9	100.0
2001	155	79.5	54	34.8	8.9	4.4	98.1	99.4
2002	253	71.9	103	40.7	9.8	4.4	98.8	100.0 #
2003	240	72.1	95	39.6	10.7	4.4	96.7	99.2
2004	251	74.0	95	37.8	11.6	4.5	95.6	98.8
2005	255	72.2	81	31.8	12.3	4.4	96.9	100.0
2006	286	71.9	84	29.4	12.8	4.5	96.2	99.0
2007	339	74.5	102	30.1	13.0	4.5	95.3	98.5 #
2008	354	73.8	77	21.8	13.2	4.5	92.1	99.2
2009	340	72.5	67	19.7	13.6	4.3	90.9	100.0
2010	352	78.6	74	21.0	14.4	4.2	92.3	100.0
2011	342	76.0	72	21.1	14.9	4.2	89.8	99.4
2012	367	70.7	72	19.6	15.4	4.2	92.9	99.7
2013	352	69.0	59	16.8	15.4	3.8	88.4	98.9
2014	370	73.1	70	18.9	15.9	3.8	86.5	99.2
2015	380	71.6	73	19.2	16.3	3.3	82.6	97.4
2016	353	72.8	84	23.8	16.5	3.0	85.8	99.7
2017	306	71.7	71	23.2	16.8	2.5	76.1	99.7
2018	231	68.8	11	4.8	17.0	2.0	52.4	100.0
2019	224	73.4	6	2.7	17.2	2.3	44.2	84.4 ##
1998-2019	6190	72.6	1523	24.6	17.2	4.3	88.2	98.8

6,190 cases diagnosed 1998-2019 are related to a total of 6,187 patients. Currently, in 1,328 (21.5 %) of these 6,187 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,053 / 206 / 69 (17.0 % / 3.3 % / 1.1 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 306 cases has been diagnosed, of which 16.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.5 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

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

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	57	29.7	20	35.1	7.0	2.7	96.5	100.0
1999	71	33.0	27	38.0	7.0	2.7	97.2	100.0
2000	64	28.4	39	60.9	6.8	2.7	93.8	100.0
2001	40	20.5	20	50.0	8.6	2.7	97.5	97.5
2002	99	28.1	49	49.5	10.3	2.7	99.0	100.0 #
2003	93	27.9	42	45.2	10.6	2.8	96.8	100.0
2004	88	26.0	44	50.0	11.1	2.8	96.6	100.0
2005	98	27.8	48	49.0	12.1	2.7	94.9	98.0
2006	112	28.1	45	40.2	13.0	2.8	92.0	98.2
2007	116	25.5	34	29.3	13.6	2.8	93.1	99.1 #
2008	126	26.3	37	29.4	14.4	2.8	92.9	100.0
2009	129	27.5	49	38.0	14.9	2.6	89.9	99.2
2010	96	21.4	31	32.3	15.1	2.1	94.8	100.0
2011	108	24.0	30	27.8	15.0	2.0	91.7	100.0
2012	152	29.3	41	27.0	14.8	1.9	86.8	98.7
2013	158	31.0	41	25.9	15.4	2.0	89.2	99.4
2014	136	26.9	39	28.7	15.7	2.1	86.8	100.0
2015	151	28.4	44	29.1	15.5	2.2	85.4	98.0
2016	132	27.2	38	28.8	15.5	2.1	83.3	100.0
2017	121	28.3	32	26.4	15.9	1.7	71.1	99.2
2018	105	31.3	11	10.5	16.2	1.1	61.0	100.0
2019	81	26.6			16.7	1.3	34.6	85.2 ##
1998–2019	2333	27.4	761	32.6	16.7	2.7	87.1	98.9

2,333 cases diagnosed 1998-2019 are related to a total of 2,331 patients. Currently, in 467 (20.0 %) of these 2,331 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 394 / 60 / 13 (16.9 % / 2.6 % / 0.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 121 cases has been diagnosed, of which 15.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 1.7 % 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 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	135	57	12.2	4.8	7.6	2.0	11.1	3.1	14.2	4.1
1999	144	71	12.9	6.0	7.6	2.4	11.4	3.7	15.0	4.9
2000	161	64	14.1	5.3	8.4	2.1	12.6	3.3	15.8	4.6
2001	155	40	13.4	3.3	7.9	1.5	11.7	2.2	15.2	2.7
2002	253	99	13.6	5.1	7.6	2.0	11.4	3.0	14.6	4.2
2003	240	93	12.8	4.7	6.9	1.9	10.4	2.8	13.8	3.9
2004	251	88	13.3	4.5	7.3	1.9	11.0	2.7	14.2	3.5
2005	255	98	13.5	4.9	7.2	2.2	10.6	3.0	13.5	3.7
2006	286	112	14.9	5.6	7.8	2.2	11.7	3.3	15.1	4.3
2007	339	116	15.3	5.0	8.2	2.1	12.1	3.1	15.4	3.9
2008	354	126	15.9	5.4	8.5	2.4	12.3	3.4	15.4	4.4
2009	340	129	15.2	5.5	7.8	2.1	11.3	3.2	14.5	4.3
2010	352	96	15.6	4.1	7.8	1.5	11.6	2.2	14.8	2.9
2011	342	108	15.3	4.6	7.6	2.0	11.1	2.7	14.2	3.5
2012	367	152	16.2	6.4	7.9	2.7	11.6	3.9	14.9	5.1
2013	352	158	15.3	6.6	7.7	2.8	11.2	4.1	14.0	5.2
2014	370	136	15.9	5.6	7.8	2.4	11.4	3.4	14.4	4.2
2015	380	151	16.0	6.2	7.7	2.5	11.3	3.6	14.6	4.6
2016	353	132	14.7	5.4	6.8	2.1	10.1	3.1	13.3	4.0
2017	306	121	12.7	4.9	5.6	2.0	8.5	2.9	11.3	3.7
2018	231	105	9.5	4.2	4.4	1.7	6.5	2.5	8.4	3.2
2019	224	81	9.2	3.3	4.5	1.5	6.6	2.2	8.3	2.6
1998-2019	6190	2333	14.0	5.1	7.1	2.1	10.5	3.1	13.5	4.0

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

Table 3

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	192	68.2	12.2	16.5	92.2	53.6	60.7	68.5	76.7	83.6
1999	215	70.0	11.7	10.8	95.7	57.5	62.5	70.2	78.2	84.0
2000	225	70.4	11.8	25.1	94.3	57.2	63.7	70.1	78.5	86.1
2001	195	68.1	12.6	28.2	98.8	52.2	61.0	68.9	77.2	82.3
2002	352	69.5	11.0	29.3	94.0	55.8	62.4	69.9	77.5	82.3
2003	333	70.1	12.1	10.9	98.8	57.4	63.3	70.7	78.7	83.0
2004	339	69.8	12.0	3.1	93.4	54.4	62.0	70.5	78.2	84.3
2005	353	69.2	13.0	1.0	100	56.9	63.1	68.9	77.6	83.7
2006	398	69.8	11.3	20.4	96.6	54.3	62.8	69.8	78.3	84.6
2007	455	69.3	12.1	0.3	96.7	54.7	62.1	70.5	77.8	84.1
2008	480	68.5	12.4	1.1	97.9	54.0	62.1	69.3	76.8	82.8
2009	469	70.4	11.5	1.4	95.8	57.0	65.1	71.0	77.7	84.1
2010	448	70.7	11.3	0.8	98.5	56.8	63.8	71.2	78.2	85.1
2011	450	69.6	12.9	0.7	98.3	54.6	63.8	70.9	77.7	83.3
2012	519	69.7	12.0	1.5	97.8	54.8	64.1	71.7	77.5	82.6
2013	510	69.7	12.0	0.6	96.7	55.8	63.1	70.9	77.7	83.4
2014	506	70.3	11.2	0.5	98.1	56.3	63.6	71.4	77.4	84.2
2015	531	70.8	12.0	7.0	99.2	56.6	63.5	72.5	78.6	84.5
2016	485	71.8	11.9	3.0	104	57.2	65.4	73.5	79.3	84.7
2017	427	71.6	11.3	20.2	98.0	57.4	65.1	73.3	79.5	84.4
2018	336	70.5	10.7	35.1	98.1	55.2	63.2	72.4	78.0	83.1
2019	305	69.1	10.4	33.3	91.2	55.7	62.8	69.9	76.6	81.4
1998-2019	8523	70.0	11.8	0.3	104	55.8	63.2	70.9	78.0	83.7

Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	135	67.0	11.6	16.5	89.1	55.0	60.3	66.3	74.7	82.6
1999	144	68.1	11.2	10.8	95.7	56.4	61.8	69.0	75.8	79.8
2000	161	69.3	12.1	25.1	94.3	55.6	63.0	68.5	76.2	87.6
2001	155	67.4	11.6	31.6	95.3	50.5	61.0	68.3	75.6	81.6
2002	253	68.2	10.1	36.0	93.8	55.6	62.1	68.1	75.4	81.2
2003	240	68.8	11.2	25.1	92.4	56.1	62.5	68.6	76.9	82.1
2004	251	68.6	10.9	22.5	93.4	54.7	61.2	69.0	75.9	81.9
2005	255	68.1	9.8	34.4	93.0	56.9	62.2	67.4	75.2	80.4
2006	286	68.7	10.4	41.8	96.6	55.0	62.0	69.1	76.1	81.9
2007	339	68.5	11.4	0.3	96.7	56.0	61.5	69.8	76.0	81.1
2008	354	67.7	11.0	6.5	97.9	54.5	61.5	68.7	74.5	80.5
2009	340	69.4	11.5	1.4	94.7	56.5	63.6	70.3	76.6	83.1
2010	352	69.5	10.9	0.8	94.9	56.2	62.4	70.7	76.6	82.6
2011	342	69.0	11.1	0.8	92.3	55.2	63.5	70.4	76.3	81.2
2012	367	69.3	11.0	1.5	91.3	54.9	63.5	71.2	76.7	82.0
2013	352	69.2	11.4	0.6	96.7	55.9	62.4	69.7	77.0	82.4
2014	370	69.8	10.4	18.4	95.6	56.2	63.0	70.8	76.9	82.0
2015	380	70.2	10.8	9.2	99.2	56.8	63.6	72.2	77.3	82.9
2016	353	71.4	11.5	10.0	104	57.6	65.6	73.4	78.7	83.6
2017	306	71.5	10.4	33.7	94.4	57.4	65.5	73.3	79.3	82.8
2018	231	69.8	10.3	41.3	98.1	55.1	62.2	72.1	77.6	81.7
2019	224	69.4	9.8	33.3	88.1	56.1	62.8	70.3	76.5	81.2
1998-2019	6190	69.2	11.0	0.3	104	55.8	62.6	70.1	76.7	82.1

Table 3b

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	57	71.1	13.1	34.6	92.2	51.1	62.2	74.9	78.8	87.3
1999	71	73.8	11.8	35.7	94.0	59.5	64.4	75.7	83.3	88.1
2000	64	73.1	10.7	33.9	93.4	60.8	65.7	75.3	80.4	84.5
2001	40	71.2	15.5	28.2	98.8	53.4	62.8	72.2	81.2	91.2
2002	99	72.8	12.6	29.3	94.0	58.3	65.3	76.5	80.7	86.9
2003	93	73.4	13.4	10.9	98.8	60.3	66.3	77.0	81.0	86.0
2004	88	73.1	14.4	3.1	93.4	51.3	65.3	74.3	83.6	89.3
2005	98	72.2	18.7	1.0	100	55.2	65.4	75.4	83.8	90.8
2006	112	72.9	13.1	20.4	95.3	54.2	66.0	72.8	83.1	86.7
2007	116	71.7	13.6	25.9	94.8	53.8	64.5	73.1	82.6	87.1
2008	126	70.6	15.6	1.1	96.7	52.5	64.0	73.5	81.4	86.0
2009	129	73.1	11.1	39.7	95.8	58.4	66.4	73.8	81.9	86.4
2010	96	75.0	11.9	15.6	98.5	60.8	69.0	74.7	85.2	87.7
2011	108	71.4	17.3	0.7	98.3	47.8	66.1	75.3	82.2	88.0
2012	152	70.8	14.0	1.5	97.8	54.7	65.3	74.0	79.3	85.5
2013	158	70.8	13.1	2.7	95.4	54.5	63.9	72.0	79.8	85.1
2014	136	71.7	13.0	0.5	98.1	57.0	65.7	72.8	78.8	87.1
2015	151	72.4	14.4	7.0	95.6	54.2	63.2	74.8	83.7	89.3
2016	132	73.0	12.8	3.0	101	56.3	65.2	74.8	81.0	87.5
2017	121	71.9	13.3	20.2	98.0	57.5	65.0	73.4	79.9	86.5
2018	105	72.1	11.3	35.1	95.3	58.6	65.7	73.2	79.2	85.9
2019	81	68.5	12.0	35.2	91.2	50.7	62.8	68.8	77.4	82.9
1998-2019	2333	72.1	13.6	0.5	101	55.7	65.2	73.9	81.3	87.1

Table 4

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

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	17	0.3	0.3	9	0.2	0.2	8	0.5	0.5
5-9	6	0.1	0.4	5	0.1	0.3	1	0.1	0.6
10-14	0	0.0	0.4			0.3			0.6
15-19	6	0.1	0.5	4	0.1	0.4	2	0.1	0.7
20-24	6	0.1	0.6	2	0.0	0.5	4	0.2	0.9
25-29	6	0.1	0.7	4	0.1	0.6	2	0.1	1.1
30-34	18	0.3	1.0	12	0.3	0.8	6	0.4	1.4
35-39	26	0.4	1.4	11	0.3	1.1	15	0.9	2.4
40-44	44	0.7	2.2	27	0.6	1.7	17	1.1	3.4
45-49	122	2.1	4.2	83	1.9	3.6	39	2.4	5.8
50-54	282	4.8	9.0	217	5.0	8.7	65	4.0	9.9
55-59	469	7.9	16.9	375	8.7	17.4	94	5.8	15.7
60-64	685	11.6	28.5	544	12.6	30.0	141	8.8	24.5
65-69	953	16.1	44.6	734	17.0	47.0	219	13.6	38.1
70-74	1170	19.8	64.3	884	20.5	67.5	286	17.8	55.8
75-79	997	16.8	81.2	729	16.9	84.5	268	16.6	72.4
80-84	665	11.2	92.4	463	10.7	95.2	202	12.5	85.0
85+	449	7.6	100.0	207	4.8	100.0	242	15.0	100.0
All ages	5921	100.0		4310	100.0		1611	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=838 %	Females DCO rate n=427 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4	9	8	0.6	0.6		12.5	4.3	5.0
5- 9	5	1	0.3	0.1			4.4	1.1
10-14								
15-19	4	2	0.3	0.1			1.3	0.8
20-24	2	4	0.1	0.2			0.3	0.8
25-29	4	2	0.2	0.1			0.5	0.2
30-34	12	6	0.6	0.3	8.3	16.7	1.0	0.3
35-39	11	15	0.5	0.7	18.2		0.6	0.5
40-44	27	17	1.2	0.8	3.7	5.9	1.0	0.3
45-49	83	39	3.3	1.6	8.4	7.7	1.7	0.4
50-54	217	65	9.3	2.8	15.7	7.7	2.8	0.6
55-59	375	94	19.3	4.7	9.9	9.6	3.2	0.8
60-64	544	141	33.4	8.0	15.3	14.9	3.3	1.0
65-69	734	219	48.3	13.0	18.0	12.3	3.2	1.2
70-74	884	286	63.1	17.8	15.8	18.5	3.4	1.5
75-79	729	267	65.8	19.4	19.9	23.2	3.3	1.5
80-84	463	202	70.5	20.8	30.2	37.6	3.3	1.4
85+	207	242	48.5	25.1	56.0	69.4	2.1	1.6
All ages	4310	1610			19.4	26.5	3.0	1.1
Incidence								
Raw			14.3	5.2				
WS			7.0	2.1				
ES			10.3	3.1				
BRD-S			13.2	3.9				

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

ICD-10 C22: Malignant neoplasm of liver and intrahepatic bile ducts

Age distribution and age-specific incidence 2007 - 2019 (Males: 4310, Females: 1610)

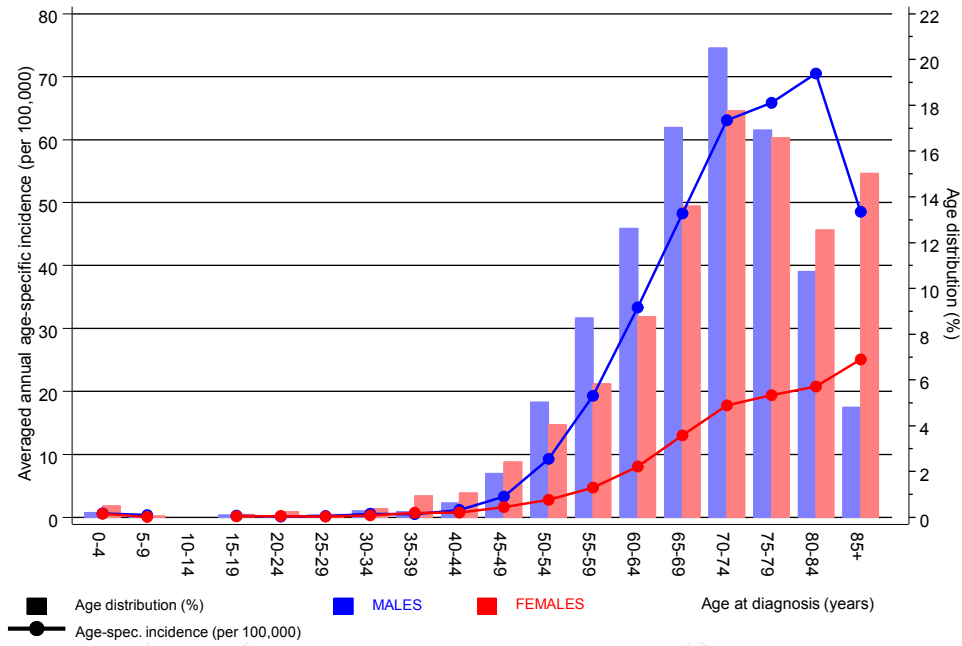


Figure 6. Age distribution (males: mean=69.6 yrs, median=70.8 yrs; females: mean=71.8 yrs, median=73.3 yrs) and age-specific incidence.

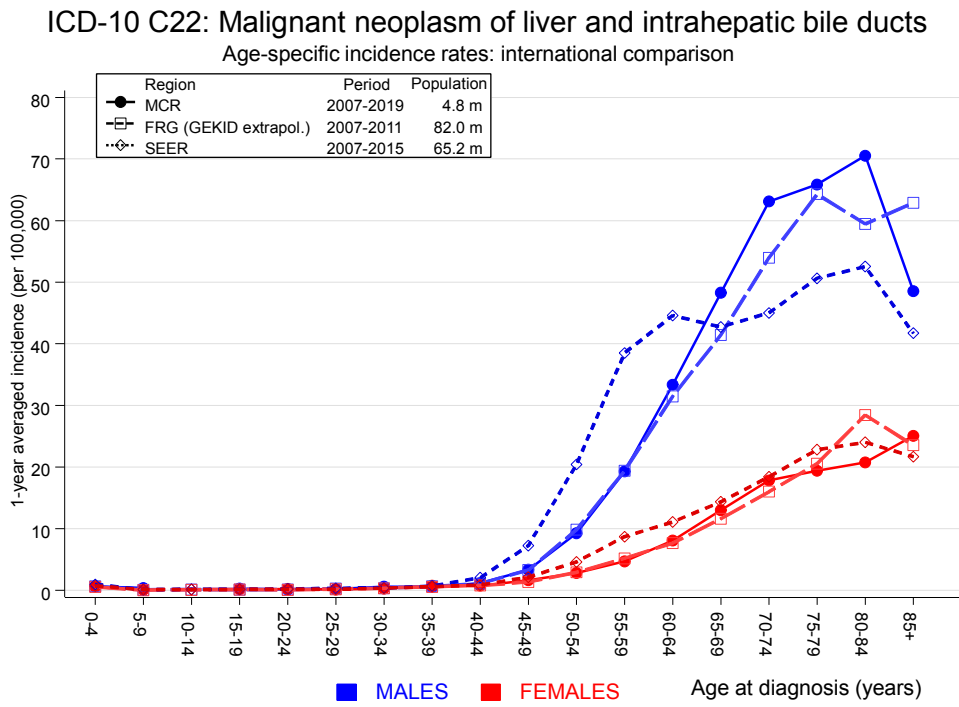


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. <http://www.gekid.de>. Last access: 02/11/2015
 Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 submission. <http://www.seer.cancer.gov>.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2019

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	1	0.1	7.7	0.2	43.0	1.2	
C03–C06 Oral cavity	11	1.0	11.3	5.6	20.2 #	13.6	
C07–C08 Salivary gland	1	0.3	3.9	0.1	21.6	1.0	
C09–C10 Oropharynx	2	1.2	1.6	0.2	5.9	1.0	
C12–C13 Hypopharynx	2	0.7	3.0	0.4	10.9	1.8	
C15 Oesophagus	18	2.4	7.4	4.4	11.7 #	21.1	5.6
C16 Stomach	10	4.6	2.2	1.0	4.0 #	7.3	
C17 Small intestine	3	0.7	4.1	0.9	12.1	3.1	
C18 Colon	32	11.4	2.8	1.9	4.0 #	27.9	9.4
C19–C20 Rectum	10	6.4	1.6	0.8	2.9	4.9	50.0
C22 Liver	3	3.6	0.8	0.2	2.4	-0.8	33.3
C23–C24 Bile	5	1.3	3.9	1.3	9.1 #	5.0	20.0
C25 Pancreas	18	4.7	3.8	2.3	6.0 #	18.0	11.1
C30–C31 Sinuses	1	0.2	4.5	0.1	25.1	1.1	
C32 Larynx	2	1.2	1.7	0.2	6.1	1.1	
C33–C34 Lung	51	14.4	3.5	2.6	4.7 #	49.5	25.5
C38,C45 Mesothelioma	1	0.8	1.2	0.0	6.6	0.2	100.0
C43 Malign. melanoma	9	5.3	1.7	0.8	3.2	5.0	11.1
C48 Peritoneal	1	0.1	10.5	0.3	58.3	1.2	
C50 Breast	2	0.3	6.0	0.7	21.6	2.3	50.0
C61 Prostate	43	34.1	1.3	0.9	1.7	12.0	23.3
C64 Kidney	25	4.2	6.0	3.9	8.9 #	28.2	16.0
C67 Bladder	17	5.4	3.1	1.8	5.0 #	15.7	11.8
C68 Urethra	1	0.1	8.7	0.2	48.2	1.2	
C68 Urinary org.	1	0.1	13.9	0.4	77.2	1.3	100.0
C73 Thyroid	5	0.8	6.5	2.1	15.2 #	5.7	20.0
C76–C79 CUP	7	2.0	3.6	1.4	7.4 #	6.8	
C82–C85 NHL	16	5.0	3.2	1.8	5.2 #	14.9	18.8
C90 Mult. myeloma	3	1.6	1.9	0.4	5.6	2.0	66.7
C91–C96 Leukaemia	6	1.8	3.4	1.2	7.4 #	5.7	33.3
Not observed	0	5.0	0.0	0.0	0.7 #	-6.8	
All further malignancies	307	120.7	2.5	2.3	2.8 #	252.1	17.6

Patients	4939
Median age at next malignancy (years)	71.9
Person-years	7390
Mean observation time (years)	1.5
Median observation time (years)	0.6

The occurrence of further specified malignancy is statistically significant.

Table 7b

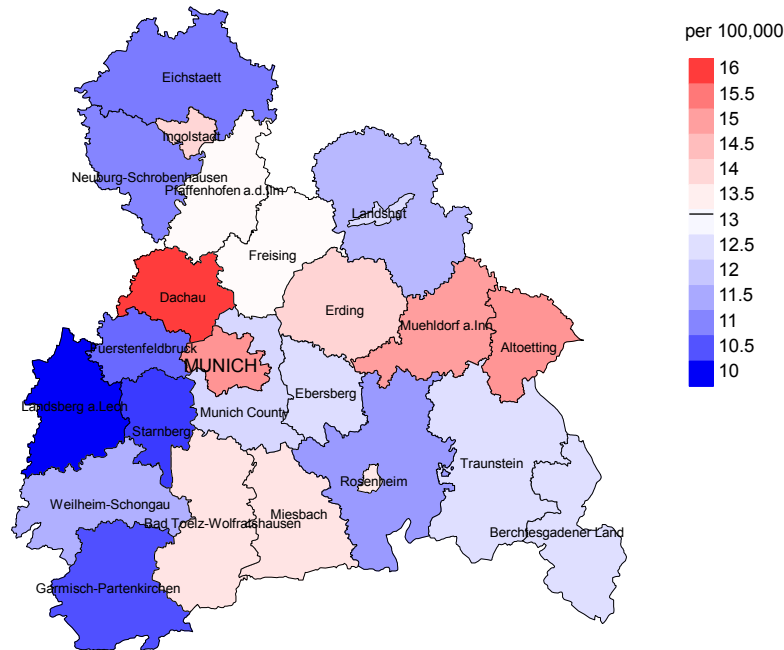
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	1	0.1	6.7	0.2	37.6	3.5	
C09-C10 Oropharynx	3	0.1	27.4	5.7	80.1 #	11.9	
C11 Nasopharynx	1	0.0	116.7	3.0	650.2 #	4.1	
C16 Stomach	5	0.9	5.8	1.9	13.6 #	17.0	20.0
C17 Small intestine	1	0.1	6.7	0.2	37.4	3.5	
C18 Colon	16	2.5	6.4	3.7	10.4 #	55.6	25.0
C22 Liver	2	0.3	5.8	0.7	21.1	6.8	
C23-C24 Bile	2	0.4	5.4	0.7	19.4	6.7	
C25 Pancreas	2	1.2	1.6	0.2	5.8	3.1	50.0
C32 Larynx	1	0.0	20.7	0.5	115.5	3.9	
C33-C34 Lung	12	2.1	5.7	2.9	9.9 #	40.7	16.7
C37 Thymus	1	0.0	59.8	1.5	333.1 #	4.0	
C40-C41 Bone	1	0.0	40.6	1.0	226.4 #	4.0	100.0
C43 Malign. melanoma	1	1.0	1.0	0.0	5.7	0.1	
C50 Breast	17	8.3	2.1	1.2	3.3 #	35.9	23.5
C51 Vulva	1	0.3	3.5	0.1	19.8	3.0	
C54 Corpus uteri	2	1.5	1.3	0.2	4.7	1.9	
C56 Ovary	1	1.1	0.9	0.0	5.1	-0.4	
C64 Kidney	6	0.6	9.5	3.5	20.7 #	22.1	50.0
C69 Eye carcinoma	1	0.0	172.4	4.4	960.8 #	4.1	
C70-C72 CNS cancer	2	0.3	5.9	0.7	21.4	6.8	50.0
C73 Thyroid	2	0.4	4.8	0.6	17.4	6.5	50.0
C76-C79 CUP	1	0.5	2.2	0.1	12.0	2.2	
C82-C85 NHL	2	1.0	2.0	0.2	7.0	4.0	
Not observed	0	3.8	0.0	0.0	1.0 #	-15.7	
All further malignancies	84	26.8	3.1	2.5	3.9 #	235.6	21.4
Patients		1745					
Median age at next malignancy (years)		74.7					
Person-years		2428					
Mean observation time (years)		1.4					
Median observation time (years)		0.5					

The occurrence of further specified malignancy is statistically significant.

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



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

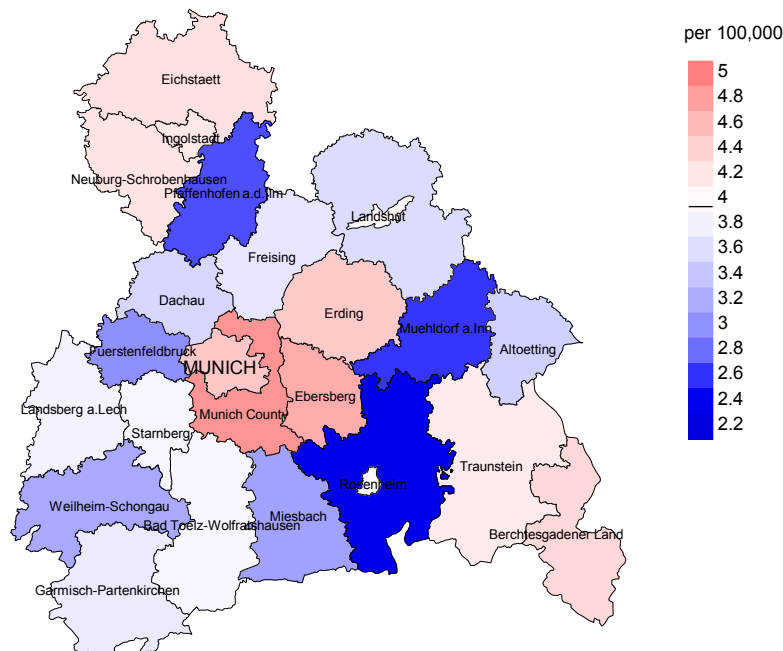
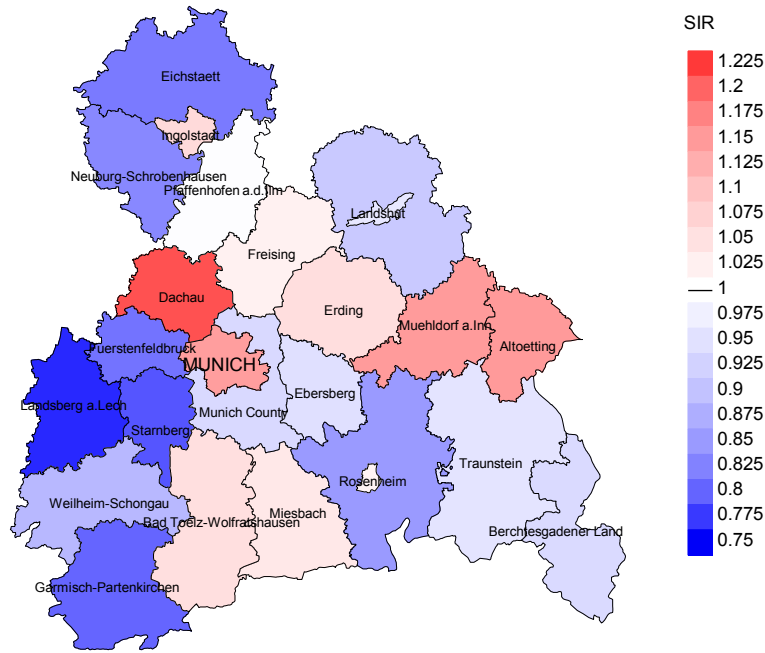


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 13.2/100,000 WS N=4,310, females 3.9/100,000 WS N=1,610).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 51 women were identified with newly diagnosed liver cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 4.7/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.2 and 6.7/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

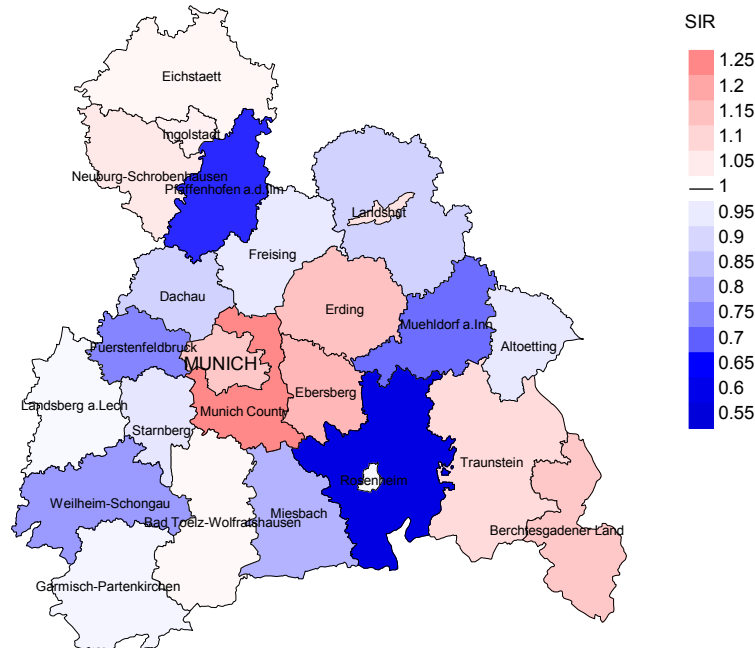


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=4,310, females N=1,610).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 51 women were identified with newly diagnosed liver cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.17. Though, the value of this parameter may vary with an underlying probability of 99% between 0.79 and 1.66, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	192	100.0	38.0	188	97.9	96.3
1999	215	99.1	40.9	210	97.7	96.7
2000	225	100.0	43.6	216	96.0	95.8
2001	195	99.0	37.9	191	97.9	95.8
2002	352	100.0	43.2	348	98.9	97.7
2003	333	99.4	41.1	322	96.7	97.5
2004	339	99.1	41.0	325	95.9	97.8
2005	353	99.4	36.5	340	96.3	97.9
2006	398	98.7	32.4	378	95.0	99.2
2007	455	98.7	29.9	431	94.7	97.4
2008	480	99.4	23.8	443	92.3	98.0
2009	469	99.8	24.7	425	90.6	98.1
2010	448	100.0	23.4	416	92.9	98.8
2011	450	99.6	22.7	406	90.2	97.5
2012	519	99.4	21.8	473	91.1	96.8
2013	510	99.0	19.6	452	88.6	96.0
2014	506	99.4	21.5	438	86.6	95.2
2015	531	97.6	22.0	443	83.4	93.2
2016	485	99.8	25.2	413	85.2	92.0
2017	427	99.5	24.1	319	74.7	83.1
2018	336	100.0	6.5	185	55.1	46.5
2019	305	84.6	2.0	127	41.6	85.0
1998-2019	8523	98.8	26.8	7489	87.9	94.7

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	192	171	97.1	118	61.5
1999	215	197	95.4	138	64.2
2000	225	192	97.4	135	60.0
2001	195	186	96.8	111	56.9
2002	352	266	98.1	222	63.1
2003	333	272	98.2	198	59.5
2004	339	258	98.1	187	55.2
2005	353	288	95.8	196	55.5
2006	398	334	98.5	232	58.3
2007	455	319	97.8	229	50.3
2008	480	352	98.9	233	48.5
2009	469	356	98.3	229	48.8
2010	448	361	98.9	210	46.9
2011	450	369	98.4	208	46.2
2012	519	384	98.7	238	45.9
2013	510	388	98.2	232	45.5
2014	506	426	98.1	228	45.1
2015	531	463	99.4	244	46.0
2016	485	433	99.1	247	50.9
2017	427	349	96.6	193	45.2
2018	336	267	36.0	92	27.4
2019	305	237	54.4	80	26.2
1998–2019	8523	6868	94.1	4200	49.3

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates
(incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	171	83.0	17.0	95.8
1999	197	87.8	12.2	96.3
2000	192	91.7	8.3	95.2
2001	186	93.5	6.5	99.4
2002	266	92.5	7.5	98.1
2003	272	92.6	7.4	98.1
2004	258	93.0	7.0	98.0
2005	288	90.6	9.4	97.1
2006	334	93.7	6.3	98.5
2007	319	89.7	10.3	95.5
2008	352	90.3	9.7	96.0
2009	356	93.8	6.2	98.3
2010	361	89.8	10.2	93.8
2011	369	89.2	10.8	94.5
2012	384	86.2	13.8	94.7
2013	388	89.9	10.1	94.5
2014	426	87.3	12.7	92.8
2015	463	88.6	11.4	93.7
2016	433	88.0	12.0	94.6
2017	349	89.1	10.9	93.8
2018	267	54.7	45.3	92.7
2019	237	65.8	34.2	83.7
1998–2019	6868	87.7	12.3	95.4

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	123	68.5	68.7	66.2	69.2
1999	133	70.3	70.2	74.3	70.4
2000	130	70.9	71.3	67.3	71.3
2001	145	68.4	67.8	74.5	68.4
2002	181	68.7	68.8	68.1	68.8
2003	207	69.7	70.0	63.1	70.0
2004	187	69.8	69.7	71.6	69.8
2005	205	68.2	68.1	69.4	68.1
2006	252	69.6	69.5	71.3	70.0
2007	247	71.7	71.4	72.8	71.7
2008	262	69.4	69.4	71.4	69.4
2009	258	69.9	69.9	73.6	70.1
2010	268	72.1	72.1	71.9	72.1
2011	284	70.9	71.2	69.1	71.3
2012	289	71.7	71.9	70.1	71.8
2013	275	72.7	72.7	71.9	72.8
2014	312	71.9	71.5	73.8	72.0
2015	344	72.8	72.9	71.5	72.9
2016	326	73.8	73.9	70.4	73.9
2017	251	73.1	72.8	74.7	73.5
2018	187	74.4	74.8	73.6	76.7
2019	185	74.9	73.2	77.2	76.6
1998-2019	5051	71.4	71.3	72.1	71.4

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	48	75.2	73.7	79.0	75.3
1999	64	76.6	76.5	82.0	77.0
2000	62	76.7	77.0	71.8	77.0
2001	41	72.8	72.5	89.4	73.1
2002	85	75.4	75.2	76.6	75.3
2003	65	76.5	76.3	80.7	76.5
2004	71	77.5	76.3	79.3	77.2
2005	83	74.7	74.8	65.3	74.8
2006	82	76.7	76.2	82.5	76.7
2007	72	74.0	73.2	76.4	74.0
2008	90	75.2	74.8	78.1	75.5
2009	98	74.7	74.7	75.1	74.7
2010	93	76.6	76.7	74.3	76.6
2011	85	73.2	74.2	69.2	74.1
2012	95	74.7	75.1	71.9	75.6
2013	113	74.5	74.3	82.2	74.5
2014	114	74.1	73.5	75.7	73.5
2015	119	75.0	74.1	83.0	74.9
2016	107	74.8	74.8	75.7	74.9
2017	98	77.4	76.3	81.3	77.5
2018	80	75.3	73.9	79.2	76.1
2019	52	73.3	72.3	74.7	74.0
1998-2019	1817	75.1	74.8	77.3	75.4

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	103	9.3	0.76	5.5	0.73	8.4	0.76	11.1	0.78
1999	114	10.2	0.79	6.0	0.79	9.2	0.80	12.4	0.83
2000	120	10.5	0.75	6.0	0.72	9.3	0.74	12.3	0.78
2001	135	11.6	0.87	6.8	0.86	10.2	0.88	13.2	0.87
2002	167	9.0	0.66	5.0	0.66	7.5	0.66	9.8	0.68
2003	190	10.1	0.79	5.5	0.79	8.3	0.80	10.9	0.79
2004	173	9.2	0.69	5.0	0.68	7.6	0.69	9.7	0.69
2005	183	9.7	0.72	5.2	0.71	7.6	0.72	9.9	0.73
2006	236	12.3	0.83	6.4	0.81	9.5	0.81	12.4	0.82
2007	221	10.0	0.65	5.0	0.61	7.6	0.63	10.2	0.66
2008	238	10.7	0.67	5.6	0.66	8.3	0.67	10.8	0.70
2009	243	10.9	0.71	5.4	0.70	8.2	0.72	10.4	0.72
2010	240	10.6	0.68	5.0	0.64	7.6	0.65	10.3	0.70
2011	251	11.2	0.73	5.4	0.71	8.0	0.73	10.5	0.74
2012	249	11.0	0.68	5.0	0.63	7.6	0.65	10.1	0.68
2013	242	10.5	0.69	4.8	0.63	7.3	0.65	9.7	0.69
2014	269	11.5	0.73	5.5	0.71	8.1	0.72	10.5	0.73
2015	299	12.6	0.79	5.7	0.75	8.6	0.76	11.4	0.78
2016	284	11.8	0.80	5.2	0.77	7.9	0.78	10.6	0.80
2017	223	9.2	0.73	4.3	0.77	6.4	0.75	8.3	0.73
2018	99	4.1	0.43	1.7	0.39	2.6	0.40	3.6	0.43
2019	121	5.0	0.54	2.2	0.48	3.3	0.50	4.4	0.53
1998-2019	4400	10.0	0.71	4.9	0.69	7.4	0.70	9.7	0.72

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	0.71	1.5	0.73	2.2	0.73	3.0	0.74
1999	59	5.0	0.83	1.9	0.78	3.0	0.81	4.1	0.83
2000	56	4.7	0.88	1.7	0.82	2.8	0.84	4.0	0.88
2001	39	3.2	0.98	1.5	0.98	2.2	1.00	2.7	1.02
2002	79	4.0	0.80	1.6	0.79	2.4	0.79	3.3	0.78
2003	62	3.1	0.67	1.3	0.72	2.0	0.71	2.6	0.68
2004	67	3.4	0.76	1.2	0.64	1.9	0.70	2.6	0.74
2005	78	3.9	0.80	1.5	0.65	2.2	0.74	2.9	0.78
2006	77	3.8	0.69	1.6	0.70	2.3	0.68	2.9	0.68
2007	65	2.8	0.56	1.1	0.52	1.6	0.52	2.1	0.53
2008	80	3.4	0.63	1.3	0.54	2.0	0.59	2.6	0.61
2009	91	3.9	0.71	1.5	0.72	2.3	0.71	3.1	0.72
2010	84	3.6	0.88	1.2	0.77	1.9	0.83	2.7	0.92
2011	78	3.3	0.73	1.3	0.65	1.9	0.71	2.5	0.71
2012	82	3.5	0.54	1.3	0.49	2.0	0.51	2.6	0.51
2013	107	4.5	0.68	1.8	0.62	2.6	0.64	3.5	0.66
2014	103	4.3	0.76	1.7	0.72	2.5	0.74	3.3	0.78
2015	111	4.6	0.74	1.7	0.70	2.6	0.71	3.4	0.74
2016	97	4.0	0.73	1.5	0.74	2.3	0.74	2.9	0.74
2017	88	3.6	0.73	1.3	0.63	1.9	0.66	2.5	0.68
2018	47	1.9	0.45	0.7	0.42	1.1	0.43	1.4	0.44
2019	35	1.4	0.43	0.6	0.39	0.9	0.41	1.1	0.41
1998-2019	1625	3.5	0.70	1.4	0.65	2.1	0.67	2.7	0.69

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	2	0.0	0.0	1	0.0	0.0	1	0.1	0.1
5-9	1	0.0	0.1	1	0.0	0.1			0.1
10-14	3	0.1	0.1	3	0.1	0.2			0.1
15-19	4	0.1	0.2	2	0.1	0.2	2	0.2	0.3
20-24	3	0.1	0.3	2	0.1	0.3	1	0.1	0.4
25-29	1	0.0	0.3	1	0.0	0.3			0.4
30-34	8	0.2	0.5	6	0.2	0.5	2	0.2	0.6
35-39	18	0.4	1.0	10	0.3	0.9	8	0.7	1.3
40-44	19	0.5	1.5	14	0.5	1.3	5	0.5	1.8
45-49	66	1.6	3.1	49	1.6	3.0	17	1.6	3.4
50-54	145	3.6	6.7	117	3.9	6.9	28	2.6	6.0
55-59	272	6.7	13.4	212	7.1	14.0	60	5.6	11.6
60-64	454	11.2	24.6	356	12.0	26.0	98	9.2	20.8
65-69	612	15.1	39.7	473	15.9	41.9	139	13.0	33.8
70-74	803	19.8	59.6	612	20.5	62.4	191	17.9	51.7
75-79	785	19.4	79.0	594	19.9	82.3	191	17.9	69.6
80-84	497	12.3	91.3	354	11.9	94.2	143	13.4	83.0
85+	354	8.7	100.0	172	5.8	100.0	182	17.0	100.0
All ages	4047	100.0		2979	100.0		1068	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(incl. multiple malignancies)

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	1	1	0.1	0.11	0.1	0.13	5.3	6.3
5- 9	1		0.1	0.20			4.0	
10-14	3		0.2	1.00			11.1	
15-19	2	2	0.1	0.50	0.1	1.00	4.3	8.0
20-24	2	1	0.1	1.00	0.1	0.25	3.0	2.6
25-29	1		0.0	0.25			1.2	
30-34	6	2	0.3	0.50	0.1	0.33	4.7	1.3
35-39	10	8	0.5	0.91	0.4	0.53	4.1	2.2
40-44	14	5	0.6	0.52	0.2	0.29	2.4	0.6
45-49	49	17	2.0	0.59	0.7	0.44	3.7	1.1
50-54	117	28	5.0	0.54	1.2	0.43	4.7	1.1
55-59	212	60	10.9	0.57	3.0	0.64	5.1	1.7
60-64	356	98	21.8	0.65	5.6	0.70	6.0	2.1
65-69	473	139	31.1	0.64	8.3	0.63	5.5	2.1
70-74	612	191	43.7	0.69	11.9	0.67	5.5	2.3
75-79	594	191	53.7	0.81	13.9	0.72	5.2	2.1
80-84	354	143	53.9	0.76	14.7	0.71	3.8	1.7
85+	172	182	40.3	0.83	18.9	0.75	2.1	1.7
All ages	2979	1068					4.7	1.9
Mortality								
Raw			9.9	0.69	3.4	0.66		
WS			4.6	0.66	1.3	0.61		
ES			6.9	0.67	2.0	0.63		
BRD-S			9.1	0.69	2.6	0.65		
PYLL-70								
per 100,000			41.9		13.0			
ES			36.6		11.1			
AYLL-70			8.9		9.4			

Table 14a

Further malignancies in deaths in period 1998-2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	3	0.3	2	66.7			1	33.3
C03-C06 Oral cavity	29	2.8	22	75.9	2	6.9	5	17.2
C07-C08 Salivary gland	2	0.2	1	50.0	1	50.0		
C09-C10 Oropharynx	23	2.2	20	87.0	2	8.7	1	4.3
C12-C13 Hypopharynx	15	1.4	12	80.0	2	13.3	1	6.7
C15 Oesophagus	31	3.0	9	29.0	10	32.3	12	38.7
C16 Stomach	30	2.9	15	50.0	10	33.3	5	16.7
C17 Small intestine	5	0.5	3	60.0	1	20.0	1	20.0
C18 Colon	123	11.8	86	69.9	28	22.8	9	7.3
C19-C20 Rectum	65	6.3	51	78.5	11	16.9	3	4.6
C21 Anus/canal	1	0.1					1	100.0
C22 Liver	4	0.4					4	100.0
C23-C24 Bile	5	0.5	2	40.0	3	60.0		
C25 Pancreas	17	1.6	1	5.9	9	52.9	7	41.2
C30-C31 Sinuses	1	0.1			1	100.0		
C32 Larynx	28	2.7	26	92.9	2	7.1		
C33-C34 Lung	91	8.8	32	35.2	24	26.4	35	38.5
C38,C45 Mesothelioma	1	0.1					1	100.0
C40-C41 Bone	2	0.2	1	50.0	1	50.0		
C43 Malign. melanoma	44	4.2	34	77.3	4	9.1	6	13.6
C44 Skin others	87	8.4	60	69.0	3	3.4	24	27.6
C46,C49 Soft tissue	3	0.3	2	66.7	1	33.3		
C48 Peritoneal	1	0.1			1	100.0		
C50 Breast	4	0.4	2	50.0			2	50.0
C60 Penis	3	0.3	3	100.0				
C61 Prostate	217	20.9	183	84.3	11	5.1	23	10.6
C62 Testis	11	1.1	11	100.0				
C64 Kidney	58	5.6	38	65.5	11	19.0	9	15.5
C65 Renal pelvis	1	0.1	1	100.0				
C66 Ureter	1	0.1	1	100.0				
C67 Bladder	47	4.5	28	59.6	6	12.8	13	27.7
C68 Urethra	1	0.1					1	100.0
C69 Eye melanoma	4	0.4	4	100.0				
C70-C72 CNS cancer	3	0.3	2	66.7			1	33.3
C73 Thyroid	9	0.9	8	88.9			1	11.1
C76-C79 CUP	13	1.3	7	53.8	2	15.4	4	30.8
C81 Hodgkin lymphoma	2	0.2	2	100.0				
C82-C85 NHL	38	3.7	28	73.7	5	13.2	5	13.2
C90 Mult. myeloma	8	0.8	5	62.5	1	12.5	2	25.0
C91-C96 Leukaemia	9	0.9	4	44.4			5	55.6

Table 14a

Further malignancies in deaths in period 1998-2019
 MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
All further malignancies	1040	100.0	706	67.9	152	14.6	182	17.5

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

Table 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	6	1.7	5	83.3	1	16.7		
C09-C10 Oropharynx	4	1.2	3	75.0			1	25.0
C11 Nasopharynx	1	0.3			1	100.0		
C12-C13 Hypopharynx	1	0.3			1	100.0		
C15 Oesophagus	1	0.3	1	100.0				
C16 Stomach	11	3.2	4	36.4	4	36.4	3	27.3
C17 Small intestine	2	0.6	1	50.0	1	50.0		
C18 Colon	38	11.1	25	65.8	10	26.3	3	7.9
C19-C20 Rectum	8	2.3	7	87.5	1	12.5		
C22 Liver	2	0.6					2	100.0
C23-C24 Bile	4	1.2	2	50.0	1	25.0	1	25.0
C25 Pancreas	3	0.9	1	33.3	1	33.3	1	33.3
C26 GI cancer	1	0.3			1	100.0		
C30-C31 Sinuses	1	0.3	1	100.0				
C32 Larynx	1	0.3			1	100.0		
C33-C34 Lung	15	4.4	9	60.0	2	13.3	4	26.7
C37 Thymus	1	0.3	1	100.0				
C40-C41 Bone	1	0.3					1	100.0
C43 Malign. melanoma	15	4.4	14	93.3			1	6.7
C44 Skin others	28	8.2	20	71.4	1	3.6	7	25.0
C48 Peritoneal	1	0.3	1	100.0				
C50 Breast	96	28.0	82	85.4	6	6.3	8	8.3
C51 Vulva	4	1.2	3	75.0			1	25.0
C52 Vagina	1	0.3	1	100.0				
C53 Cervix uteri	8	2.3	8	100.0				
C54 Corpus uteri	19	5.5	16	84.2	1	5.3	2	10.5
C56 Ovary	9	2.6	8	88.9			1	11.1
C64 Kidney	14	4.1	6	42.9	5	35.7	3	21.4
C67 Bladder	3	0.9	2	66.7	1	33.3		
C69 Eye carcinoma	1	0.3					1	100.0
C69 Eye melanoma	4	1.2	4	100.0				
C70-C72 CNS cancer	2	0.6			1	50.0	1	50.0
C73 Thyroid	8	2.3	5	62.5	1	12.5	2	25.0
C76-C79 CUP	6	1.7	2	33.3	3	50.0	1	16.7
C81 Hodgkin lymphoma	3	0.9	3	100.0				
C82-C85 NHL	16	4.7	13	81.3	3	18.8		
C90 Mult. myeloma	2	0.6	2	100.0				
C91-C96 Leukaemia	2	0.6	2	100.0				
All further malignancies	343	100.0	252	73.5	47	13.7	44	12.8

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

Table 15

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

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	1	1	0.1	0.11	0.1	0.13	5.3	6.7
5- 9	1		0.1	0.20			4.2	
10-14	3		0.2	1.00			11.1	
15-19	2	2	0.1	0.50	0.1	1.00	4.4	8.7
20-24	2	1	0.1	1.00	0.1	0.25	3.3	2.7
25-29	1		0.0	0.25			1.3	
30-34	6		0.3	0.50			4.8	
35-39	10	7	0.5	0.91	0.3	0.50	4.4	2.1
40-44	14	4	0.6	0.52	0.2	0.29	2.7	0.6
45-49	44	16	1.8	0.58	0.7	0.46	3.6	1.2
50-54	101	24	4.3	0.52	1.0	0.44	4.6	1.2
55-59	196	51	10.1	0.59	2.6	0.63	5.5	1.7
60-64	303	86	18.6	0.64	4.9	0.70	6.1	2.3
65-69	393	114	25.8	0.66	6.8	0.66	5.7	2.2
70-74	488	152	34.8	0.71	9.5	0.66	5.7	2.4
75-79	432	141	39.0	0.82	10.2	0.71	5.2	2.0
80-84	256	111	39.0	0.76	11.4	0.72	3.8	1.7
85+	126	148	29.5	0.83	15.3	0.73	2.1	1.7
All ages	2379	858					4.8	1.9
Mortality								
Raw			7.9	0.69	2.8	0.66		
WS			3.8	0.66	1.1	0.61		
ES			5.6	0.67	1.6	0.63		
BRD-S			7.3	0.69	2.1	0.65		
PYLL-70								
per 100,000			37.5		11.1			
ES			32.8		9.6			
AYLL-70			9.2		9.5			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	1	1	0.1	0.11	0.1	0.13	5.3	6.7
5- 9	1		0.1	0.20			4.2	
10-14	3		0.2	1.00			11.1	
15-19	2	2	0.1	0.50	0.1	1.00	4.4	9.1
20-24	2	1	0.1	1.00	0.1	0.25	3.3	2.8
25-29	1		0.0	0.33			1.3	
30-34	6		0.3	0.50			4.9	
35-39	10	7	0.5	0.91	0.3	0.50	4.4	2.1
40-44	14	4	0.6	0.52	0.2	0.33	2.7	0.6
45-49	44	16	1.8	0.58	0.7	0.47	3.6	1.2
50-54	101	24	4.3	0.54	1.0	0.47	4.6	1.2
55-59	191	48	9.8	0.60	2.4	0.62	5.4	1.6
60-64	296	85	18.2	0.65	4.8	0.73	6.0	2.3
65-69	375	113	24.7	0.66	6.7	0.66	5.6	2.3
70-74	465	147	33.2	0.72	9.2	0.65	5.7	2.4
75-79	412	136	37.2	0.81	9.9	0.72	5.2	2.0
80-84	239	107	36.4	0.75	11.0	0.71	3.8	1.7
85+	112	144	26.3	0.76	14.9	0.72	2.1	1.7
All ages	2275	835					4.8	1.9
Mortality								
Raw			7.6	0.69	2.7	0.66		
WS			3.7	0.66	1.0	0.61		
ES			5.4	0.67	1.6	0.63		
BRD-S			7.0	0.69	2.0	0.65		
PYLL-70								
per 100,000			36.9		10.9			
ES			32.3		9.4			
AYLL-70			9.3		9.5			

* See corresponding tables with multiple malignancies.

ICD-10 C22: Malignant neoplasm of liver and intrahepatic bile ducts

Age distribution and age-specific mortality 2007 - 2019 (Males: 2979, Females: 1068)

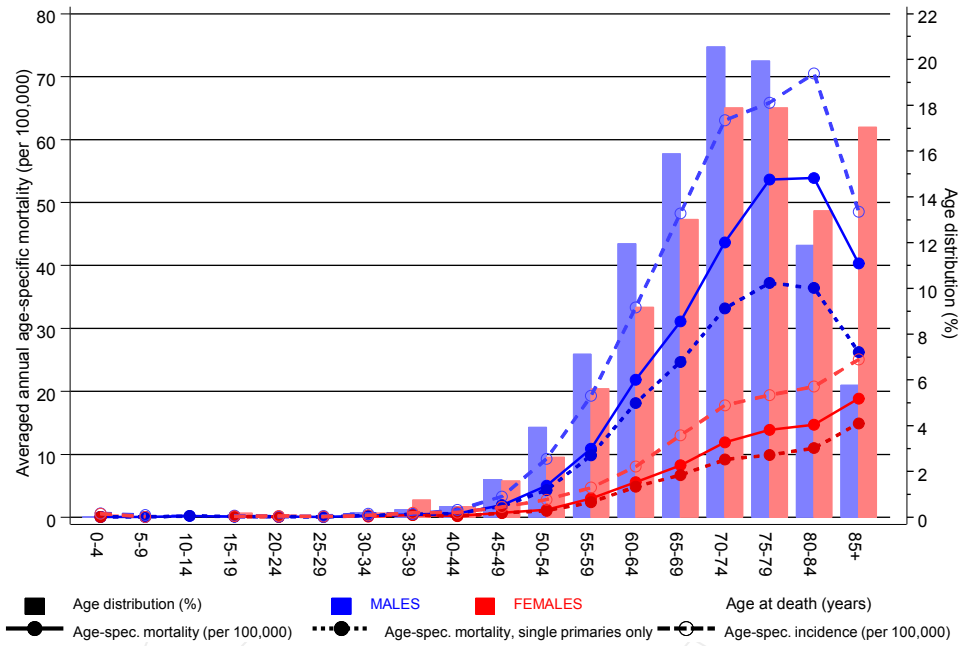
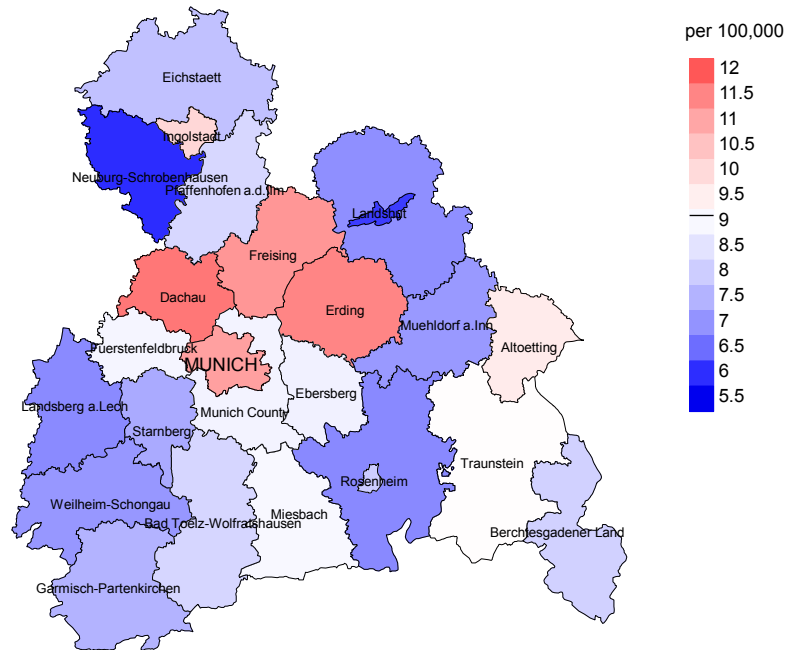


Figure 17. Distribution of age at death (bars; males: mean=69.6 yrs, median=70.8 yrs; females: mean=72.4 yrs, median=73.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

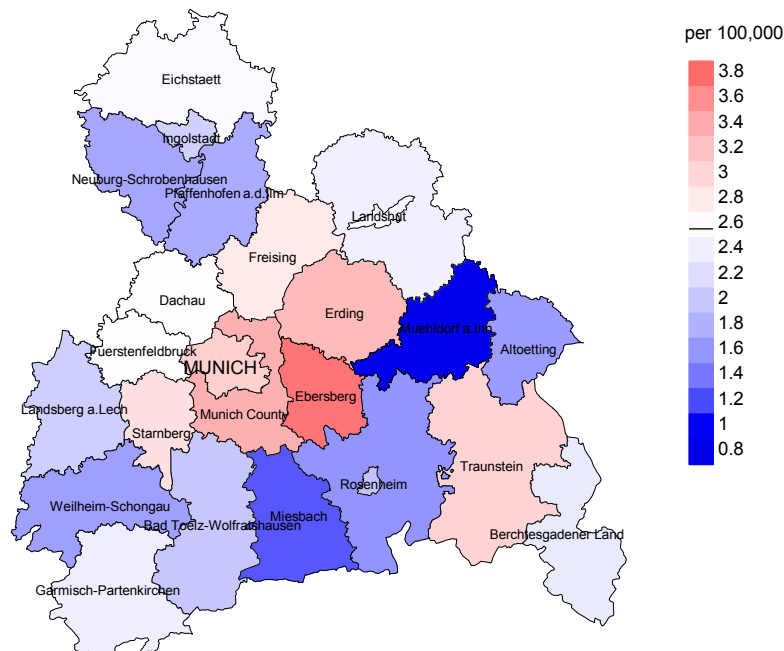
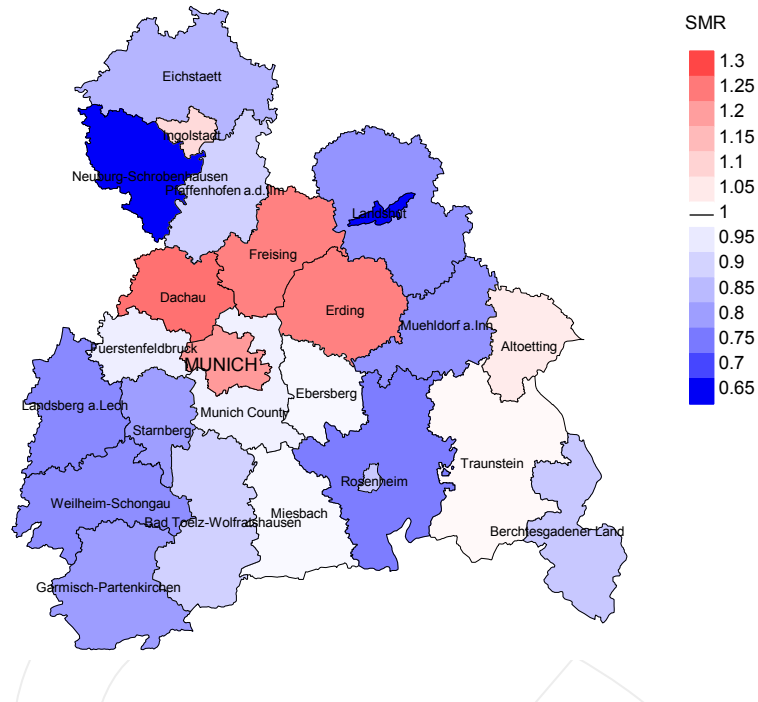


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 9.1/100,000 WS N=2,979, females 2.6/100,000 WS N=1,068).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 43 women died from liver cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.8/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.4 and 5.6/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

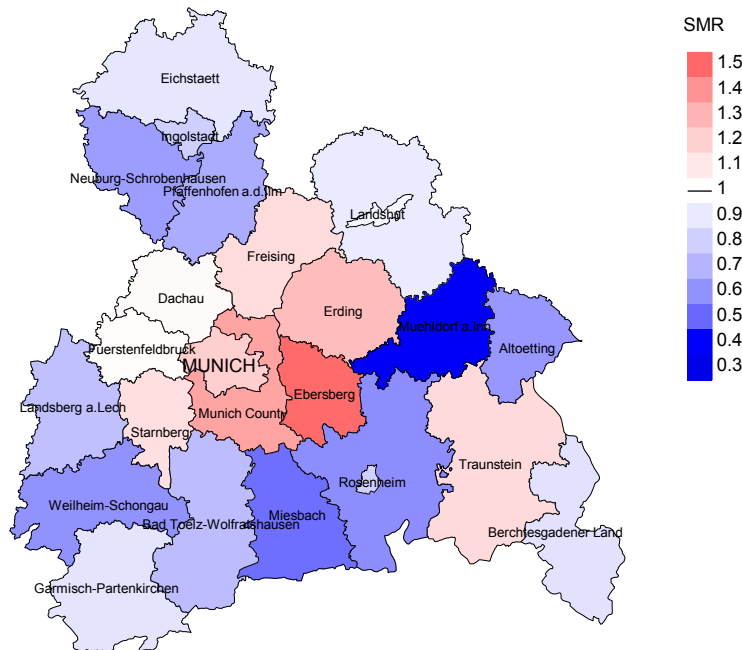


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,979, females N=1,068).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 43 women died from liver cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.49. Though, the value of this parameter may vary with an underlying probability of 99% between 0.97 and 2.19, 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

Recommended Citation

Munich Cancer Registry. ICD-10 C22: Liver cancer - Incidence and Mortality [Internet]. 2021 [updated 2021 Jan 25; cited 2021 Mar 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bC22__E-ICD-10-C22-Liver-cancer-incidence-and-mortality.pdf

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