Munich Cancer Registry

- Survival
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ICD-10 D39.1: Borderline ovarian tumor

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	1,683
Diseases	1,684
Creation date	01/26/2021
Database export	01/07/2021
Population (females)	2.48 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninistr. 15
Munich, 81377
Germany

https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bD391_E-ICD-10-D39.1-Borderline-ovarian-tumor-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, 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
D39.1	Neoplasm of uncertain or unknown behaviour of female genital organs: Ovary

INCIDENCE

Table 1

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	24	8.3	10.5	41.7	83.3
1999	24	8.3	10.2	41.7	91.7
2000	36	14.3	9.9	33.3	94.4
2001	26	13.6	10.0	30.8	88.5
2002	43	13.7	9.8	16.3	81.4 #
2003	55	13.5	9.8	34.5	87.3
2004	74	12.8	9.4	24.3	89.2
2005	78	11.7	9.1	21.8	89.7
2006	75	11.5	8.5	12.0	89.3
2007	92	11.4	8.4	20.7	77.2 #
2008	98	10.4	7.7	12.2	98.0
2009	97	10.8	7.6	18.6	92.8
2010	105	10.6	6.9	17.1	95.2
2011	113	10.3	6.3	7.1	93.8
2012	91	10.5	6.4	18.7	96.7
2013	100	10.4	5.3	15.0	99.0
2014	108	10.6	4.2	6.5	96.3
2015	89	10.2	3.7	3.4	79.8
2016	97	10.5	3.5	9.3	100.0
2017	86	10.7	2.4	5.8	100.0
2018	94	11.0	0.6	1.1	100.0
2019	79	11.0	0.0	1.3	60.8 ##
1998-2019	1684	11.0	10.5	14.4	91.2

1,684 cases diagnosed 1998-2019 are related to a total of 1,683 patients. Currently, in 360 (21.4 %) of these 1,683 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 291 / 59 / 10 (17.3 % / 3.5 % / 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 retreived from the respective headings.

How to interpret:
In 2017, a subgroup of 86 cases has been diagnosed, of which 10.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.4 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis
(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	Cases n	Incidence raw	Incidence WS	Incidence ES	Incidence BRD-S
1998	24	2.0	1.3	1.7	1.9
1999	24	2.0	1.5	1.8	1.9
2000	36	3.0	1.9	2.5	2.8
2001	26	2.1	1.7	2.0	2.2
2002	43	2.2	1.7	1.9	2.1
2003	55	2.8	2.0	2.4	2.7
2004	74	3.7	2.6	3.2	3.4
2005	78	3.9	2.9	3.6	3.8
2006	75	3.7	2.7	3.3	3.5
2007	92	4.0	2.7	3.4	3.8
2008	98	4.2	2.9	3.6	3.9
2009	97	4.2	2.7	3.5	3.8
2010	105	4.5	3.1	3.8	4.2
2011	113	4.8	3.6	4.4	4.6
2012	91	3.9	2.6	3.3	3.5
2013	100	4.2	2.8	3.5	3.9
2014	108	4.5	2.9	3.6	4.0
2015	89	3.7	2.6	3.2	3.5
2016	97	4.0	2.7	3.3	3.6
2017	86	3.5	2.5	3.1	3.3
2018	94	3.8	2.7	3.3	3.5
2019	79	3.2	2.4	2.8	3.1
1998–2019	1684	3.7	2.6	3.2	3.4

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

Table 3

Age distribution parameters by year of diagnosis

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	24	58.8	16.1	18.2	80.2	38.2	49.4	61.2	68.6	77.7
1999	24	54.9	14.8	17.0	83.5	34.9	48.7	60.1	63.9	68.5
2000	36	55.4	15.9	28.5	86.4	31.9	45.8	53.7	66.3	78.6
2001	26	52.6	18.0	18.8	79.5	24.1	41.4	51.8	69.1	75.4
2002	43	49.0	18.1	6.6	83.4	25.2	35.9	48.5	61.8	72.8
2003	55	54.0	19.4	16.6	88.6	28.8	35.2	55.2	69.2	76.3
2004	74	52.7	15.0	11.5	79.7	35.3	40.0	54.2	64.6	71.5
2005	78	53.5	15.6	18.9	86.7	30.6	43.7	53.7	65.8	73.8
2006	75	52.5	17.6	12.8	85.3	30.5	40.2	53.1	63.3	79.6
2007	92	54.7	15.6	17.8	85.2	35.6	44.3	56.2	65.4	77.6
2008	98	53.0	14.8	18.7	92.3	36.1	41.3	50.2	63.6	73.4
2009	97	54.2	15.8	18.6	82.3	32.1	41.5	53.1	68.5	75.8
2010	105	54.0	15.9	16.3	85.2	32.7	45.3	52.8	67.8	75.7
2011	113	52.8	15.9	7.8	95.5	28.0	43.9	53.7	62.3	72.2
2012	91	53.6	15.1	26.0	88.8	33.6	41.1	54.0	65.3	73.0
2013	100	55.0	15.5	21.3	91.3	32.4	45.8	55.7	65.1	76.4
2014	108	57.4	16.1	15.8	93.6	38.5	46.6	56.5	69.2	77.9
2015	89	51.7	16.4	17.3	84.0	29.3	41.4	50.8	63.6	77.2
2016	97	54.0	15.8	17.1	88.7	36.3	43.6	53.2	65.9	77.3
2017	86	53.7	16.0	19.0	90.3	30.7	43.9	54.6	63.8	74.8
2018	94	54.0	15.3	19.3	93.2	33.7	43.9	54.3	64.2	73.2
2019	79	52.0	17.8	18.8	86.2	29.1	36.9	56.1	64.2	77.3
1998–2019	1684	53.8	16.1	6.6	95.5	31.8	42.7	53.8	65.3	75.8

Table 4

Age distribution by 5-year age group for period 2007-2019

Age at diagnosis Years	Cases n	%	Cum.%
0-4			
5-9	1	0.1	0.1
10-14	0	0.0	0.1
15-19	13	1.0	1.1
20-24	27	2.2	3.3
25-29	52	4.2	7.4
30-34	70	5.6	13.1
35-39	78	6.2	19.3
40-44	108	8.6	27.9
45-49	156	12.5	40.4
50-54	162	13.0	53.4
55-59	146	11.7	65.1
60-64	119	9.5	74.6
65-69	101	8.1	82.7
70-74	79	6.3	89.0
75-79	74	5.9	95.0
80-84	42	3.4	98.3
85+	21	1.7	100.0
All ages	1249	100.0	

Table 5

Age-specific incidence
for period 2007-2019

Age at diagnosis Years	Cases n	Age-spec. incidence
0- 4		0.0
5- 9	1	0.1
10-14		0.0
15-19	13	0.9
20-24	27	1.5
25-29	52	2.5
30-34	70	3.3
35-39	78	3.7
40-44	108	4.8
45-49	156	6.4
50-54	162	7.0
55-59	146	7.3
60-64	119	6.8
65-69	101	6.0
70-74	79	4.9
75-79	74	5.4
80-84	42	4.3
85+	21	2.2
All ages	1249	
Incidence		
Raw		4.0
WS		2.8
ES		3.5
BRD-S		3.7

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).

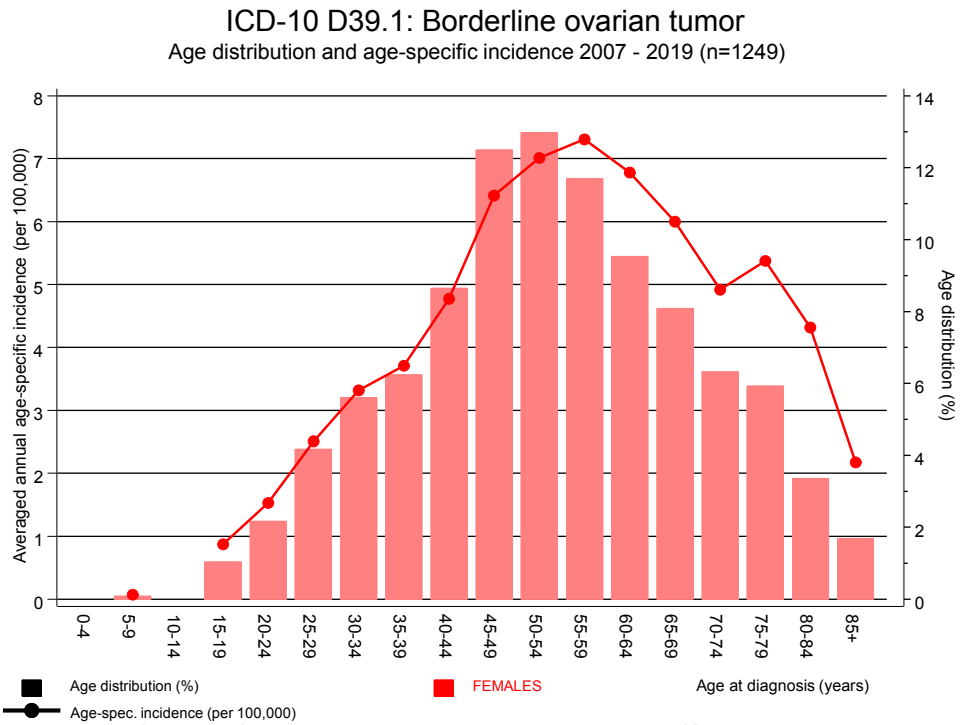

Figure 6. Age distribution (mean=53.9 yrs, median=53.5 yrs) and age-specific incidence.

Table 7

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	2	0.3	7.1	0.9	25.5		2.9	
C15	Oesophagus	1	0.3	3.4	0.1	18.9		1.2	
C16	Stomach	8	1.3	6.1	2.6	12.0	#	11.2	12.5
C17	Small intestine	2	0.3	7.9	1.0	28.6		2.9	
C18	Colon	23	3.8	6.1	3.9	9.1	#	32.2	
C19–C20	Rectum	6	1.7	3.6	1.3	7.8	#	7.3	
C21	Anus/canal	2	0.3	7.5	0.9	27.2		2.9	
C22	Liver	1	0.5	2.0	0.1	11.0		0.8	
C25	Pancreas	11	1.8	6.0	3.0	10.8	#	15.4	18.2
C26	GI cancer	1	0.1	17.3	0.4	96.5		1.6	
C33–C34	Lung	14	3.5	4.1	2.2	6.8	#	17.7	
C38,C45	Mesothelioma	1	0.1	13.1	0.3	72.8		1.5	
C43	Malign. melanoma	5	2.0	2.5	0.8	5.8		5.0	
C46,C49	Soft tissue	4	0.3	15.2	4.1	38.9	#	6.3	
C48	Peritoneal	8	0.2	43.6	18.8	85.9	#	13.1	
C50	Breast	40	15.5	2.6	1.8	3.5	#	41.0	
C53	Cervix uteri	6	0.8	7.1	2.6	15.4	#	8.6	
C54	Corpus uteri	13	2.5	5.1	2.7	8.8	#	17.5	7.7
C55,C57	Fem. genitals un	1	0.1	13.4	0.3	74.6		1.5	
C56	Ovary	21	1.8	11.5	7.1	17.6	#	32.1	
C64	Kidney	5	1.0	5.1	1.7	11.9	#	6.7	20.0
C65	Renal pelvis	1	0.1	8.1	0.2	45.2		1.5	
C66	Ureter	2	0.1	31.1	3.8	112.3	#	3.2	
C67	Bladder	2	0.7	2.7	0.3	9.7		2.1	
C70–C72	CNS cancer	1	0.6	1.6	0.0	9.1		0.6	
C73	Thyroid	5	1.1	4.5	1.5	10.5	#	6.5	
C76–C79	CUP	7	0.7	9.7	3.9	20.0	#	10.5	
C82–C85	NHL	3	1.7	1.8	0.4	5.3		2.2	
C91–C96	Leukaemia	1	0.6	1.6	0.0	8.9		0.6	
Not observed		0	2.6	0.0	0.0	1.4		-4.3	
All further malignancies		197	46.2	4.3	3.7	4.9	#	252.4	2.5

Patients	1616
Median age at next malignancy (years)	62.4
Person-years	5973
Mean observation time (years)	3.7
Median observation time (years)	1.6

The occurrence of further specified malignancy is statistically significant.

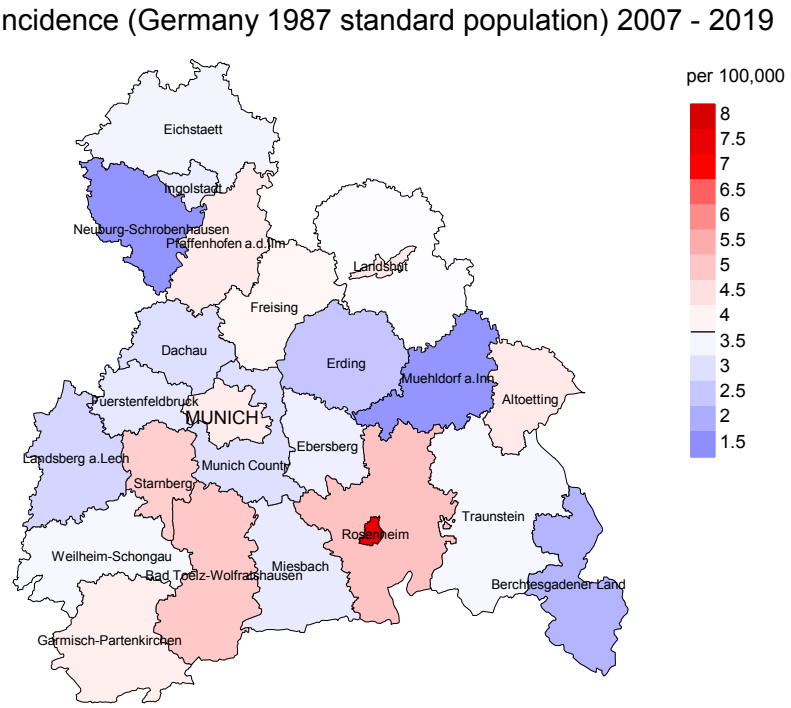

Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (3.7/100,000 WS N=1,249).

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 33 women were identified with newly diagnosed borderline ovarian tumor. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 3.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.0 and 5.3/100,000.

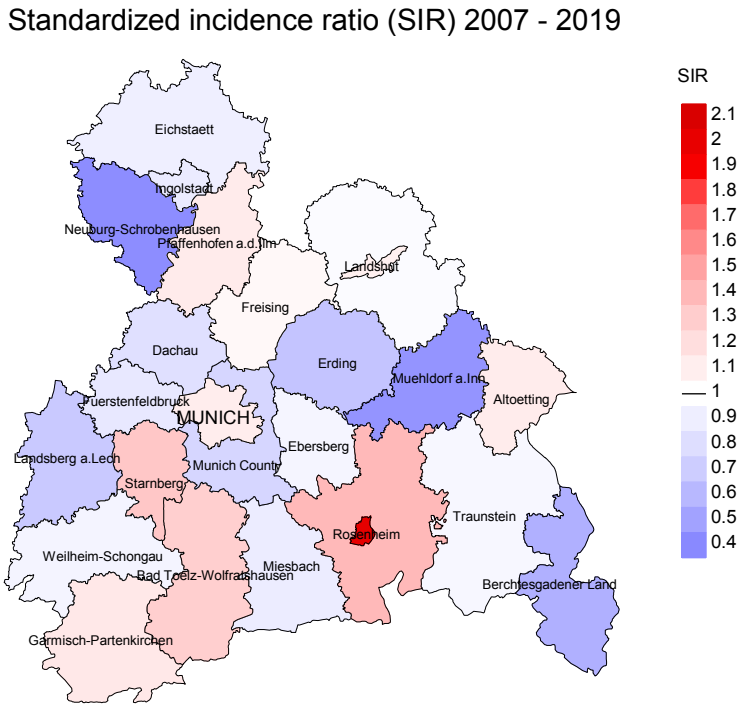

Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (N=1,249).

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 33 women were identified with newly diagnosed borderline ovarian tumor. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.94. Though, the value of this parameter may vary with an underlying probability of 99% between 0.57 and 1.45, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,
and deaths among the annual cohorts

(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 %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	24	83.3	10	41.7	90.0
1999	24	91.7	10	41.7	100.0
2000	36	94.4	12	33.3	91.7
2001	26	88.5	8	30.8	100.0
2002	43	81.4	7	16.3	57.1
2003	55	87.3	19	34.5	89.5
2004	74	89.2	18	24.3	100.0
2005	78	89.7	17	21.8	88.2
2006	75	89.3	9	12.0	88.9
2007	92	77.2	19	20.7	84.2
2008	98	98.0	12	12.2	83.3
2009	97	92.8	18	18.6	100.0
2010	105	95.2	18	17.1	72.2
2011	113	93.8	8	7.1	100.0
2012	91	96.7	17	18.7	82.4
2013	100	99.0	15	15.0	93.3
2014	108	96.3	7	6.5	85.7
2015	89	79.8	3	3.4	66.7
2016	97	100.0	9	9.3	88.9
2017	86	100.0	5	5.8	80.0
2018	94	100.0	1	1.1	
2019	79	60.8	1	1.3	
1998–2019	1684	91.2	243	14.4	87.7

Table 9b

Annual cohorts of incident cancers and deaths,
and cases deceased within the same year of being diagnosed with cancer

(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	Deaths in same year n	Prop. deaths in same year %
1998	24	5		
1999	24	7		
2000	36	5	2	5.6
2001	26	9	1	3.8
2002	43	4		
2003	55	12	5	9.1
2004	74	5		
2005	78	12		
2006	75	12		
2007	92	13	2	2.2
2008	98	11		
2009	97	14	1	1.0
2010	105	17	1	1.0
2011	113	11	1	0.9
2012	91	22		
2013	100	19	1	1.0
2014	108	22	2	1.9
2015	89	28	1	1.1
2016	97	28	2	2.1
2017	86	33	2	2.3
2018	94	23		
2019	79	14	1	1.3
1998–2019	1684	326	22	1.3

Table 9c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(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	5	40.0	60.0	50.0
1999	7	28.6	71.4	20.0
2000	5	40.0	60.0	60.0
2001	9	33.3	66.7	55.6
2002	4	50.0	50.0	50.0
2003	12	58.3	41.7	81.8
2004	5	20.0	80.0	20.0
2005	12	41.7	58.3	50.0
2006	12	41.7	58.3	60.0
2007	13	46.2	53.8	46.2
2008	11	54.5	45.5	45.5
2009	14	57.1	42.9	57.1
2010	17	41.2	58.8	43.8
2011	11	63.6	36.4	63.6
2012	22	59.1	40.9	66.7
2013	19	52.6	47.4	57.9
2014	22	36.4	63.6	50.0
2015	28	53.6	46.4	70.4
2016	28	53.6	46.4	67.9
2017	33	42.4	57.6	51.6
2018	23	30.4	69.6	75.0
2019	14	14.3	85.7	50.0
1998-2019	326	45.1	54.9	57.2

Table 10

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

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	5	75.8	67.1	75.8	90.0
1999	7	75.8	61.2	80.5	69.7
2000	5	62.6	57.8	78.7	53.0
2001	9	80.6	78.5	81.1	81.5
2002	4	71.2	71.2	74.1	71.2
2003	12	68.3	65.8	68.8	72.6
2004	5	75.4	75.2	78.4	75.2
2005	12	72.2	71.3	73.1	75.6
2006	12	75.3	73.5	76.3	76.1
2007	13	71.9	69.8	71.9	69.8
2008	11	69.3	58.7	83.6	62.8
2009	14	79.1	73.7	81.9	73.7
2010	17	79.4	71.0	85.4	71.0
2011	11	72.9	64.7	82.6	64.7
2012	22	74.7	66.4	83.2	69.9
2013	19	80.0	66.1	87.6	68.2
2014	22	81.3	78.0	83.2	79.1
2015	28	75.2	66.0	88.7	68.9
2016	28	76.4	68.2	86.7	70.5
2017	33	77.5	71.2	81.4	69.6
2018	23	77.9	66.2	79.1	80.2
2019	14	78.7	63.7	78.7	82.0
1998–2019	326	77.1	69.7	81.9	71.5

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 11

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

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	2	0.2	0.08	0.1	0.07	0.1	0.07	0.1	0.06
1999	2	0.2	0.08	0.1	0.08	0.2	0.09	0.2	0.09
2000	2	0.2	0.06	0.1	0.06	0.1	0.06	0.1	0.05
2001	3	0.2	0.12	0.1	0.05	0.1	0.07	0.2	0.09
2002	2	0.1	0.05	0.0	0.03	0.1	0.04	0.1	0.05
2003	7	0.4	0.13	0.2	0.09	0.2	0.10	0.3	0.11
2004	1	0.1	0.01	0.0	0.01	0.0	0.01	0.0	0.01
2005	5	0.3	0.06	0.1	0.04	0.2	0.05	0.2	0.05
2006	5	0.2	0.07	0.1	0.04	0.2	0.05	0.2	0.06
2007	6	0.3	0.07	0.1	0.05	0.2	0.05	0.2	0.06
2008	6	0.3	0.06	0.2	0.07	0.2	0.07	0.3	0.07
2009	8	0.3	0.08	0.1	0.04	0.2	0.05	0.2	0.06
2010	7	0.3	0.07	0.1	0.05	0.2	0.05	0.3	0.06
2011	7	0.3	0.06	0.2	0.05	0.2	0.05	0.2	0.05
2012	13	0.6	0.14	0.3	0.10	0.4	0.11	0.5	0.13
2013	10	0.4	0.10	0.2	0.07	0.3	0.08	0.3	0.08
2014	8	0.3	0.07	0.1	0.04	0.2	0.05	0.3	0.07
2015	15	0.6	0.17	0.3	0.12	0.4	0.14	0.5	0.15
2016	15	0.6	0.15	0.3	0.12	0.4	0.13	0.5	0.14
2017	14	0.6	0.16	0.2	0.10	0.4	0.12	0.4	0.13
2018	7	0.3	0.07	0.1	0.05	0.2	0.05	0.2	0.06
2019	2	0.1	0.03	0.0	0.02	0.1	0.02	0.1	0.02
1998-2019	147	0.3	0.09	0.2	0.06	0.2	0.07	0.3	0.08

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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