

Munich Cancer Registry



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- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C23-C24: Gallbladder cancer

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	3,996
Diseases	4,002
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m



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

<https://www.tumorregister-muenchen.de/en/facts/base/bC2324E-ICD-10-C23-C24-Gallbladder-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, August 2018

[#] 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
C23	Malignant neoplasm of gallbladder
C24.-	Malignant neoplasm of other and unspecified parts of biliary tract
C24.0	Extrahepatic bile duct
C24.1	Ampulla of Vater
C24.8	Overlapping lesion of biliary tract
C24.9	Biliary tract, 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	108	25	23.1	5.6	3.6	92.6	100.0
1999	117	18	15.4	10.2	3.6	95.7	100.0
2000	115	27	23.5	10.6	3.5	96.5	100.0
2001	129	43	33.3	10.7	3.5	92.2	97.7
2002	236	79	33.5	11.8	3.6	97.0	100.0 #
2003	228	72	31.6	10.8	3.6	94.3	99.6
2004	233	60	25.8	10.6	3.6	89.3	97.0
2005	211	58	27.5	11.1	3.6	90.5	99.1
2006	251	54	21.5	11.9	3.6	90.8	96.8
2007	258	46	17.8	12.3	3.7	91.9	95.3 #
2008	259	59	22.8	12.9	3.4	90.0	92.7
2009	256	41	16.0	12.7	3.4	87.1	89.8
2010	235	43	18.3	13.2	2.9	86.0	93.2
2011	245	35	14.3	13.9	3.0	86.9	91.0
2012	246	30	12.2	14.4	3.3	82.1	91.9
2013	224	48	21.4	14.8	2.9	79.0	86.6
2014	249	44	17.7	15.0	2.8	80.7	90.4
2015	197	34	17.3	15.5	3.6	67.5	98.5
2016	205	37	18.0	15.6	4.0	46.3	86.8 ##
1998-2016	4002	853	21.3	15.6	3.6	85.7	94.5

4,002 cases diagnosed 1998-2016 are related to a total of 3,996 patients. Currently, in 773 (19.3 %) of these 3,996 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 643 / 98 / 32 (16.1 % / 2.5 % / 0.8 %) 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 2014, a subgroup of 249 cases has been diagnosed, of which 15.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.8 % 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 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	38	35.2	8	21.1	10.5	3.8	86.8	100.0
1999	47	40.2	5	10.6	14.1	3.6	91.5	100.0
2000	53	46.1	9	17.0	14.5	3.5	94.3	100.0
2001	49	38.0	10	20.4	13.9	3.4	98.0	100.0
2002	102	43.2	30	29.4	13.5	3.5	97.1	100.0 #
2003	91	39.9	27	29.7	12.9	3.4	94.5	100.0
2004	83	35.6	17	20.5	12.1	3.4	90.4	97.6
2005	90	42.7	21	23.3	12.5	3.4	90.0	100.0
2006	97	38.6	20	20.6	13.8	3.4	91.8	97.9
2007	103	39.9	12	11.7	13.8	3.4	89.3	92.2 #
2008	122	47.1	20	16.4	14.2	3.1	91.0	94.3
2009	127	49.6	16	12.6	13.9	2.8	89.0	91.3
2010	104	44.3	13	12.5	14.3	2.4	79.8	90.4
2011	118	48.2	8	6.8	15.1	2.5	80.5	86.4
2012	113	45.9	10	8.8	15.3	2.9	84.1	92.9
2013	107	47.8	18	16.8	15.7	2.4	76.6	85.0
2014	117	47.0	17	14.5	15.6	2.6	74.4	86.3
2015	91	46.2	16	17.6	16.3	3.1	69.2	100.0
2016	107	52.2	16	15.0	16.4	4.9	41.1	83.2 ##
1998-2016	1759	44.0	293	16.7	16.4	3.8	83.5	93.5

1,759 cases diagnosed 1998-2016 are related to a total of 1,758 patients. Currently, in 357 (20.3 %) of these 1,758 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 291 / 46 / 20 (16.6 % / 2.6 % / 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 2014, a subgroup of 117 cases has been diagnosed, of which 15.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.6 % 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	70	64.8	17	24.3	2.9	3.5	95.7	100.0
1999	70	59.8	13	18.6	7.9	3.5	98.6	100.0
2000	62	53.9	18	29.0	7.9	3.5	98.4	100.0
2001	80	62.0	33	41.3	8.5	3.6	88.8	96.3
2002	134	56.8	49	36.6	10.6	3.7	97.0	100.0 #
2003	137	60.1	45	32.8	9.4	3.7	94.2	99.3
2004	150	64.4	43	28.7	9.7	3.8	88.7	96.7
2005	121	57.3	37	30.6	10.2	3.8	90.9	98.3
2006	154	61.4	34	22.1	10.6	3.8	90.3	96.1
2007	155	60.1	34	21.9	11.3	4.0	93.5	97.4 #
2008	137	52.9	39	28.5	12.0	3.6	89.1	91.2
2009	129	50.4	25	19.4	11.9	4.0	85.3	88.4
2010	131	55.7	30	22.9	12.4	3.4	90.8	95.4
2011	127	51.8	27	21.3	13.0	3.4	92.9	95.3
2012	133	54.1	20	15.0	13.7	3.8	80.5	91.0
2013	117	52.2	30	25.6	14.2	3.3	81.2	88.0
2014	132	53.0	27	20.5	14.5	3.0	86.4	93.9
2015	106	53.8	18	17.0	14.8	4.0	66.0	97.2
2016	98	47.8	21	21.4	15.0	3.1	52.0	90.8 ##
1998-2016	2243	56.0	560	25.0	15.0	3.5	87.4	95.3

2,243 cases diagnosed 1998-2016 are related to a total of 2,238 patients. Currently, in 416 (18.6 %) of these 2,238 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 352 / 52 / 12 (15.7 % / 2.3 % / 0.5 %) 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 2014, a subgroup of 132 cases has been diagnosed, of which 14.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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 4.81 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	38	70	3.4	6.0	1.9	2.5	3.2	3.7	4.7	4.8
1999	47	70	4.2	5.9	2.4	2.3	3.7	3.6	4.8	5.0
2000	53	62	4.7	5.2	2.7	1.6	4.1	2.7	5.6	4.2
2001	49	80	4.2	6.6	2.3	2.7	3.8	4.1	5.3	5.5
2002	102	134	5.5	6.8	3.1	2.3	4.6	3.8	6.0	5.4
2003	91	137	4.9	7.0	2.6	2.5	4.0	3.9	5.4	5.4
2004	83	150	4.4	7.6	2.4	2.8	3.7	4.3	4.8	5.8
2005	90	121	4.8	6.1	2.5	2.3	3.8	3.5	4.9	4.7
2006	97	154	5.1	7.7	2.6	2.5	3.9	4.1	5.1	5.7
2007	103	155	4.6	6.7	2.5	2.5	3.7	3.9	4.7	5.2
2008	122	137	5.5	5.9	2.6	2.1	4.0	3.2	5.6	4.3
2009	127	129	5.7	5.5	2.7	2.0	4.2	3.0	5.6	4.1
2010	104	131	4.6	5.6	2.2	2.0	3.4	3.1	4.5	4.2
2011	118	127	5.3	5.4	2.4	1.9	3.7	2.9	5.1	3.9
2012	113	133	5.0	5.6	2.3	2.0	3.4	3.1	4.6	4.2
2013	107	117	4.6	4.9	2.0	1.7	3.1	2.6	4.3	3.5
2014	117	132	5.0	5.5	2.3	1.7	3.4	2.7	4.5	4.0
2015	91	106	3.8	4.4	1.5	1.4	2.4	2.2	3.5	3.1
2016	107	98	4.5	4.0	2.0	1.3	3.0	2.0	4.0	2.7
1998-2016	1759	2243	4.8	5.8	2.3	2.0	3.6	3.2	4.8	4.4

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

Table 3

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	108	73.4	12.7	28.5	99.5	55.5	65.3	74.9	82.8	88.9
1999	117	72.5	12.4	35.3	96.5	56.5	66.8	74.0	80.6	87.0
2000	115	75.2	11.0	44.5	94.0	60.0	66.8	76.9	82.4	88.7
2001	129	73.2	12.1	40.2	99.1	56.5	65.7	75.9	81.6	88.5
2002	236	73.8	11.6	34.1	94.5	57.8	66.4	74.6	82.1	88.1
2003	228	74.3	10.3	37.2	96.8	60.0	66.7	75.0	82.0	87.3
2004	233	73.6	11.9	34.0	100	57.0	67.0	74.2	82.6	88.0
2005	211	72.8	11.6	44.5	98.0	57.8	63.9	72.2	81.8	86.8
2006	251	74.4	11.9	36.7	99.2	58.2	67.4	75.0	83.6	88.8
2007	258	71.9	12.0	35.2	97.1	55.8	64.5	72.5	80.3	87.0
2008	259	74.0	11.6	32.9	99.3	59.2	67.6	74.6	83.3	87.4
2009	256	73.1	11.9	26.5	97.7	56.0	67.1	73.7	81.6	87.7
2010	235	73.0	11.2	43.5	93.8	58.2	65.7	74.2	81.7	87.2
2011	245	74.0	11.3	36.1	100	59.0	66.2	75.1	82.8	87.9
2012	246	73.5	10.5	29.3	99.8	60.5	67.1	74.3	80.3	87.4
2013	224	74.6	10.1	48.6	96.2	60.7	69.0	74.7	81.4	87.8
2014	249	74.0	11.5	27.9	97.2	57.2	68.5	75.9	81.6	86.9
2015	197	75.3	10.7	35.4	98.4	60.8	70.1	76.8	81.8	87.7
2016	205	73.9	11.0	41.7	96.8	58.9	66.7	75.6	80.4	87.8
1998-2016	4002	73.7	11.4	26.5	100	58.2	66.6	74.8	81.9	87.6

Table 3a

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	38	72.4	10.9	51.0	91.0	55.5	62.2	74.7	80.3	86.3
1999	47	69.0	13.6	35.3	95.0	54.1	59.2	69.2	78.7	86.1
2000	53	71.6	12.1	44.5	94.0	56.4	62.3	72.5	80.5	86.0
2001	49	72.4	11.9	42.1	92.8	56.5	63.6	73.9	79.7	88.7
2002	102	70.3	10.4	44.7	93.5	58.1	63.0	70.1	77.7	85.2
2003	91	72.1	9.7	52.5	95.2	58.9	63.9	72.0	79.7	84.8
2004	83	69.7	11.6	34.0	91.5	54.1	62.9	71.1	76.7	83.7
2005	90	70.2	11.0	47.0	98.0	56.1	63.3	69.4	78.9	86.1
2006	97	69.9	12.0	36.7	94.5	53.8	62.5	69.6	78.3	84.2
2007	103	67.9	11.3	35.2	93.1	53.7	61.4	66.5	77.3	82.6
2008	122	72.5	10.3	37.0	93.1	60.3	66.7	72.7	80.6	84.6
2009	127	71.4	11.2	43.3	97.7	53.4	64.9	71.6	80.0	84.6
2010	104	71.2	10.4	43.5	93.7	58.0	64.2	72.8	78.4	84.2
2011	118	71.7	10.8	38.9	92.1	56.9	65.3	73.7	79.4	84.0
2012	113	71.7	9.5	49.8	93.5	57.9	64.8	72.5	77.5	83.4
2013	107	73.3	9.8	48.6	93.8	59.0	66.9	74.5	80.3	85.3
2014	117	70.9	12.6	27.9	97.2	51.8	65.7	74.0	79.4	84.9
2015	91	74.3	9.8	45.5	95.1	61.2	69.4	75.8	79.7	84.5
2016	107	71.5	10.7	41.7	92.8	56.3	65.5	72.8	79.4	83.2
1998-2016	1759	71.3	11.0	27.9	98.0	56.7	64.2	72.3	79.2	84.7

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		
				Min.	Max.	10%	25%	50%	75%	90%
1998	70	74.0	13.7	28.5	99.5	55.8	65.8	75.3	84.5	90.0
1999	70	74.9	11.1	43.7	96.5	60.7	68.8	75.9	81.9	89.2
2000	62	78.3	8.9	51.1	92.4	66.8	74.2	78.6	83.9	89.7
2001	80	73.8	12.2	40.2	99.1	56.8	65.8	76.7	81.9	88.4
2002	134	76.4	11.8	34.1	94.5	57.8	71.9	79.2	83.6	89.7
2003	137	75.8	10.5	37.2	96.8	61.8	68.9	77.3	83.0	88.1
2004	150	75.7	11.6	44.2	100	60.0	68.5	76.7	84.0	90.1
2005	121	74.7	11.7	44.5	98.0	59.4	65.3	76.5	82.8	89.3
2006	154	77.2	11.1	43.2	99.2	64.8	71.2	78.4	85.7	91.2
2007	155	74.6	11.7	39.2	97.1	57.9	67.9	75.6	83.0	89.2
2008	137	75.4	12.5	32.9	99.3	59.1	68.9	77.8	84.7	88.1
2009	129	74.8	12.3	26.5	96.6	58.9	67.9	76.4	84.0	88.5
2010	131	74.5	11.6	45.3	93.8	59.0	67.2	75.4	83.6	88.8
2011	127	76.0	11.4	36.1	100	61.1	69.3	76.2	85.2	89.4
2012	133	75.1	11.2	29.3	99.8	62.4	68.8	76.3	82.3	89.4
2013	117	75.7	10.4	50.5	96.2	61.9	70.6	75.2	83.0	89.0
2014	132	76.7	9.6	44.5	93.1	63.5	70.6	78.3	83.2	88.0
2015	106	76.2	11.3	35.4	98.4	59.6	70.1	78.0	84.7	88.6
2016	98	76.6	10.8	46.3	96.8	62.3	70.0	77.1	85.1	89.7
1998-2016	2243	75.6	11.4	26.5	100	60.1	69.0	76.9	83.9	89.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2016
(incl. DCO)

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	3	0.1	0.1	1	0.1	0.1	2	0.2	0.2
30-34	4	0.2	0.3	2	0.2	0.3	2	0.2	0.3
35-39	8	0.3	0.6	4	0.4	0.6	4	0.3	0.6
40-44	16	0.7	1.3	9	0.8	1.4	7	0.6	1.2
45-49	45	1.9	3.2	24	2.2	3.6	21	1.7	2.8
50-54	84	3.5	6.7	47	4.2	7.8	37	2.9	5.8
55-59	112	4.7	11.5	66	6.0	13.8	46	3.6	9.4
60-64	211	8.9	20.3	126	11.4	25.2	85	6.7	16.1
65-69	321	13.5	33.9	164	14.8	39.9	157	12.4	28.5
70-74	398	16.8	50.6	205	18.5	58.4	193	15.3	43.8
75-79	454	19.1	69.8	216	19.5	77.9	238	18.8	62.6
80-84	356	15.0	84.8	155	14.0	91.9	201	15.9	78.5
85+	362	15.2	100.0	90	8.1	100.0	272	21.5	100.0
All ages	2374	100.0		1109	100.0		1265	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007–2016

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=146 %	Females DCO rate n=271 %	Males	Females
							Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1	2	0.1	0.1			0.1	0.2
30-34	2	2	0.1	0.1			0.2	0.1
35-39	4	4	0.2	0.3		25.0	0.3	0.2
40-44	9	7	0.5	0.4			0.4	0.2
45-49	24	21	1.2	1.1			0.6	0.3
50-54	47	37	2.7	2.2	8.5	5.4	0.8	0.4
55-59	66	46	4.7	3.1	1.5	8.7	0.7	0.5
60-64	126	85	10.3	6.4	4.8	11.8	1.0	0.8
65-69	164	157	13.8	12.1	6.7	5.7	0.9	1.1
70-74	205	192	18.5	15.2	10.7	7.8	1.0	1.3
75-79	216	236	27.1	23.6	14.8	15.3	1.3	1.8
80-84	155	201	33.7	28.4	23.9	30.8	1.4	1.8
85+	90	272	29.4	37.1	36.7	48.5	1.1	2.1
All ages	1109	1262			13.2	21.5	1.0	1.1
Incidence								
Raw			4.9	5.3				
WS			2.2	1.8				
ES			3.4	2.9				
BRD-S			4.6	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).

CD-10 C23-C24: Malignant neoplasm of gallbladder and other parts of biliary tract
 Age distribution and age-specific incidence 2007 - 2016 (Males: 1109, Females: 1262)

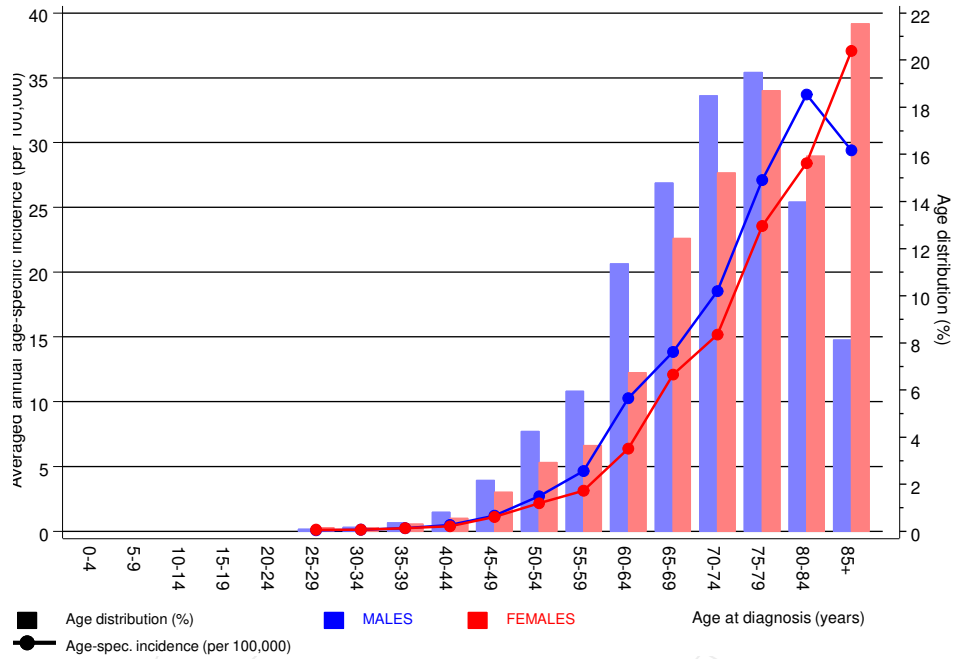


Figure 6. Age distribution (males: mean=71.6 yrs, median=73.1 yrs; females: mean=75.5 yrs, median=76.7 yrs) and age-specific incidence.

CD-10 C23-C24: Malignant neoplasm of gallbladder and other parts of biliary tract
Age-specific incidence rates: international comparison

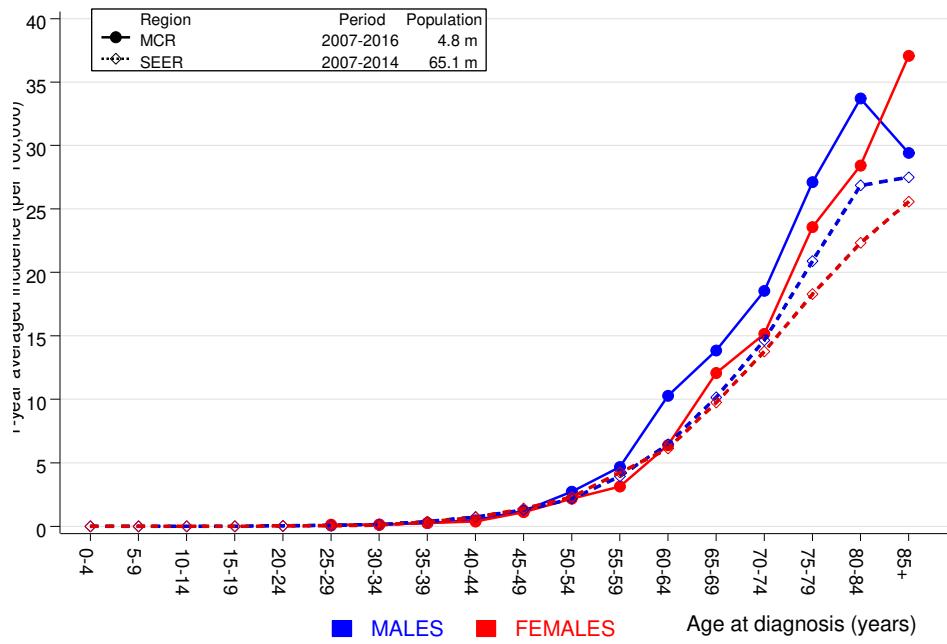


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 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 1998–2016

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C15	Oesophagus	2	0.7	2.8	0.3	10.3	6.0	
C16	Stomach	6	1.6	3.8	1.4	8.4 #	20.6	16.7
C17	Small intestine	5	0.2	24.6	8.0	57.4 #	22.2	
C18	Colon	12	3.7	3.2	1.7	5.6 #	38.3	41.7
C19–C20	Rectum	2	2.0	1.0	0.1	3.5	–0.2	
C22	Liver	4	1.1	3.7	1.0	9.4	13.5	
C25	Pancreas	5	1.4	3.5	1.1	8.1 #	16.5	40.0
C33–C34	Lung	9	4.5	2.0	0.9	3.8	20.9	
C43	Malign. melanoma	5	1.6	3.1	1.0	7.2 #	15.7	
C61	Prostate	15	11.2	1.3	0.8	2.2	17.9	13.3
C64	Kidney	3	1.3	2.3	0.5	6.6	7.7	
C67	Bladder	3	1.7	1.7	0.4	5.0	5.8	
C82–C85	NHL	2	1.6	1.3	0.2	4.6	2.1	50.0
Others, specified		5	0.8	6.1	2.0	14.2 #	19.4	60.0
Not observed		0	5.1	0.0	0.0	0.7 #	–23.8	
All further malignancies		78	38.6	2.0	1.6	2.5 #	182.6	17.9

Patients 1464
 Median age at next malignancy (years) 71.9
 Person-years 2156
 Mean observation time (years) 1.5
 Median observation time (years) 0.7

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 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 1998–2016

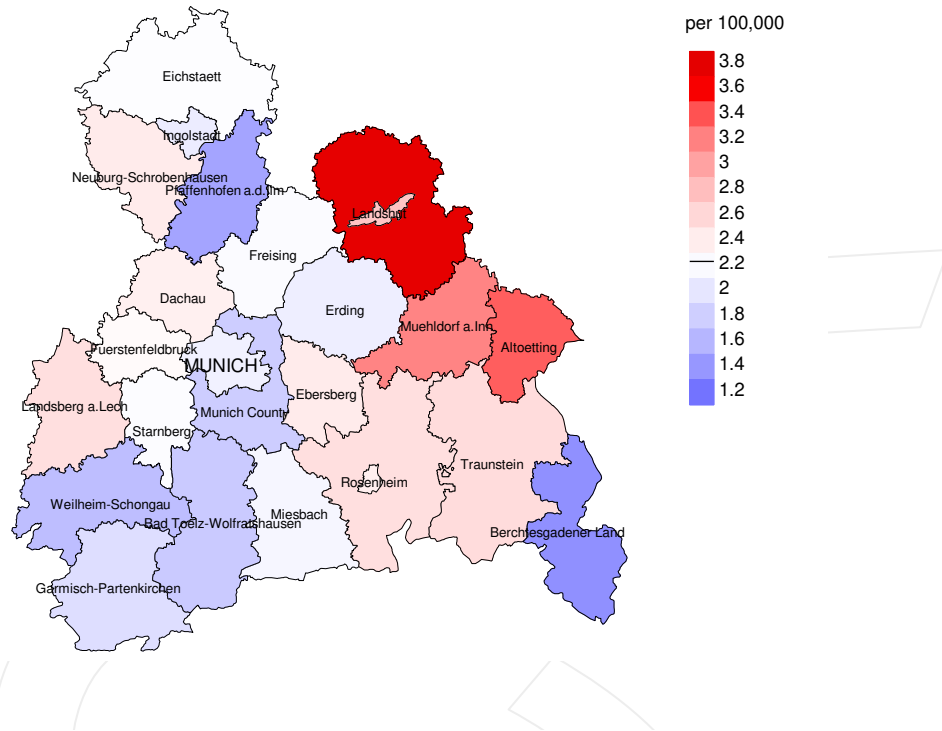
FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C16 Stomach	4	1.3	3.1	0.8	8.0	11.1	50.0
C18 Colon	16	3.5	4.6	2.6	7.4 #	51.0	37.5
C19–C20 Rectum	4	1.4	2.8	0.8	7.2	10.5	25.0
C22 Liver	2	0.4	4.7	0.6	17.0	6.4	
C23–C24 Bile	5	0.5	9.5	3.1	22.1 #	18.3	20.0
C25 Pancreas	9	1.6	5.6	2.5	10.6 #	30.1	11.1
C33–C34 Lung	8	2.3	3.4	1.5	6.7 #	23.1	
C43 Malign. melanoma	4	1.1	3.6	1.0	9.2	11.8	
C50 Breast	5	9.0	0.6	0.2	1.3	-16.2	
C53 Cervix uteri	2	0.4	5.6	0.7	20.1	6.7	50.0
C54 Corpus uteri	2	1.8	1.1	0.1	4.1	1.0	50.0
C56 Ovary	9	1.3	6.8	3.1	12.9 #	31.3	22.2
C64 Kidney	6	0.8	7.3	2.7	15.8 #	21.1	33.3
C76–C79 CUP	2	0.7	3.1	0.4	11.1	5.5	
C82–C85 NHL	3	1.3	2.3	0.5	6.6	6.9	66.7
C91–C96 Leukaemia	2	0.6	3.6	0.4	13.0	5.9	
Others, specified	3	0.5	5.6	1.2	16.3 #	10.1	
Not observed	0	3.9	0.0	0.0	0.9 #	-16.0	
All further malignancies	86	32.4	2.7	2.1	3.3 #	218.7	22.1
Patients		1773					
Median age at next malignancy (years)		76.8					
Person-years		2449					
Mean observation time (years)		1.4					
Median observation time (years)		0.6					

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Average incidence (world standard population) 2007 - 2016: Males



Average incidence (world standard population) 2007 - 2016: Females

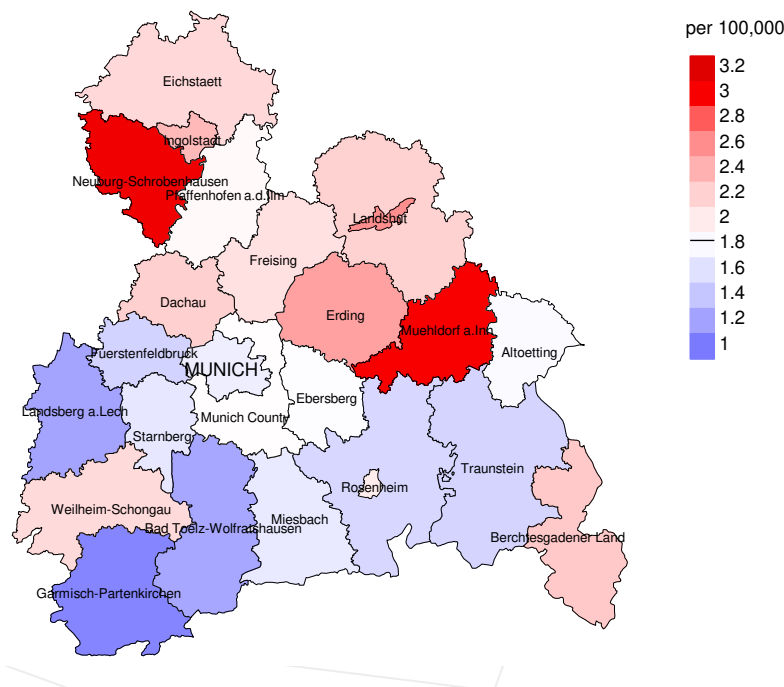
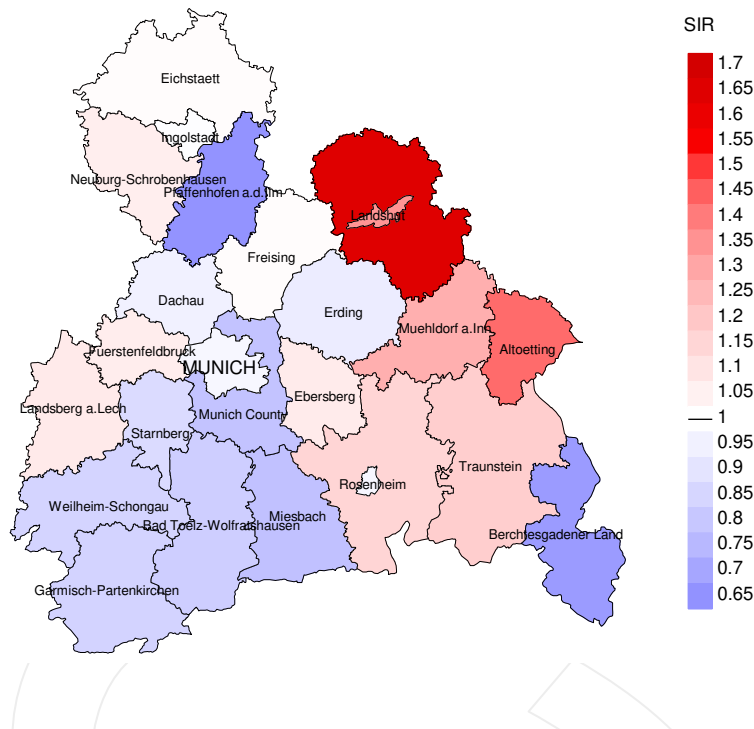


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.2/100,000 WS N=1,109, females 1.8/100,000 WS N=1,262).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 27 women were identified with newly diagnosed gallbladder cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.0 and 3.3/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

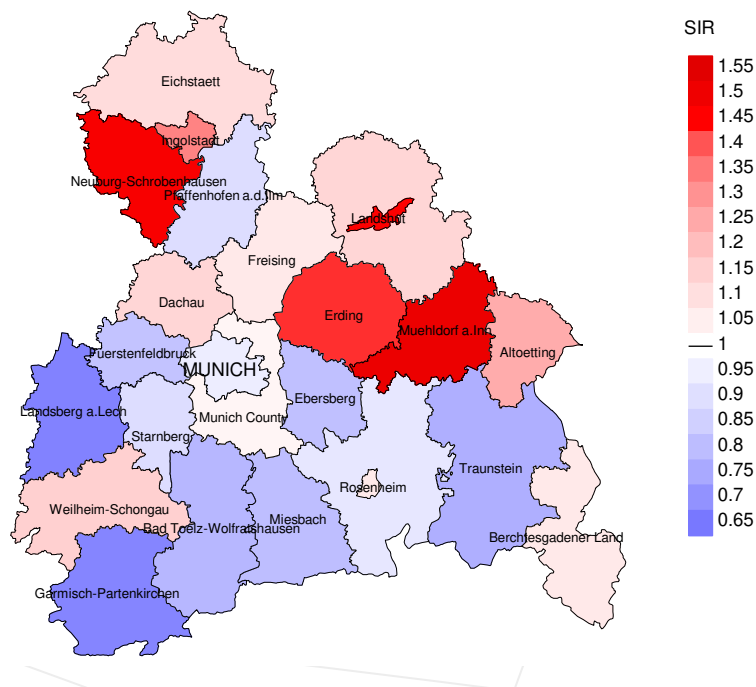


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,109, females N=1,262).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 27 women were identified with newly diagnosed gallbladder cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.81. Though, the value of this parameter may vary with an underlying probability of 99% between 0.46 and 1.30, 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 4.81 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	108	100.0	23.1	100	92.6	94.0
1999	117	100.0	15.4	112	95.7	96.4
2000	115	100.0	23.5	111	96.5	97.3
2001	129	97.7	33.3	119	92.2	96.6
2002	236	100.0	33.5	229	97.0	97.4
2003	228	99.6	31.6	215	94.3	98.6
2004	233	97.0	25.8	208	89.3	97.6
2005	211	99.1	27.5	191	90.5	99.0
2006	251	96.8	21.5	228	90.8	98.7
2007	258	95.3	17.8	237	91.9	99.2
2008	259	92.7	22.8	233	90.0	99.6
2009	256	89.8	16.0	223	87.1	98.2
2010	235	93.2	18.3	202	86.0	100.0
2011	245	91.0	14.3	213	86.9	99.1
2012	246	91.9	12.2	202	82.1	97.0
2013	224	86.6	21.4	177	79.0	97.2
2014	249	90.4	17.7	201	80.7	98.0
2015	197	98.5	17.3	133	67.5	97.0
2016	205	86.8	18.0	95	46.3	85.3
1998-2016	4002	94.5	21.3	3429	85.7	97.7

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 4.81 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	108	94	93.6	58	53.7
1999	117	103	94.2	55	47.0
2000	115	121	95.9	63	54.8
2001	129	115	97.4	59	45.7
2002	236	190	98.9	145	61.4
2003	228	148	96.6	115	50.4
2004	233	155	98.1	109	46.8
2005	211	165	97.6	96	45.5
2006	251	202	98.0	126	50.2
2007	258	190	98.4	101	39.1
2008	259	202	98.0	122	47.1
2009	256	208	98.6	100	39.1
2010	235	207	100.0	94	40.0
2011	245	205	99.5	99	40.4
2012	246	228	97.4	104	42.3
2013	224	198	98.0	90	40.2
2014	249	191	99.0	104	41.8
2015	197	211	99.1	93	47.2
2016	205	163	97.5	84	41.0
1998-2016	4002	3296	98.0	1817	45.4

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 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	94	87.2	12.8	95.5
1999	103	82.5	17.5	94.8
2000	121	91.7	8.3	98.3
2001	115	90.4	9.6	96.4
2002	190	90.5	9.5	93.6
2003	148	89.2	10.8	95.8
2004	155	91.0	9.0	96.1
2005	165	91.5	8.5	95.7
2006	202	87.6	12.4	91.9
2007	190	93.2	6.8	95.7
2008	202	94.6	5.4	96.5
2009	208	88.9	11.1	93.2
2010	207	90.8	9.2	94.7
2011	205	90.7	9.3	95.6
2012	228	86.8	13.2	92.3
2013	198	88.4	11.6	93.3
2014	191	91.1	8.9	94.7
2015	211	91.5	8.5	95.2
2016	163	85.9	14.1	91.2
1998-2016	3296	89.9	10.1	94.6

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	36	75.4	75.2	77.4	75.4
1999	36	73.0	71.3	76.4	71.3
2000	42	75.2	74.8	81.5	75.5
2001	52	72.6	69.8	78.5	73.6
2002	80	71.6	71.6	74.7	71.6
2003	61	72.3	72.2	76.3	73.2
2004	59	73.0	72.8	74.5	72.9
2005	84	70.6	70.0	73.7	70.3
2006	79	72.3	70.9	77.3	72.3
2007	67	68.7	68.3	73.8	69.5
2008	77	72.5	72.1	72.5	71.7
2009	103	71.3	71.1	74.1	71.5
2010	88	74.4	73.9	82.2	74.1
2011	105	74.9	74.9	72.5	74.9
2012	106	74.4	72.8	77.3	73.7
2013	103	75.0	74.1	83.3	74.2
2014	92	75.8	75.6	78.8	75.8
2015	91	74.8	74.4	77.9	74.9
2016	68	76.4	76.4	74.7	75.9
1998–2016	1429	73.7	73.2	76.3	73.5

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	58	76.8	76.1	87.9	76.8
1999	67	77.2	77.0	85.5	77.2
2000	79	79.1	78.4	81.6	79.8
2001	63	78.0	78.0	90.0	78.2
2002	110	79.2	78.6	81.8	78.7
2003	87	77.7	77.4	84.6	77.7
2004	96	78.2	77.6	80.8	78.3
2005	81	78.2	77.4	87.6	77.9
2006	123	79.3	77.7	88.4	77.7
2007	123	76.9	76.4	88.7	76.5
2008	125	77.3	76.8	85.2	77.5
2009	105	80.0	79.2	86.8	79.3
2010	119	79.4	79.1	83.7	78.9
2011	100	78.0	77.4	85.4	77.8
2012	122	77.3	76.8	83.7	76.8
2013	95	79.3	77.2	87.0	79.1
2014	99	78.1	78.0	79.7	78.5
2015	120	79.3	79.2	86.4	79.1
2016	95	80.2	79.8	87.3	79.8
1998–2016	1867	78.5	77.9	86.2	78.1

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 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	30	2.7	0.79	1.5	0.80	2.5	0.80	3.9	0.84
1999	26	2.3	0.55	1.3	0.55	2.1	0.56	2.7	0.57
2000	39	3.4	0.75	1.9	0.72	3.1	0.77	4.3	0.79
2001	45	3.9	0.92	2.2	0.93	3.5	0.90	4.6	0.86
2002	70	3.8	0.69	2.1	0.67	3.2	0.69	4.2	0.71
2003	54	2.9	0.59	1.5	0.58	2.4	0.59	3.3	0.61
2004	54	2.9	0.65	1.5	0.62	2.4	0.64	3.2	0.66
2005	77	4.1	0.86	2.2	0.86	3.3	0.86	4.2	0.86
2006	69	3.6	0.71	1.8	0.69	2.8	0.71	3.7	0.73
2007	62	2.8	0.60	1.4	0.56	2.1	0.57	2.7	0.58
2008	72	3.2	0.59	1.6	0.61	2.5	0.61	3.4	0.60
2009	92	4.1	0.72	2.0	0.75	3.1	0.74	4.1	0.73
2010	81	3.6	0.78	1.6	0.75	2.6	0.77	3.4	0.76
2011	97	4.3	0.82	1.9	0.78	3.0	0.81	4.2	0.81
2012	92	4.1	0.81	1.9	0.82	2.9	0.83	3.9	0.84
2013	93	4.0	0.87	1.7	0.85	2.7	0.87	3.7	0.86
2014	80	3.4	0.68	1.4	0.63	2.3	0.66	3.1	0.69
2015	80	3.4	0.88	1.5	0.97	2.2	0.92	3.1	0.89
2016	59	2.5	0.55	0.9	0.45	1.5	0.49	2.2	0.54
1998-2016	1272	3.5	0.72	1.6	0.71	2.6	0.72	3.5	0.73

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	52	4.4	0.74	1.8	0.71	2.7	0.73	3.6	0.74
1999	59	5.0	0.84	1.8	0.77	2.8	0.78	4.0	0.81
2000	72	6.0	1.16	2.1	1.32	3.4	1.24	4.8	1.15
2001	59	4.9	0.74	1.7	0.62	2.8	0.67	4.0	0.73
2002	102	5.2	0.76	1.9	0.80	2.9	0.77	4.1	0.76
2003	78	4.0	0.57	1.5	0.60	2.3	0.59	3.2	0.58
2004	87	4.4	0.58	1.5	0.55	2.5	0.57	3.4	0.59
2005	74	3.7	0.61	1.3	0.56	2.0	0.57	2.9	0.62
2006	108	5.4	0.70	1.8	0.72	2.9	0.71	4.0	0.70
2007	115	5.0	0.74	1.7	0.69	2.8	0.71	3.8	0.74
2008	119	5.1	0.87	1.8	0.85	2.8	0.87	3.8	0.90
2009	93	4.0	0.72	1.2	0.60	2.0	0.66	2.9	0.72
2010	107	4.6	0.82	1.5	0.76	2.4	0.78	3.3	0.78
2011	89	3.8	0.71	1.4	0.74	2.1	0.71	2.8	0.71
2012	106	4.5	0.80	1.5	0.73	2.3	0.77	3.2	0.77
2013	82	3.4	0.70	1.1	0.68	1.8	0.68	2.4	0.71
2014	94	3.9	0.71	1.2	0.71	1.9	0.71	2.8	0.71
2015	113	4.6	1.08	1.3	0.95	2.2	0.99	3.2	1.06
2016	81	3.3	0.83	0.9	0.72	1.5	0.75	2.2	0.81
1998-2016	1690	4.4	0.75	1.5	0.72	2.3	0.73	3.3	0.75

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	3	0.2	0.2	1	0.1	0.1	2	0.2	0.2
30-34	0	0.0	0.2			0.1			0.2
35-39	4	0.2	0.4	1	0.1	0.2	3	0.3	0.5
40-44	7	0.4	0.8	6	0.7	1.0	1	0.1	0.6
45-49	25	1.4	2.2	9	1.1	2.1	16	1.6	2.2
50-54	60	3.3	5.5	36	4.5	6.6	24	2.4	4.6
55-59	87	4.8	10.3	50	6.2	12.7	37	3.7	8.3
60-64	133	7.4	17.7	81	10.0	22.8	52	5.2	13.5
65-69	210	11.6	29.3	114	14.1	36.9	96	9.6	23.1
70-74	301	16.7	45.9	146	18.1	55.0	155	15.5	38.6
75-79	365	20.2	66.1	163	20.2	75.1	202	20.2	58.9
80-84	298	16.5	82.6	115	14.2	89.4	183	18.3	77.2
85+	314	17.4	100.0	86	10.6	100.0	228	22.8	100.0
All ages	1807	100.0		808	100.0		999	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007–2016
(incl. multiple malignancies)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1	2	0.1	1.00	0.1	1.00	1.4	2.7
30-34								
35-39	1	3	0.1	0.25	0.2	0.75	0.5	1.1
40-44	6	1	0.3	0.67	0.1	0.14	1.2	0.1
45-49	9	16	0.5	0.38	0.8	0.76	0.8	1.2
50-54	36	24	2.1	0.77	1.4	0.65	1.8	1.2
55-59	50	37	3.5	0.76	2.5	0.80	1.5	1.3
60-64	81	52	6.6	0.64	3.9	0.61	1.6	1.4
65-69	114	96	9.6	0.70	7.4	0.61	1.6	1.8
70-74	146	155	13.2	0.71	12.2	0.81	1.6	2.3
75-79	163	202	20.5	0.75	20.2	0.86	1.8	2.9
80-84	115	183	25.0	0.74	25.9	0.91	1.5	2.7
85+	86	228	28.1	0.96	31.1	0.84	1.3	2.5
All ages	808	999					1.5	2.2
Mortality								
Raw			3.5	0.73	4.2	0.79		
WS			1.6	0.71	1.4	0.74		
ES			2.5	0.72	2.2	0.76		
BRD-S			3.4	0.73	3.0	0.78		
PYLL-70								
per 100,000			12.8		10.4			
ES			11.1		8.7			
AYLL-70			8.7		9.0			

Table 14a

Further malignancies in deaths in period 1998–2016
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C15 Oesophagus	3	1.1	1	33.3	1	33.3	1	33.3
C16 Stomach	15	5.3	8	53.3	4	26.7	3	20.0
C17 Small intestine	5	1.8	1	20.0	2	40.0	2	40.0
C18 Colon	31	11.0	20	64.5	7	22.6	4	12.9
C19–C20 Rectum	18	6.4	16	88.9	1	5.6	1	5.6
C22 Liver	4	1.4	1	25.0	2	50.0	1	25.0
C23–C24 Bile	3	1.1					3	100.0
C25 Pancreas	9	3.2	1	11.1	3	33.3	5	55.6
C32 Larynx	4	1.4	4	100.0				
C33–C34 Lung	13	4.6	4	30.8	3	23.1	6	46.2
C43 Malign. melanoma	11	3.9	7	63.6	1	9.1	3	27.3
C44 Skin others	21	7.4	14	66.7	2	9.5	5	23.8
C61 Prostate	78	27.7	64	82.1	4	5.1	10	12.8
C62 Testis	5	1.8	5	100.0				
C64 Kidney	14	5.0	11	78.6	1	7.1	2	14.3
C67 Bladder	14	5.0	10	71.4	2	14.3	2	14.3
C76–C79 CUP	5	1.8	5	100.0				
C82–C85 NHL	7	2.5	4	57.1	1	14.3	2	28.6
Others, specified	22	7.8	14	63.6	2	9.1	6	27.3
All further malignancies	282	100.0	190	67.4	36	12.8	56	19.9

Further malignancies with number of cases 1 to 2 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 1998–2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C16 Stomach	8	2.5	1	12.5	1	12.5	6	75.0
C18 Colon	36	11.0	21	58.3	5	13.9	10	27.8
C19–C20 Rectum	13	4.0	8	61.5	2	15.4	3	23.1
C22 Liver	4	1.2	1	25.0	1	25.0	2	50.0
C23–C24 Bile	4	1.2			1	25.0	3	75.0
C25 Pancreas	12	3.7	2	16.7	6	50.0	4	33.3
C33–C34 Lung	13	4.0	3	23.1	2	15.4	8	61.5
C43 Malign. melanoma	13	4.0	11	84.6			2	15.4
C44 Skin others	16	4.9	13	81.3	3	18.8		
C50 Breast	86	26.4	82	95.3	3	3.5	1	1.2
C51 Vulva	4	1.2	4	100.0				
C53 Cervix uteri	8	2.5	6	75.0			2	25.0
C54 Corpus uteri	24	7.4	22	91.7			2	8.3
C56 Ovary	18	5.5	7	38.9	2	11.1	9	50.0
C64 Kidney	16	4.9	10	62.5	4	25.0	2	12.5
C67 Bladder	6	1.8	6	100.0				
C73 Thyroid	4	1.2	4	100.0				
C76–C79 CUP	6	1.8	3	50.0	2	33.3	1	16.7
C82–C85 NHL	12	3.7	10	83.3	1	8.3	1	8.3
C91–C96 Leukaemia	4	1.2	2	50.0			2	50.0
Others, specified	19	5.8	13	68.4	3	15.8	3	15.8
All further malignancies	326	100.0	229	70.2	36	11.0	61	18.7

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

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

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(First primaries only *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1	2	0.1	1.00	0.1	1.00	1.5	3.0
30-34								
35-39	1	3	0.1	0.50	0.2	0.75	0.5	1.2
40-44	6	1	0.3	0.86	0.1	0.14	1.3	0.2
45-49	9	15	0.5	0.39	0.8	0.75	0.9	1.3
50-54	33	22	1.9	0.79	1.3	0.65	1.8	1.3
55-59	46	34	3.2	0.75	2.3	0.87	1.6	1.4
60-64	65	45	5.3	0.60	3.4	0.62	1.6	1.5
65-69	97	73	8.2	0.69	5.6	0.59	1.7	1.7
70-74	124	132	11.2	0.75	10.4	0.89	1.7	2.5
75-79	125	159	15.7	0.78	15.9	0.87	1.9	2.9
80-84	88	143	19.1	0.78	20.2	0.86	1.6	2.7
85+	65	196	21.2	0.97	26.7	0.89	1.4	2.7
All ages	660	825					1.6	2.2
Mortality								
Raw			2.9	0.74	3.5	0.81		
WS			1.3	0.71	1.1	0.75		
ES			2.0	0.73	1.8	0.77		
BRD-S			2.7	0.74	2.5	0.79		
PYLL-70								
per 100,000			11.5		9.4			
ES			9.9		7.8			
AYLL-70			9.0		9.6			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**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						
10-14						
15-19						
20-24						
25-29	1	2	0.1	1.00	1.5	3.1
30-34						
35-39	1	3	0.1	0.50	0.5	1.2
40-44	6	1	0.3	0.86	1.3	0.2
45-49	9	15	0.5	0.41	0.9	1.3
50-54	31	21	1.8	0.74	1.7	1.3
55-59	46	32	3.2	0.79	1.6	1.4
60-64	62	45	5.1	0.61	1.5	1.5
65-69	95	72	8.0	0.70	1.7	1.7
70-74	119	128	10.8	0.73	1.7	2.5
75-79	120	149	15.1	0.76	1.9	2.8
80-84	87	136	18.9	0.78	1.7	2.7
85+	62	188	20.2	0.95	1.4	2.7
All ages	639	792			1.6	2.2
Mortality						
Raw			2.8	0.74	3.3	0.81
WS			1.3	0.71	1.1	0.76
ES			2.0	0.73	1.7	0.78
BRD-S			2.6	0.74	2.4	0.79
PYLL-70						
per 100,000			11.2		9.2	
ES			9.7		7.6	
AYLL-70			9.0		9.6	

* See corresponding tables with multiple malignancies.

CD-10 C23-C24: Malignant neoplasm of gallbladder and other parts of biliary tract
 Age distribution and age-specific mortality 2007 - 2016 (Males: 808, Females: 999)

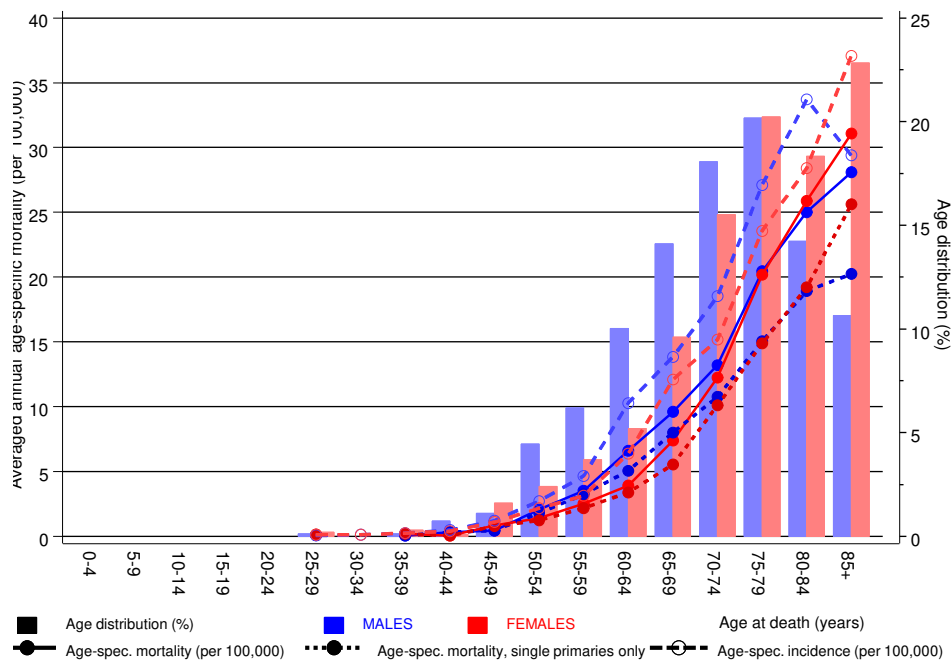
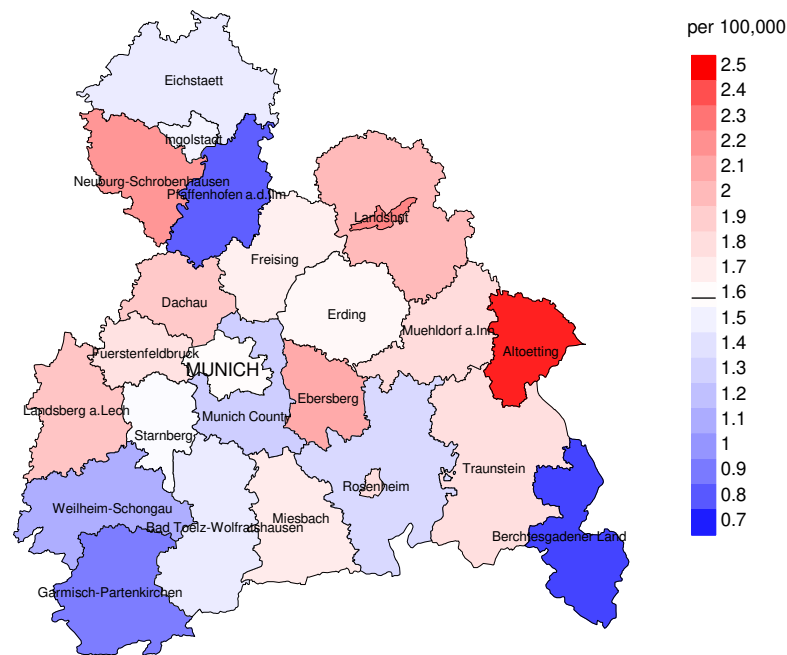


Figure 17. Distribution of age at death (bars; males: mean=71.2 yrs, median=72.6 yrs; females: mean=75.3 yrs, median=76.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2016: Males



Average mortality (world standard population) 2007 - 2016: Females

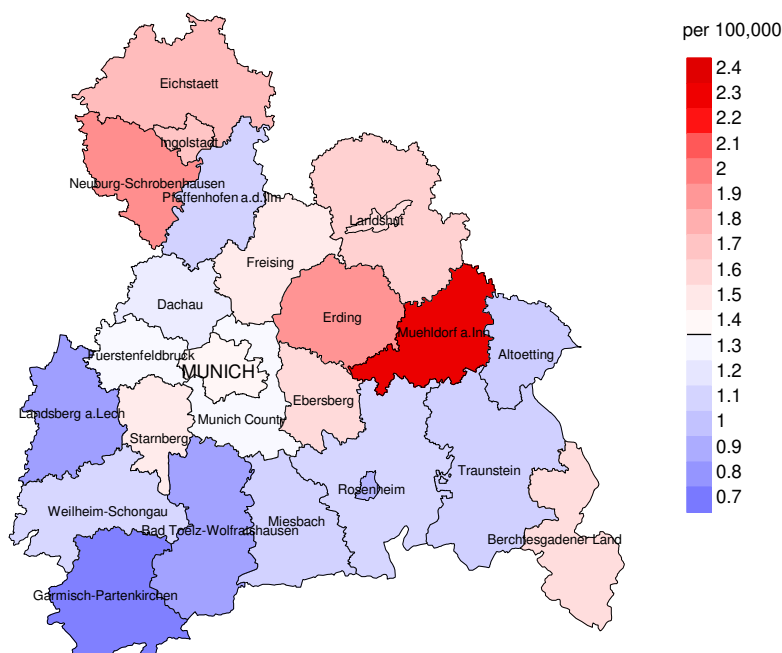
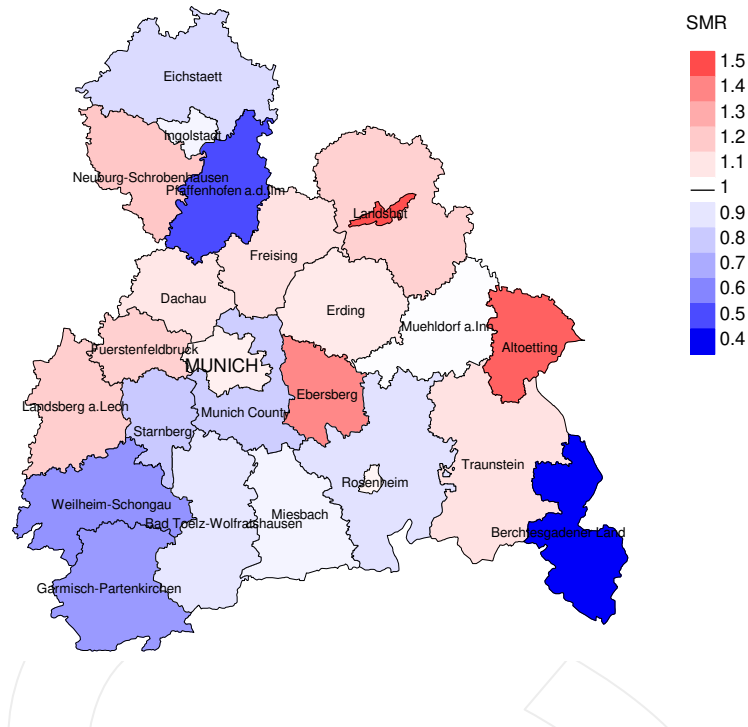


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.6/100,000 WS N=808, females 1.4/100,000 WS N=999).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 24 women died from gallbladder cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.8 and 2.9/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

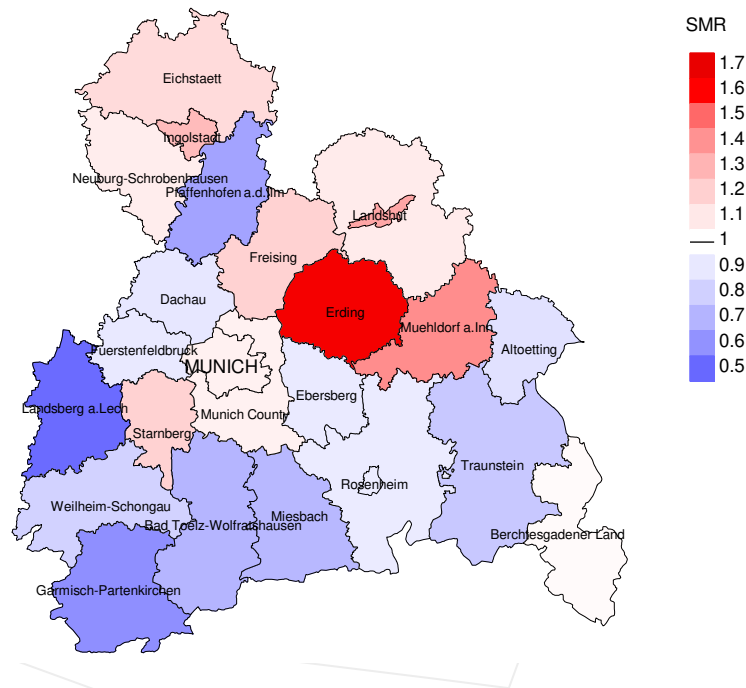


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=808, females N=999).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 24 women died from gallbladder cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.91. Though, the value of this parameter may vary with an underlying probability of 99% between 0.50 and 1.50, 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 index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic 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 MI- index. 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 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 between mortality and incidence
FRG	Federal Republic of Germany

Recommended Citation

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