Munich Cancer Registry

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ICD-10 C23-C24: Gallbladder cancer

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	3,473
Diseases	3,478
Creation date	04/13/2016
Export date	12/23/2015
Population	4.64 m

Munich Cancer Registry at Munich Cancer Center
Marchioninistr. 15
Munich, 81377
Germany

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

http://www.tumorregister-muenchen.de/en/facts/base/bC2324E-ICD-10-C23-C24-Gallbladder-cancer-incidence-and-mortality.pdf

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 4.64 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, April 2016

[#] 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 2.51 million to 3.96 in 2002, and to 4.52 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

All patients with invasive cancer by year of diagnosis, proportions of DCO, multiple primaries, deaths, and active follow-up (incl. DCO)

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %	
1998	106	24	22.6	8.5	91.5	100.0	
1999	114	17	14.9	20.2	95.6	100.0	
2000	114	27	23.7	12.3	96.5	100.0	
2001	126	40	31.7	11.1	92.1	97.6	
2002	237	80	33.8	17.7	95.4	100.0	#
2003	229	72	31.4	12.2	93.9	99.6	
2004	232	60	25.9	13.8	87.9	97.0	
2005	212	58	27.4	17.5	89.6	98.6	
2006	250	54	21.6	19.6	90.4	98.0	
2007	259	47	18.1	20.8	91.1	94.6	#
2008	260	60	23.1	21.2	87.3	92.3	
2009	256	41	16.0	17.2	84.8	89.5	
2010	235	43	18.3	20.4	82.6	90.6	
2011	244	35	14.3	23.8	85.2	91.0	
2012	245	30	12.2	22.9	77.1	91.8	
2013	210	47	22.4	24.8	65.7	99.5	
2014	149	40	26.8	20.1	47.7	97.3	##
1998-2014	3478	775	22.3	18.5	85.5	95.7	

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 found in the respective headings.

Table 1a

All patients with invasive cancer
by year of diagnosis and gender
(incl. DCO)

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	106	37	69	34.9
1999	114	45	69	39.5
2000	114	53	61	46.5
2001	126	48	78	38.1
2002	237	103	134	43.5
2003	229	91	138	39.7
2004	232	82	150	35.3
2005	212	91	121	42.9
2006	250	97	153	38.8
2007	259	104	155	40.2
2008	260	122	138	46.9
2009	256	126	130	49.2
2010	235	104	131	44.3
2011	244	118	126	48.4
2012	245	113	132	46.1
2013	210	101	109	48.1
2014	149	66	83	44.3
1998–2014	3478	1501	1977	43.2

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 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	37	69	3.3	5.9	1.9	2.5	3.1	3.7	4.5	4.7
1999	45	69	4.0	5.8	2.3	2.3	3.6	3.6	4.6	4.9
2000	53	61	4.7	5.1	2.7	1.6	4.1	2.7	5.6	4.1
2001	48	78	4.1	6.4	2.3	2.6	3.7	4.0	5.2	5.4
2002	103	134	5.5	6.8	3.1	2.3	4.7	3.8	6.0	5.4
2003	91	138	4.9	7.0	2.6	2.5	4.0	3.9	5.4	5.5
2004	82	150	4.4	7.6	2.4	2.8	3.6	4.3	4.7	5.8
2005	91	121	4.8	6.1	2.5	2.3	3.8	3.5	4.9	4.7
2006	97	153	5.1	7.6	2.6	2.5	3.9	4.1	5.1	5.6
2007	104	155	4.7	6.7	2.6	2.5	3.7	3.9	4.7	5.2
2008	122	138	5.5	5.9	2.6	2.1	4.0	3.2	5.6	4.3
2009	126	130	5.6	5.6	2.7	2.0	4.1	3.1	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	126	5.2	5.3	2.4	1.9	3.7	2.9	5.1	3.8
2012	113	132	4.9	5.6	2.3	2.0	3.5	3.1	4.6	4.2
2013	101	109	4.4	4.6	1.9	1.5	3.0	2.4	4.2	3.3
2014	66	83	2.9	3.5	1.3	1.2	2.0	1.9	2.7	2.8
1998–2014	1501	1977	4.7	5.9	2.3	2.1	3.6	3.3	4.8	4.5

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	106	73.2	12.7	28.5	99.5	55.5	64.8	74.7	82.6	88.8
1999	114	72.2	12.3	35.3	96.5	56.5	66.8	73.2	79.5	87.0
2000	114	74.9	11.0	44.5	94.0	60.0	66.8	76.2	82.2	88.7
2001	126	72.9	12.0	40.2	99.1	56.5	65.3	75.2	81.5	88.0
2002	237	73.7	11.6	34.1	94.5	57.8	65.9	74.6	82.1	88.1
2003	229	74.3	10.3	37.2	96.8	60.0	66.8	75.0	81.9	87.3
2004	232	73.7	11.8	34.0	100	57.0	67.1	74.2	82.7	88.0
2005	212	72.7	11.6	44.5	98.0	57.5	63.9	72.1	81.8	86.8
2006	250	74.4	12.0	36.7	99.2	58.0	67.4	74.9	83.6	89.0
2007	259	71.9	12.0	35.2	97.1	55.8	64.5	72.4	80.3	87.0
2008	260	74.0	11.5	32.9	99.3	59.5	67.7	74.7	83.1	87.3
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	244	73.9	11.4	36.1	100	58.6	66.1	75.1	82.9	87.9
2012	245	73.5	10.6	29.3	99.8	60.8	67.1	74.3	80.3	87.4
2013	210	74.7	10.1	48.6	96.2	60.4	69.3	75.1	81.5	87.7
2014	149	74.2	10.5	34.8	93.1	60.8	69.1	75.8	81.4	86.6
1998-2014	3478	73.6	11.4	26.5	100	58.2	66.4	74.5	82.0	87.5

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	37	71.9	10.5	51.0	88.9	55.5	62.2	74.7	79.2	83.6
1999	45	68.1	13.0	35.3	89.8	54.1	59.2	68.7	77.5	86.0
2000	53	71.6	12.1	44.5	94.0	56.4	62.3	72.5	80.5	86.0
2001	48	71.9	11.6	42.1	92.8	56.5	63.0	73.4	79.6	88.0
2002	103	70.3	10.3	44.7	93.5	58.1	62.9	70.0	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	82	69.9	11.4	34.0	91.5	54.2	63.9	71.1	76.7	83.7
2005	91	70.0	11.1	47.0	98.0	57.0	63.0	69.4	78.9	86.0
2006	97	69.9	12.0	36.7	94.5	53.8	62.5	69.6	78.3	84.2
2007	104	67.9	11.3	35.2	93.1	53.7	61.4	66.5	76.2	82.6
2008	122	72.5	10.3	37.0	93.1	60.3	66.7	72.7	80.6	84.6
2009	126	71.5	11.2	43.3	97.7	53.4	64.9	71.9	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	71.6	10.9	38.9	92.1	56.4	65.2	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	101	73.5	9.8	48.6	93.8	60.7	68.3	74.6	80.3	85.1
2014	66	72.0	11.1	34.8	89.0	55.4	67.0	74.2	79.4	85.0
1998-2014	1501	71.1	10.9	34.0	98.0	56.7	63.9	71.7	79.1	84.6

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	69	73.9	13.7	28.5	99.5	54.5	65.8	75.2	84.5	90.1
1999	69	75.0	11.0	43.7	96.5	61.6	69.6	75.8	81.9	90.1
2000	61	77.9	9.1	51.1	92.4	66.4	74.0	78.3	82.5	89.7
2001	78	73.5	12.3	40.2	99.1	54.9	65.7	76.0	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	138	75.7	10.5	37.2	96.8	61.8	68.1	77.2	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	153	77.2	11.1	43.2	99.2	64.8	71.2	78.5	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	138	75.4	12.4	32.9	99.3	59.1	68.9	77.9	84.7	88.1
2009	130	74.7	12.4	26.5	96.6	60.1	67.9	76.3	84.0	88.3
2010	131	74.5	11.6	45.3	93.8	59.0	67.2	75.4	83.6	88.8
2011	126	76.0	11.4	36.1	100	61.1	69.3	76.2	85.2	89.4
2012	132	75.1	11.2	29.3	99.8	62.4	68.7	76.4	82.4	89.4
2013	109	75.9	10.3	50.5	96.2	60.1	71.1	75.4	83.0	89.0
2014	83	76.1	9.7	44.5	93.1	63.0	69.6	77.7	83.0	87.3
1998-2014	1977	75.5	11.5	26.5	100	60.0	68.8	76.7	83.8	89.0

Table 4

Age distribution by 5-year age group and gender for period 2007-2014
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
25-29	2	0.1	0.1		0.0		2	0.2	0.2
30-34	3	0.2	0.3	1	0.1	0.1	2	0.2	0.4
35-39	7	0.4	0.6	4	0.5	0.6	3	0.3	0.7
40-44	13	0.7	1.3	6	0.7	1.3	7	0.7	1.4
45-49	34	1.8	3.2	17	2.0	3.3	17	1.7	3.1
50-54	69	3.7	6.9	39	4.6	7.8	30	3.0	6.1
55-59	88	4.7	11.6	51	6.0	13.8	37	3.7	9.8
60-64	169	9.1	20.7	101	11.8	25.6	68	6.8	16.5
65-69	268	14.4	35.1	136	15.9	41.6	132	13.1	29.7
70-74	319	17.2	52.3	158	18.5	60.1	161	16.0	45.7
75-79	325	17.5	69.8	152	17.8	77.9	173	17.2	62.9
80-84	283	15.2	85.0	119	13.9	91.8	164	16.3	79.3
85+	278	15.0	100.0	70	8.2	100.0	208	20.7	100.0
All ages	1858	100.0		854	100.0		1004	100.0	

Included in the statistics are 26.5% multiple primaries in males and 26.1% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2014

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=113 %	Females DCO rate n=230 %	Males Prop.all cancers n=91183 %	Females Prop.all cancers n=89596 %
0- 4			0.0	0.0				
5- 9			0.0	0.0				
10-14			0.0	0.0				
15-19			0.0	0.0				
20-24			0.0	0.0				
25-29		2	0.0	0.2				0.3
30-34	1	2	0.1	0.2			0.1	0.2
35-39	4	3	0.3	0.2		33.3	0.3	0.2
40-44	6	7	0.4	0.5			0.3	0.2
45-49	17	17	1.1	1.1			0.5	0.3
50-54	39	30	3.0	2.3	10.3	6.7	0.8	0.4
55-59	51	37	4.8	3.3	2.0	10.8	0.7	0.5
60-64	101	68	10.3	6.4	4.0	8.8	0.9	0.7
65-69	136	132	14.1	12.6	6.6	6.1	0.9	1.2
70-74	158	160	17.4	15.3	12.0	8.1	0.9	1.4
75-79	152	172	27.6	24.1	14.5	19.2	1.2	1.7
80-84	119	164	34.1	29.2	24.4	35.4	1.4	1.9
85+	70	208	30.2	36.0	35.7	50.5	1.1	2.0
All ages	854	1002			13.2	23.0	0.9	1.1
Incidence								
Raw			4.7	5.3				
WS			2.2	1.9				
ES			3.4	2.9				
BRD-S			4.6	4.0				

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).

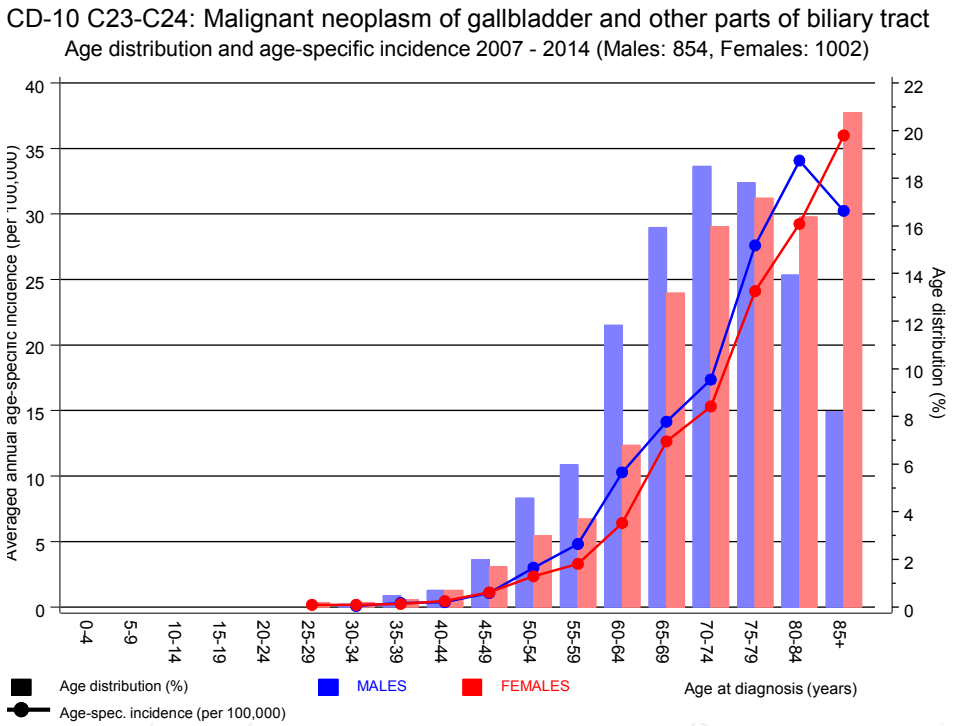


Figure 6. Age distribution and age-specific incidence

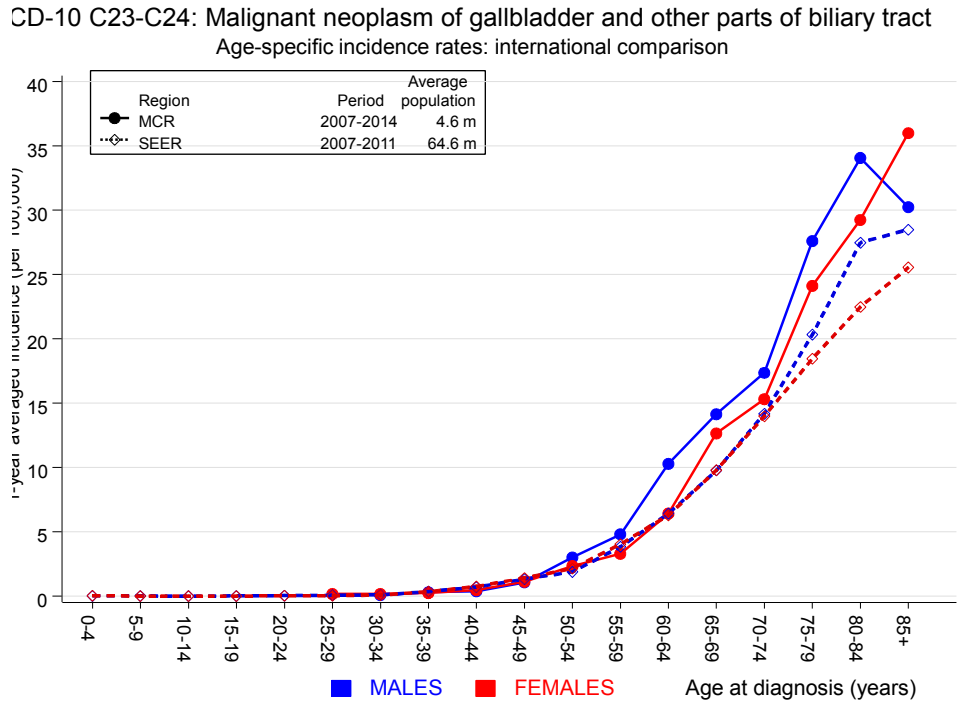


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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.

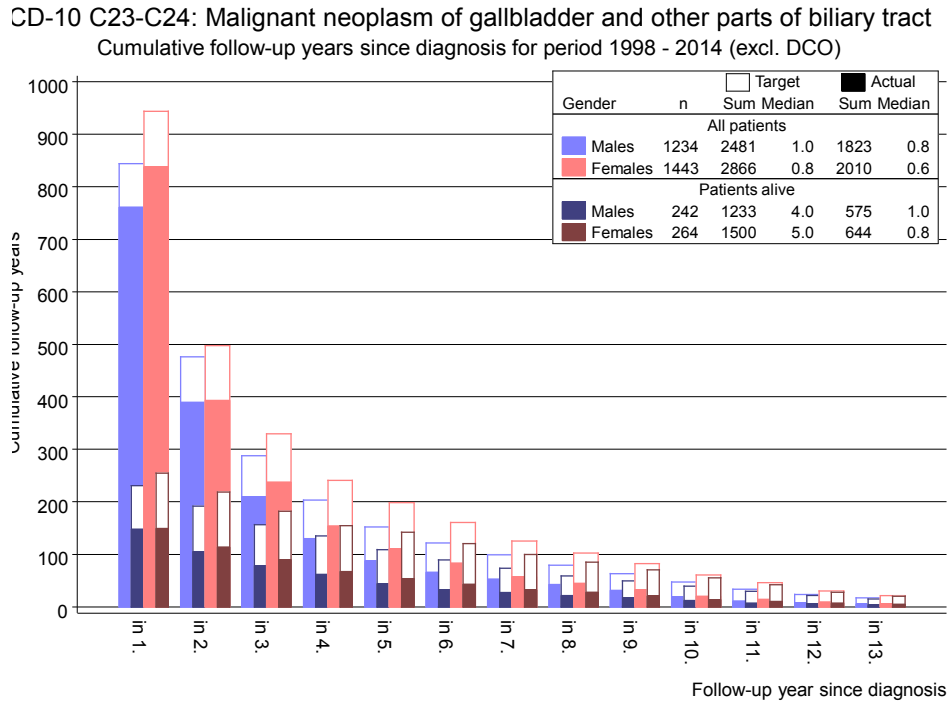


Figure 7. Cumulative follow-up years depending on time since diagnosis

The increase of the lost to follow-up rate can be interpreted as a consequence of a declining number of survivors over time.

Table 8a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C15	Oesophagus	2	0.6	3.4	0.4	12.4		7.7	
C16	Stomach	6	1.3	4.5	1.6	9.7	#	25.2	16.7
C17	Small intestine	3	0.2	18.6	3.8	54.3	#	15.4	
C18	Colon	12	3.2	3.7	1.9	6.5	#	47.6	41.7
C19-C20	Rectum	2	1.8	1.1	0.1	4.1		1.2	
C22	Liver	3	0.9	3.3	0.7	9.7		11.4	
C25	Pancreas	4	1.2	3.3	0.9	8.6		15.2	25.0
C33-C34	Lung	9	3.8	2.4	1.1	4.5	#	28.0	
C43	Malign. melanoma	4	1.4	3.0	0.8	7.6		14.3	
C61	Prostate	13	9.7	1.3	0.7	2.3		17.8	15.4
C64	Kidney	3	1.1	2.6	0.5	7.7		10.1	
C67	Bladder	3	1.5	2.0	0.4	5.9		8.2	33.3
C82-C85	NHL	2	1.3	1.5	0.2	5.6		3.8	50.0
Other primaries		3	0.4	7.8	1.6	22.7	#	14.2	66.7
Not observed		0	4.7	0.0	0.0	0.8	#	-25.3	
All mult. primaries		69	33.0	2.1	1.6	2.6	#	194.9	18.8

Patients	1303
Median age at second malignancy (years)	72.1
Person-years	1845
Mean observation time (years)	1.4
Median observation time (years)	0.7

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category “Other primaries”

Table 8b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998–2014
FEMALES

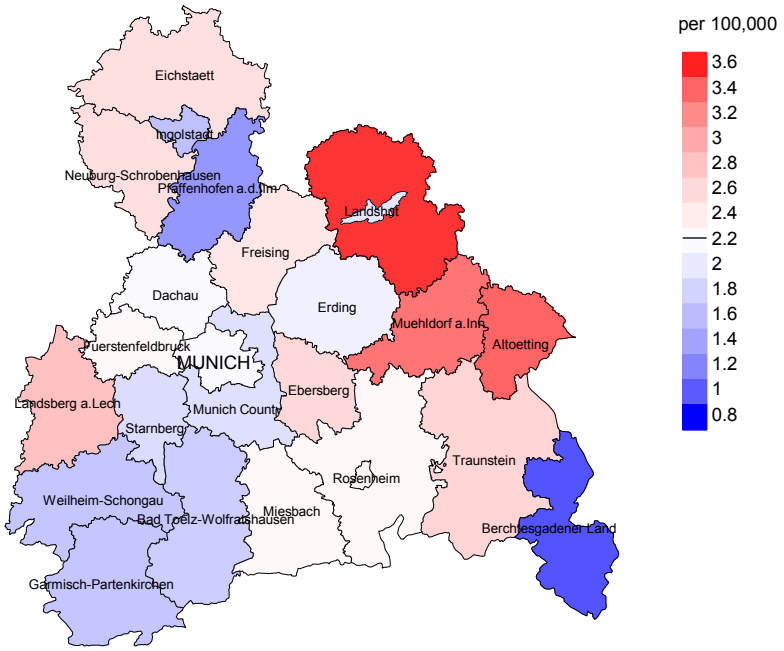
Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C16	Stomach	4	1.1	3.6	1.0	9.3		14.1	50.0
C18	Colon	11	3.0	3.7	1.8	6.6	#	38.9	36.4
C19–C20	Rectum	3	1.2	2.4	0.5	7.1		8.6	33.3
C22	Liver	2	0.3	5.8	0.7	21.0		8.0	
C23–C24	Bile	4	0.4	8.9	2.4	22.9	#	17.3	25.0
C25	Pancreas	7	1.3	5.3	2.1	10.9	#	27.6	14.3
C33–C34	Lung	7	1.9	3.7	1.5	7.6	#	24.7	
C43	Malign. melanoma	2	0.9	2.2	0.3	7.9		5.3	
C50	Breast	3	7.5	0.4	0.1	1.2		-22.0	
C53	Cervix uteri	2	0.3	6.4	0.8	23.2		8.2	50.0
C56	Ovary	9	1.1	8.0	3.7	15.2	#	38.2	22.2
C64	Kidney	4	0.7	5.7	1.5	14.5	#	16.0	25.0
C76–C79	CUP	2	0.5	3.7	0.4	13.3		7.1	
C82–C85	NHL	5	1.1	4.5	1.5	10.6	#	18.9	40.0
C91–C96	Leukaemia	2	0.5	4.3	0.5	15.5		7.5	
Other primaries		4	1.9	2.1	0.6	5.4		10.2	50.0
Not observed		0	3.3	0.0	0.0	1.1		-16.2	
All mult. primaries		71	27.3	2.6	2.0	3.3	#	212.3	23.9

Patients	1590
Median age at second malignancy (years)	76.1
Person-years	2059
Mean observation time (years)	1.3
Median observation time (years)	0.5

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category “Other primaries”

Average incidence (world standard population) 2007 - 2014: Males



Average incidence (world standard population) 2007 - 2014: Females

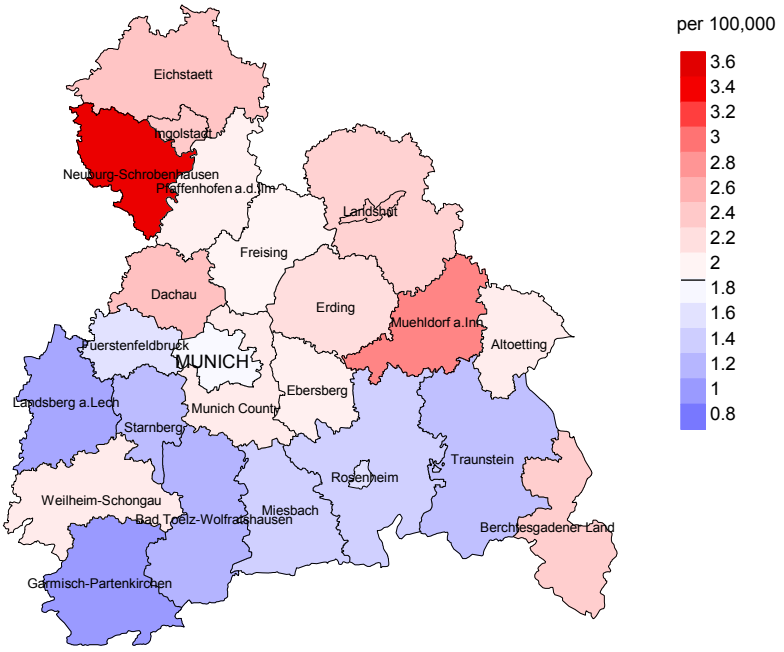
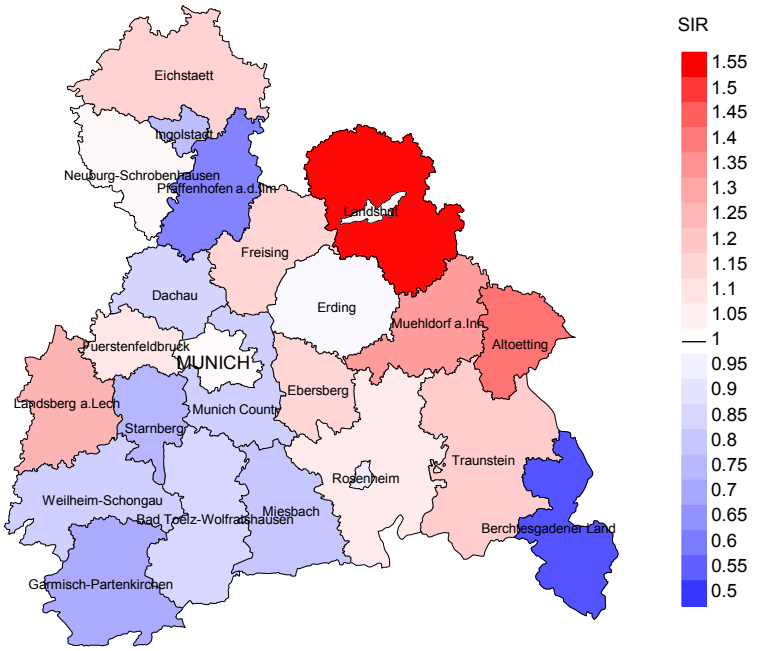


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 2.2/100,000 WS N=854, females 1.9/100,000 WS N=1,002).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 22 women were identified with newly diagnosed gallbladder cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.0 and 3.7/100,000.

Standardized incidence ratio (SIR) 2007 - 2014: Males



Standardized incidence ratio (SIR) 2007 - 2014: Females

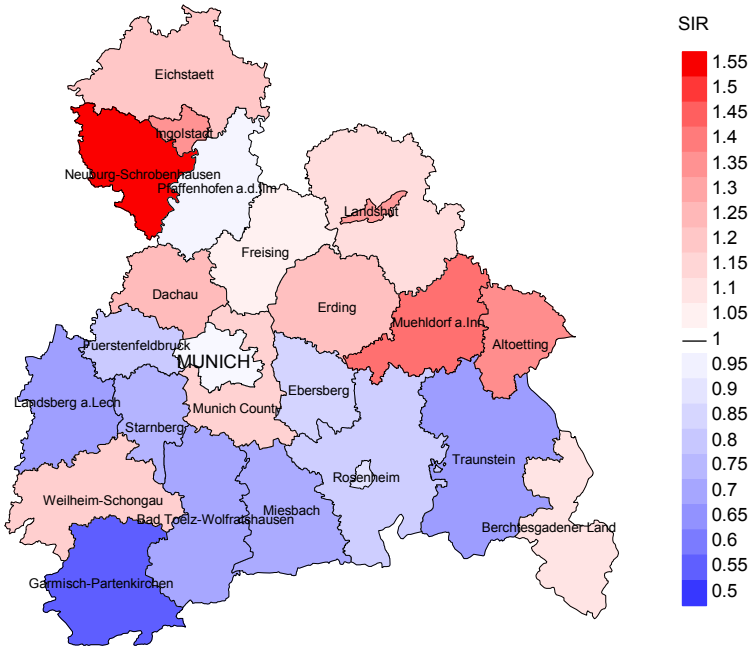


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=854, females N=1,002).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 22 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 0.84. Though, the value of this parameter may vary with an underlying probability of 99% between 0.45 and 1.42, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 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	106	100.0	22.6	97	91.5	93.8
1999	114	100.0	14.9	109	95.6	96.3
2000	114	100.0	23.7	110	96.5	97.3
2001	126	97.6	31.7	116	92.1	96.6
2002	237	100.0	33.8	226	95.4	97.8
2003	229	99.6	31.4	215	93.9	98.6
2004	232	97.0	25.9	204	87.9	98.0
2005	212	98.6	27.4	190	89.6	98.9
2006	250	98.0	21.6	226	90.4	98.7
2007	259	94.6	18.1	236	91.1	99.2
2008	260	92.3	23.1	227	87.3	99.6
2009	256	89.5	16.0	217	84.8	98.2
2010	235	90.6	18.3	194	82.6	100.0
2011	244	91.0	14.3	208	85.2	99.5
2012	245	91.8	12.2	189	77.1	97.4
2013	210	99.5	22.4	138	65.7	97.1
2014	149	97.3	26.8	71	47.7	98.6
1998-2014	3478	95.7	22.3	2973	85.5	98.3

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 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	106	94	93.6	57	53.8
1999	114	104	94.2	54	47.4
2000	114	122	95.9	62	54.4
2001	126	115	97.4	56	44.4
2002	237	191	99.0	146	61.6
2003	229	148	96.6	115	50.2
2004	232	155	98.7	108	46.6
2005	212	165	97.6	96	45.3
2006	250	202	98.0	126	50.4
2007	259	191	98.4	102	39.4
2008	260	202	98.0	123	47.3
2009	256	208	98.6	100	39.1
2010	235	208	100.0	94	40.0
2011	244	205	99.5	99	40.6
2012	245	230	97.4	105	42.9
2013	210	197	98.5	90	42.9
2014	149	141	99.3	62	41.6
1998–2014	3478	2878	98.0	1595	45.9

Table 10c

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 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 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	104	80.8	19.2	94.9
2000	122	91.8	8.2	98.3
2001	115	90.4	9.6	96.4
2002	191	90.6	9.4	93.7
2003	148	89.2	10.8	95.8
2004	155	90.3	9.7	96.1
2005	165	91.5	8.5	95.7
2006	202	87.6	12.4	91.9
2007	191	93.2	6.8	95.7
2008	202	94.6	5.4	96.5
2009	208	88.9	11.1	93.2
2010	208	90.9	9.1	94.7
2011	205	91.2	8.8	95.6
2012	230	87.0	13.0	92.4
2013	197	88.8	11.2	93.3
2014	141	90.1	9.9	93.6
1998-2014	2878	89.9	10.1	94.7

Table 11a

Medians of age at death according to the grouping in Table 10
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	81	71.6	71.4	74.7	71.5
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	68	68.6	68.2	73.8	69.2
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	107	74.2	71.9	77.3	73.6
2013	103	75.0	74.1	83.3	74.2
2014	66	76.7	76.7	77.2	76.4
1998-2014	1247	73.2	72.8	76.2	73.1

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 11b

Medians of age at death according to the grouping in Table 10
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	68	77.1	76.9	83.0	77.1
2000	80	78.8	78.3	81.6	79.2
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	77.9	79.4	78.2
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	120	79.3	78.9	83.7	78.6
2011	100	78.0	77.6	83.5	77.8
2012	123	77.3	76.8	83.7	76.8
2013	94	79.3	77.2	87.6	79.1
2014	75	77.0	77.0	75.5	76.1
1998-2014	1631	78.1	77.5	85.3	77.9

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 12a

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	0.81	1.5	0.82	2.5	0.82	3.9	0.86
1999	26	2.3	0.58	1.3	0.57	2.1	0.58	2.7	0.59
2000	39	3.4	0.75	1.9	0.72	3.1	0.77	4.3	0.79
2001	45	3.9	0.94	2.2	0.95	3.5	0.93	4.6	0.88
2002	71	3.8	0.69	2.1	0.67	3.2	0.69	4.3	0.71
2003	54	2.9	0.59	1.5	0.58	2.4	0.59	3.3	0.61
2004	54	2.9	0.66	1.5	0.64	2.4	0.65	3.2	0.67
2005	77	4.1	0.85	2.2	0.85	3.3	0.85	4.2	0.85
2006	69	3.6	0.71	1.8	0.69	2.8	0.71	3.7	0.73
2007	63	2.8	0.61	1.5	0.57	2.1	0.58	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	0.73	2.0	0.76	3.1	0.75	4.1	0.74
2010	81	3.6	0.78	1.6	0.75	2.6	0.77	3.4	0.76
2011	97	4.2	0.82	1.8	0.77	2.9	0.80	4.1	0.81
2012	93	4.1	0.82	1.9	0.83	2.9	0.84	3.9	0.85
2013	93	4.1	0.92	1.8	0.92	2.8	0.93	3.9	0.91
2014	56	2.5	0.85	1.0	0.80	1.7	0.85	2.4	0.89
1998-2014	1112	3.5	0.74	1.7	0.73	2.7	0.74	3.6	0.75

Table 12b

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	0.75	1.8	0.71	2.7	0.74	3.6	0.75
1999	58	4.9	0.84	1.8	0.76	2.8	0.78	3.9	0.80
2000	73	6.1	1.20	2.2	1.34	3.5	1.27	4.9	1.18
2001	59	4.9	0.76	1.7	0.63	2.8	0.69	4.0	0.75
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	0.59	2.3	0.59	3.2	0.58
2004	86	4.4	0.57	1.5	0.54	2.4	0.56	3.4	0.58
2005	74	3.7	0.61	1.3	0.56	2.0	0.57	2.9	0.62
2006	108	5.4	0.71	1.8	0.72	2.9	0.71	4.0	0.71
2007	115	5.0	0.74	1.7	0.69	2.8	0.71	3.8	0.74
2008	119	5.1	0.86	1.8	0.84	2.8	0.86	3.8	0.89
2009	93	4.0	0.72	1.2	0.59	2.0	0.65	2.9	0.71
2010	108	4.6	0.82	1.6	0.77	2.5	0.79	3.3	0.79
2011	90	3.8	0.72	1.4	0.75	2.1	0.72	2.8	0.72
2012	107	4.5	0.82	1.5	0.76	2.4	0.79	3.3	0.79
2013	82	3.5	0.75	1.1	0.74	1.8	0.73	2.5	0.76
2014	71	3.0	0.86	1.0	0.84	1.6	0.84	2.3	0.84
1998-2014	1475	4.4	0.75	1.5	0.72	2.4	0.73	3.3	0.75

Table 13

Age distribution of age at death (cancer-related) for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
25-29	2	0.1	0.1			0.0	2	0.3	0.3
30-34	0	0.0	0.1			0.0			0.3
35-39	4	0.3	0.4	1	0.2	0.2	3	0.4	0.6
40-44	7	0.5	0.9	6	0.9	1.1	1	0.1	0.8
45-49	17	1.2	2.1	4	0.6	1.7	13	1.6	2.4
50-54	55	3.8	5.9	33	5.1	6.8	22	2.8	5.2
55-59	70	4.9	10.8	41	6.3	13.1	29	3.7	8.9
60-64	113	7.9	18.7	70	10.8	23.9	43	5.5	14.3
65-69	177	12.3	31.0	96	14.8	38.7	81	10.3	24.6
70-74	252	17.5	48.5	116	17.9	56.6	136	17.3	41.9
75-79	265	18.5	67.0	118	18.2	74.8	147	18.7	60.5
80-84	225	15.7	82.7	89	13.7	88.6	136	17.3	77.8
85+	249	17.3	100.0	74	11.4	100.0	175	22.2	100.0
All ages	1436	100.0		648	100.0		788	100.0	

Included in the statistics are 26.5% multiple primaries in males and 26.1% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**incl. multiple primaries**)

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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29		2	0.0		0.2	1.00		3.1
30-34			0.0		0.0			
35-39	1	3	0.1	0.25	0.2	1.00	0.6	1.2
40-44	6	1	0.4	1.00	0.1	0.14	1.3	0.2
45-49	4	13	0.3	0.24	0.9	0.76	0.4	1.1
50-54	33	22	2.5	0.85	1.7	0.73	1.8	1.2
55-59	41	29	3.9	0.80	2.6	0.78	1.3	1.1
60-64	70	43	7.1	0.69	4.1	0.63	1.5	1.2
65-69	96	81	10.0	0.71	7.8	0.61	1.3	1.6
70-74	116	136	12.7	0.73	13.0	0.84	1.3	2.1
75-79	118	147	21.4	0.78	20.6	0.85	1.4	2.3
80-84	89	136	25.5	0.75	24.3	0.83	1.2	2.1
85+	74	175	32.0	1.06	30.3	0.84	1.2	2.0
All ages	648	788					1.3	1.8
Mortality								
Raw			3.6	0.76	4.2	0.78		
WS			1.7	0.75	1.4	0.74		
ES			2.6	0.76	2.2	0.76		
BRD-S			3.5	0.76	3.1	0.78		
PYLL-70								
per 100,000			13.4		11.2			
ES			11.8		9.5			
AYLL-70			8.5		9.1			

The rates underestimate the prognosis if other synchronous cancers are prognostic unfavorable.

Table 15a

Multiple primaries in deaths in period 1998–2014
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	14	5.1	8	57.1	3	21.4	3	21.4
C17	Small intestine	3	1.1	1	33.3	1	33.3	1	33.3
C18	Colon	28	10.1	19	67.9	5	17.9	4	14.3
C19–C20	Rectum	16	5.8	14	87.5	1	6.3	1	6.3
C22	Liver	4	1.4	1	25.0	2	50.0	1	25.0
C23–C24	Bile	4	1.4			1	25.0	3	75.0
C25	Pancreas	7	2.5			3	42.9	4	57.1
C32	Larynx	5	1.8	4	80.0	1	20.0		
C33–C34	Lung	13	4.7	4	30.8	3	23.1	6	46.2
C43	Malign. melanoma	13	4.7	8	61.5	1	7.7	4	30.8
C44	Skin others	16	5.8	10	62.5	2	12.5	4	25.0
C61	Prostate	67	24.3	54	80.6	4	6.0	9	13.4
C62	Testis	5	1.8	5	100.0				
C64	Kidney	13	4.7	10	76.9	1	7.7	2	15.4
C67	Bladder	21	7.6	15	71.4	3	14.3	3	14.3
C70–C72	CNS cancer	3	1.1	2	66.7	1	33.3		
C76–C79	CUP	7	2.5	5	71.4	2	28.6		
C82–C85	NHL	7	2.5	4	57.1	1	14.3	2	28.6
C90	Mult. myeloma	4	1.4	1	25.0			3	75.0
Other primaries		23	8.3	13	56.5	4	17.4	6	26.1
All mult. primaries		276	100.0	179	64.9	40	14.5	57	20.7

Multiple primaries with number of cases 1 to 2 are pooled in category “Other primaries”

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 multiple malignancy.

Table 15b

Multiple primaries in deaths in period 1998–2014
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	6	2.0	1	16.7	1	16.7	4	66.7
C18	Colon	33	10.9	18	54.5	6	18.2	9	27.3
C19–C20	Rectum	13	4.3	8	61.5	3	23.1	2	15.4
C25	Pancreas	9	3.0	2	22.2	5	55.6	2	22.2
C33–C34	Lung	12	4.0	3	25.0	2	16.7	7	58.3
C43	Malign. melanoma	12	4.0	10	83.3			2	16.7
C44	Skin others	12	4.0	8	66.7	3	25.0	1	8.3
C50	Breast	80	26.5	76	95.0	3	3.8	1	1.3
C53	Cervix uteri	8	2.6	6	75.0			2	25.0
C54	Corpus uteri	20	6.6	19	95.0			1	5.0
C56	Ovary	16	5.3	5	31.3	3	18.8	8	50.0
C64	Kidney	13	4.3	8	61.5	4	30.8	1	7.7
C67	Bladder	10	3.3	9	90.0			1	10.0
C70–C72	CNS cancer	5	1.7	3	60.0	2	40.0		
C76–C79	CUP	6	2.0	3	50.0	2	33.3	1	16.7
C82–C85	NHL	12	4.0	9	75.0	2	16.7	1	8.3
C91–C96	Leukaemia	4	1.3	2	50.0			2	50.0
Other primaries		31	10.3	19	61.3	6	19.4	6	19.4
All mult. primaries		302	100.0	209	69.2	42	13.9	51	16.9

Multiple primaries with number of cases 1 to 3 are pooled in category “Other primaries”

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 multiple malignancy.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29		2	0.0		0.2	1.00		3.4
30-34			0.0		0.0			
35-39	1	3	0.1	0.50	0.2	1.00	0.6	1.3
40-44	6	1	0.4	1.20	0.1	0.14	1.4	0.2
45-49	4	12	0.3	0.24	0.8	0.75	0.4	1.2
50-54	29	20	2.2	0.85	1.6	0.74	1.8	1.3
55-59	37	26	3.5	0.80	2.3	0.84	1.4	1.2
60-64	56	34	5.7	0.64	3.2	0.60	1.4	1.2
65-69	80	61	8.3	0.68	5.8	0.60	1.4	1.5
70-74	98	113	10.8	0.78	10.8	0.90	1.4	2.2
75-79	91	114	16.5	0.78	16.0	0.86	1.5	2.3
80-84	66	105	18.9	0.75	18.7	0.78	1.2	2.1
85+	54	152	23.3	1.06	26.3	0.89	1.2	2.2
All ages	522	643					1.4	1.9
Mortality								
Raw			2.9	0.76	3.4	0.79		
WS			1.4	0.74	1.2	0.75		
ES			2.1	0.75	1.8	0.77		
BRD-S			2.8	0.76	2.5	0.78		
PYLL-70								
per 100,000			11.7		9.9			
ES			10.3		8.4			
AYLL-70			8.8		9.8			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29		2	0.0		0.2	1.00		3.6
30-34			0.0		0.0			
35-39	1	3	0.1	0.50	0.2	1.00	0.6	1.5
40-44	6	1	0.4	1.20	0.1	0.14	1.5	0.2
45-49	4	12	0.3	0.25	0.8	0.75	0.5	1.3
50-54	27	19	2.1	0.79	1.5	0.73	1.9	1.4
55-59	37	25	3.5	0.84	2.2	0.89	1.6	1.3
60-64	52	34	5.3	0.63	3.2	0.61	1.5	1.4
65-69	78	60	8.1	0.68	5.7	0.61	1.6	1.8
70-74	93	109	10.2	0.75	10.4	0.89	1.6	2.6
75-79	87	105	15.8	0.76	14.7	0.84	1.8	2.6
80-84	65	98	18.6	0.75	17.5	0.74	1.6	2.4
85+	51	149	22.0	1.04	25.8	0.88	1.5	2.6
All ages	501	617					1.6	2.1
Mortality								
Raw			2.8	0.74	3.3	0.78		
WS			1.3	0.73	1.1	0.75		
ES			2.0	0.74	1.8	0.76		
BRD-S			2.7	0.74	2.4	0.77		
PYLL-70								
per 100,000			11.3		9.7			
ES			9.9		8.2			
AYLL-70			8.8		9.8			

* See corresponding tables with multiple primaries.

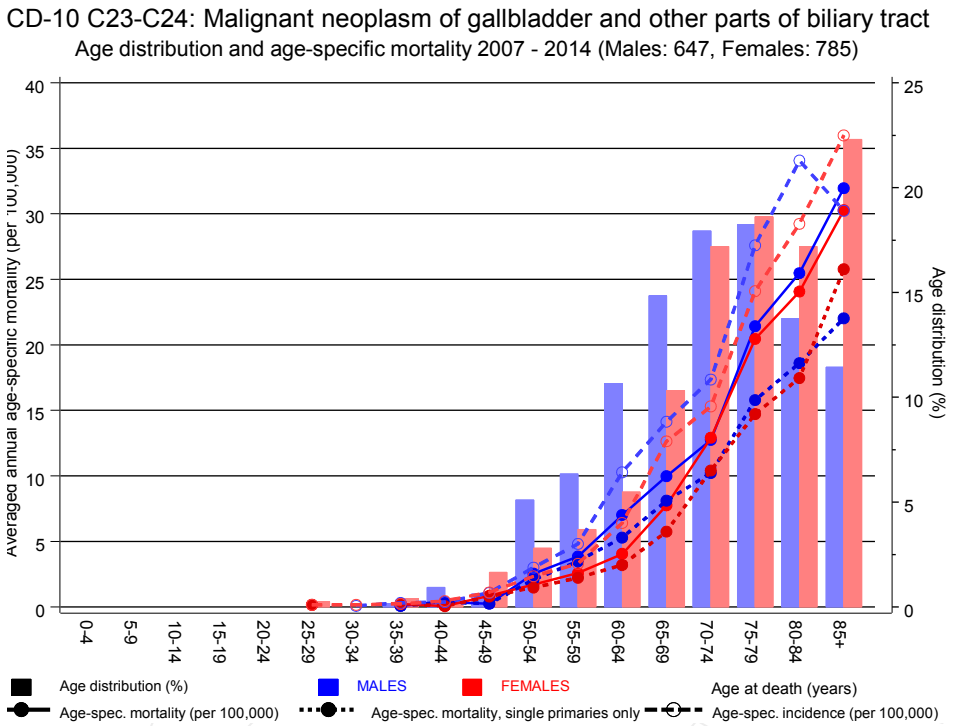
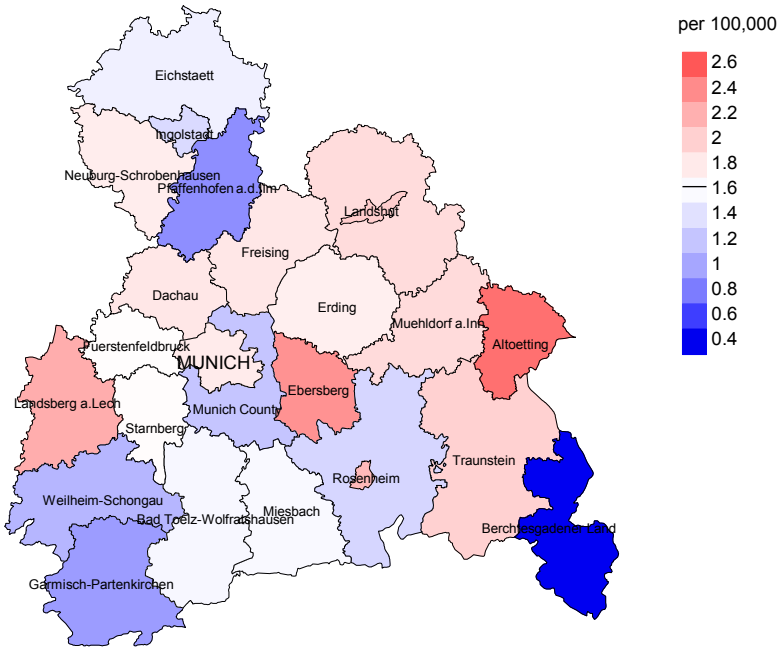


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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 - 2014: Males



Average mortality (world standard population) 2007 - 2014: Females

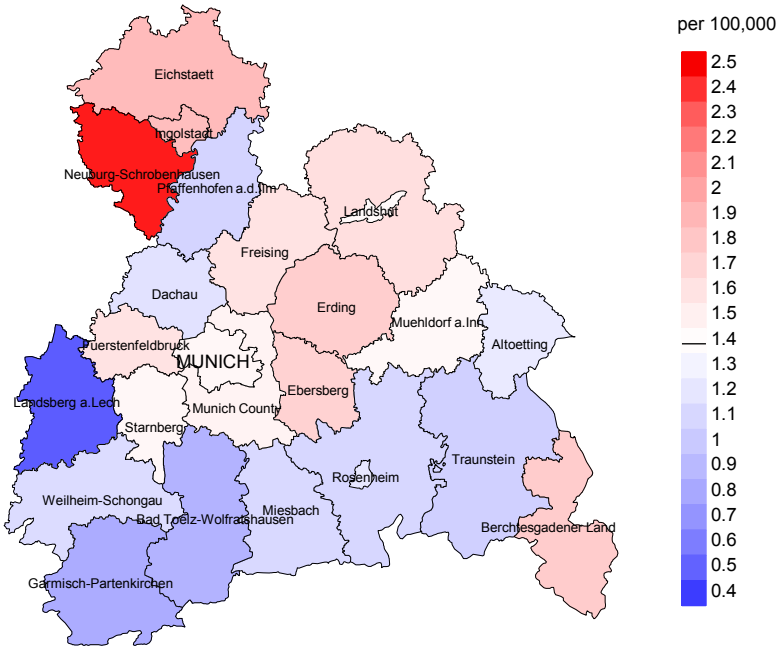
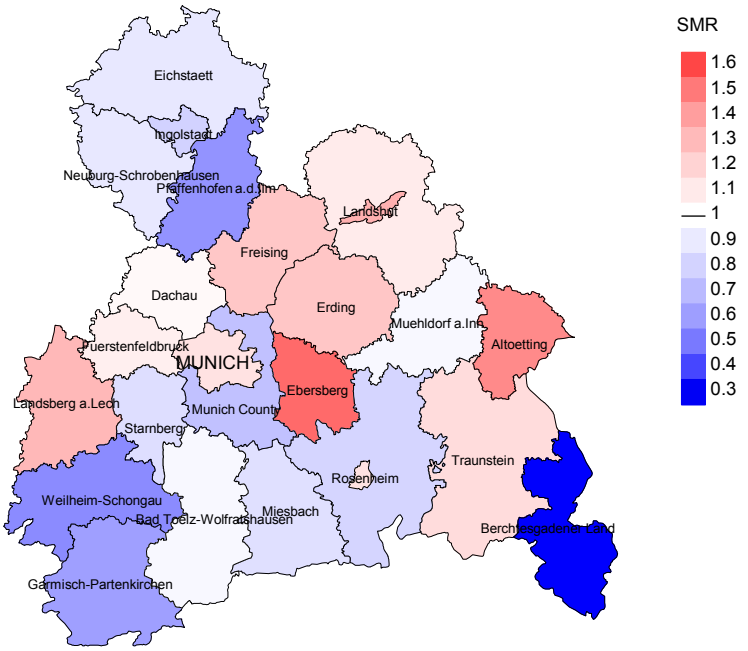


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 1.6/100,000 WS N=642, females 1.4/100,000 WS N=781).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 20 women died from gallbladder cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.8 and 3.2/100,000.

Standardized mortality ratio (SMR) 2007 - 2014: Males



Standardized mortality ratio (SMR) 2007 - 2014: Females

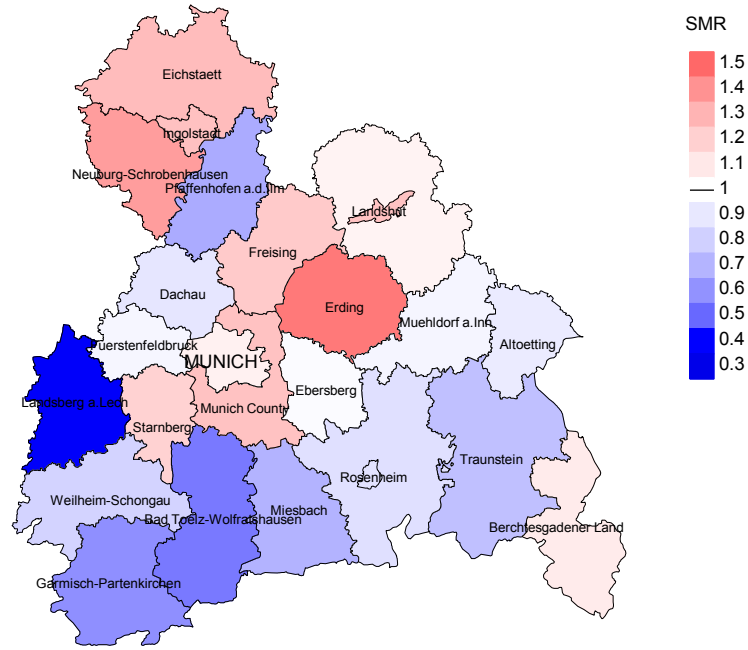


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=642, females N=781).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 20 women died from gallbladder cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.99. Though, the value of this parameter may vary with an underlying probability of 99% between 0.51 and 1.71, 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

FRG	Federal Republic of Germany
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
MCR	Munich Cancer Registry (Tumorregister München)
SEER	Surveillance, Epidemiology, and End Results (USA)
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
BRD-S	German standard population
DCO	Death certificate only
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
ES	European standard population (old)
LCL	Lower confidence limit
MI-index	Ratio between mortality and incidence
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
SIR	Standardized incidence ratio
SMR	Standardized mortality ratio
UCL	Upper confidence limit
WS	World standard population

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