

Munich Cancer Registry



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

ICD-10 C17: Small intestine cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	2,487
Diseases	2,495
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m





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

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

https://www.tumorregister-muenchen.de/en/facts/base/bC17__E-ICD-10-C17-Small-intestine-cancer-incidence-and-mortality.pdf

Index of figures and tables

Fig./Tbl.		Page
1	Annual cases, DCO, mult. malignancies, follow-up / yr	4
2	Incidence by year of diagnosis	7
3	Age distribution parameters by year of diagnosis	8
4	Age distribution by 5-year age group and sex	11
5	Age-specific incidence, DCO rate, proportion malignancies	12
6	Age distribution and age-specific incidence (chart)	13
6a	Age-specific incidence internationally (chart)	14
7	Standardized incidence ratio of further malignancies	15
8a	Map of cancer incidence (BRD-S) by county (chart)	17
8b	Standardized incidence ratio (SIR) by county (chart)	18
9a	Pts incident cohorts and mortality / yr	19
9b	Incidence and mortality by year of diagnosis	20
9c	Cancer-related deaths, death certification available / yr	21
10	Medians of age at death / yr	22
11	Mortality by year of death	24
12	Distribution of age at death	26
13	Age-specific mortality	27
14	Further malignancies in deaths	28
15	Age-specific mortality (first primaries)	30
16	Age-specific mortality (single primaries)	31
17	Age distribution and age-specific mortality (chart)	32
18a	Map of cancer mortality (BRD-S) by county (chart)	33
18b	Standardized mortality ratio (SMR) by county (chart)	34

**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
C17.-	Malignant neoplasm of small intestine
C17.0	Duodenum
C17.1	Jejunum
C17.2	Ileum
C17.3	Meckel diverticulum
C17.8	Overlapping lesion of small intestine
C17.9	Small intestine, 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	28	1	3.6	10.7	10.6	78.6	100.0
1999	52	4	7.7	16.3	10.5	80.8	96.2
2000	40	2	5.0	16.7	10.6	75.0	100.0
2001	45	2	4.4	20.6	10.5	71.1	100.0
2002	68	8	11.8	21.0	10.3	69.1	97.1 #
2003	78	8	10.3	19.9	10.2	62.8	96.2
2004	103	4	3.9	18.6	9.8	65.0	91.3
2005	93	5	5.4	18.7	9.2	68.8	94.6
2006	100	1	1.0	19.1	9.2	69.0	94.0
2007	123	2	1.6	20.0	8.9	56.1	94.3 #
2008	114	6	5.3	19.8	8.7	49.1	99.1
2009	127	7	5.5	20.2	8.5	58.3	99.2
2010	147	3	2.0	20.4	8.4	48.3	98.6
2011	148	2	1.4	21.1	7.6	54.7	98.0
2012	166	4	2.4	21.9	7.0	48.2	95.2
2013	157	3	1.9	22.3	6.0	40.8	95.5
2014	164	2	1.2	22.1	5.9	44.5	97.6
2015	175	5	2.9	23.0	4.4	43.4	97.1
2016	158			23.3	3.7	37.3	100.0
2017	170	2	1.2	24.0	2.6	30.0	98.8
2018	128			24.1	0.9	19.5	99.2
2019	111			24.1	0.0	16.2	66.7 ##
1998-2019	2495	71	2.8	24.1	10.6	48.9	95.8

2,495 cases diagnosed 1998-2019 are related to a total of 2,487 patients. Currently, in 875 (35.2 %) of these 2,487 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 645 / 175 / 55 (25.9 % / 7.0 % / 2.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 170 cases has been diagnosed, of which 24.0 % 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 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	16	57.1	1	6.3	6.3	12.6	81.3	100.0
1999	24	46.2			10.0	12.4	79.2	95.8
2000	24	60.0	2	8.3	14.1	12.5	83.3	100.0
2001	25	55.6	1	4.0	19.1	12.5	76.0	100.0
2002	33	48.5	2	6.1	19.7	12.3	75.8	97.0 #
2003	42	53.8	6	14.3	20.1	12.0	69.0	95.2
2004	67	65.0	1	1.5	18.6	11.5	64.2	92.5
2005	48	51.6	3	6.3	20.1	10.8	72.9	95.8
2006	53	53.0	1	1.9	19.3	10.7	64.2	90.6
2007	74	60.2	1	1.4	20.4	10.4	55.4	95.9 #
2008	59	51.8	2	3.4	20.6	10.2	44.1	100.0
2009	71	55.9	3	4.2	21.3	9.8	57.7	98.6
2010	75	51.0	1	1.3	21.9	9.8	50.7	100.0
2011	75	50.7	1	1.3	22.9	9.2	57.3	97.3
2012	91	54.8	1	1.1	24.1	8.4	48.4	94.5
2013	103	65.6	3	2.9	24.8	6.9	40.8	96.1
2014	88	53.7	2	2.3	24.3	6.7	50.0	97.7
2015	100	57.1	1	1.0	24.9	5.5	46.0	98.0
2016	88	55.7			25.5	4.5	43.2	100.0
2017	87	51.2	2	2.3	26.7	2.9	28.7	100.0
2018	72	56.3			27.1	1.6	19.4	100.0
2019	61	55.0			27.0	0.0	18.0	65.6 ##
1998-2019	1376	55.2	34	2.5	27.0	12.6	50.1	95.9

1,376 cases diagnosed 1998-2019 are related to a total of 1,372 patients. Currently, in 542 (39.5 %) of these 1,372 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 388 / 116 / 38 (28.3 % / 8.5 % / 2.8 %) 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 2017, a subgroup of 87 cases has been diagnosed, of which 26.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.9 % 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	12	42.9			16.7	8.2	75.0	100.0
1999	28	53.8	4	14.3	22.5	8.2	82.1	96.4
2000	16	40.0			19.6	8.3	62.5	100.0
2001	20	44.4	1	5.0	22.4	8.1	65.0	100.0
2002	35	51.5	6	17.1	22.5	7.8	62.9	97.1 #
2003	36	46.2	2	5.6	19.7	7.9	55.6	97.2
2004	36	35.0	3	8.3	18.6	7.7	66.7	88.9
2005	45	48.4	2	4.4	17.1	7.3	64.4	93.3
2006	47	47.0			18.9	7.4	74.5	97.9
2007	49	39.8	1	2.0	19.4	7.1	57.1	91.8 #
2008	55	48.2	4	7.3	18.7	7.0	54.5	98.2
2009	56	44.1	4	7.1	18.9	6.9	58.9	100.0
2010	72	49.0	2	2.8	18.5	6.7	45.8	97.2
2011	73	49.3	1	1.4	19.0	5.5	52.1	98.6
2012	75	45.2	3	4.0	19.2	5.2	48.0	96.0
2013	54	34.4			19.3	4.9	40.7	94.4
2014	76	46.3			19.4	5.0	38.2	97.4
2015	75	42.9	4	5.3	20.7	3.1	40.0	96.0
2016	70	44.3			20.5	2.8	30.0	100.0
2017	83	48.8			20.7	2.2	31.3	97.6
2018	56	43.8			20.4	0.0	19.6	98.2
2019	50	45.0			20.6	0.0	14.0	68.0 ##
1998–2019	1119	44.8	37	3.3	20.6	8.2	47.3	95.6

1,119 cases diagnosed 1998-2019 are related to a total of 1,115 patients. Currently, in 333 (29.9 %) of these 1,115 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 257 / 59 / 17 (23.0 % / 5.3 % / 1.5 %) 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 2017, a subgroup of 83 cases has been diagnosed, of which 20.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.2 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	16	12	1.4	1.0	0.9	0.5	1.3	0.8	1.8	0.9
1999	24	28	2.1	2.4	1.4	1.1	1.9	1.6	2.1	2.0
2000	24	16	2.1	1.3	1.3	0.8	1.8	1.0	2.1	1.2
2001	25	20	2.2	1.6	1.3	0.9	1.9	1.3	2.2	1.5
2002	33	35	1.8	1.8	1.1	0.9	1.5	1.4	1.9	1.6
2003	42	36	2.2	1.8	1.3	1.0	1.8	1.4	2.3	1.6
2004	67	36	3.6	1.8	2.1	0.9	2.9	1.3	3.6	1.6
2005	48	45	2.5	2.3	1.4	1.0	2.0	1.5	2.6	1.9
2006	53	47	2.8	2.3	1.5	1.2	2.2	1.6	2.8	2.0
2007	74	49	3.3	2.1	1.9	1.0	2.7	1.4	3.3	1.8
2008	59	55	2.7	2.4	1.5	1.2	2.1	1.7	2.6	1.9
2009	71	56	3.2	2.4	1.7	1.2	2.6	1.7	3.2	2.1
2010	75	72	3.3	3.1	1.9	1.7	2.7	2.4	3.1	2.7
2011	75	73	3.4	3.1	1.6	1.5	2.4	2.2	3.2	2.5
2012	91	75	4.0	3.2	2.0	1.4	2.9	2.1	3.6	2.5
2013	103	54	4.5	2.3	2.4	1.0	3.4	1.5	4.1	1.8
2014	88	76	3.8	3.2	1.8	1.5	2.7	2.2	3.4	2.5
2015	100	75	4.2	3.1	2.1	1.5	3.0	2.1	3.8	2.5
2016	88	70	3.7	2.9	1.8	1.3	2.7	1.9	3.3	2.3
2017	87	83	3.6	3.4	1.7	1.5	2.5	2.2	3.2	2.7
2018	72	56	3.0	2.3	1.5	1.1	2.1	1.6	2.6	1.8
2019	61	50	2.5	2.0	1.2	1.0	1.8	1.4	2.2	1.6
1998-2019	1376	1119	3.1	2.4	1.7	1.2	2.4	1.7	3.0	2.0

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

Table 3

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	28	67.4	12.3	45.1	90.0	50.5	57.2	66.7	75.1	85.1
1999	52	65.3	12.9	32.7	93.0	49.4	57.3	64.9	74.0	81.1
2000	40	62.2	14.3	34.4	93.2	41.7	53.3	63.3	72.8	76.4
2001	45	65.3	12.9	29.6	99.2	51.5	57.3	65.9	74.1	80.4
2002	68	66.2	13.0	28.7	101	47.7	59.1	67.7	73.9	82.7
2003	78	65.6	10.9	31.2	89.2	52.6	59.8	64.6	73.1	79.7
2004	103	65.0	12.5	36.6	94.4	47.7	56.3	66.5	73.2	81.2
2005	93	67.3	12.7	28.5	88.5	50.6	61.3	68.1	78.1	81.2
2006	100	66.6	12.6	38.6	93.7	49.1	56.6	66.5	76.2	82.9
2007	123	66.1	12.5	24.5	93.4	49.2	58.9	66.7	75.2	81.4
2008	114	65.2	12.7	27.2	88.0	49.2	57.6	66.4	73.4	80.2
2009	127	67.0	14.1	22.0	92.0	49.6	56.9	67.6	77.8	84.9
2010	147	63.9	12.4	26.3	90.1	48.1	55.7	63.9	72.5	80.1
2011	148	68.4	13.7	33.3	91.9	50.3	60.0	70.0	79.0	84.8
2012	166	68.7	12.6	30.9	94.4	52.1	60.4	69.8	77.7	85.4
2013	157	66.6	12.7	33.6	92.4	48.9	57.2	67.8	75.2	83.1
2014	164	68.2	12.1	36.4	96.3	50.3	59.6	70.0	76.8	82.2
2015	175	67.8	13.2	33.0	94.2	48.0	58.3	69.2	77.3	84.4
2016	158	66.9	13.7	32.4	98.3	46.2	56.5	69.3	77.4	82.5
2017	170	68.3	12.6	32.4	92.8	51.5	58.0	70.7	77.8	82.7
2018	128	66.2	13.0	27.4	88.9	48.2	57.3	68.5	77.1	81.9
2019	111	67.4	11.3	32.9	85.7	53.7	59.5	68.0	78.0	81.4
1998-2019	2495	66.8	12.8	22.0	101	49.7	58.0	67.8	76.5	82.5

Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	16	66.2	12.7	45.1	85.7	46.1	57.2	65.8	74.6	83.1
1999	24	60.0	11.2	32.7	85.3	47.5	52.8	60.2	67.2	73.5
2000	24	63.1	13.1	37.6	92.1	43.1	55.8	63.9	73.2	74.8
2001	25	65.2	11.1	31.9	85.2	53.9	60.0	65.9	72.5	77.8
2002	33	65.0	13.7	28.7	90.4	47.7	59.5	62.2	72.9	83.2
2003	42	66.3	8.8	45.3	85.0	55.0	61.1	65.5	73.1	76.9
2004	67	64.1	12.3	36.6	88.0	47.1	56.3	64.6	73.4	81.2
2005	48	66.3	12.8	28.5	87.0	48.7	60.0	66.8	76.1	82.2
2006	53	66.5	11.3	38.6	88.1	53.2	59.0	66.7	74.8	80.3
2007	74	64.1	13.0	24.5	93.4	44.7	57.1	65.2	74.0	79.2
2008	59	63.1	12.9	29.8	80.8	41.7	53.5	65.6	73.4	79.3
2009	71	66.3	13.8	31.4	90.1	50.6	56.6	65.3	77.8	83.0
2010	75	63.9	13.5	26.3	90.1	48.1	55.6	64.6	73.2	80.4
2011	75	70.0	12.6	33.3	91.9	53.5	62.3	70.7	80.6	84.2
2012	91	68.1	12.1	40.1	91.0	51.5	59.2	69.9	76.0	82.7
2013	103	65.3	12.3	38.6	92.3	48.5	55.8	65.5	74.8	81.6
2014	88	69.5	12.0	37.8	96.3	50.9	63.1	70.5	76.9	83.7
2015	100	67.8	13.6	33.1	88.9	47.9	56.4	71.3	77.6	85.2
2016	88	67.6	13.7	34.0	92.4	48.9	57.8	69.3	77.4	83.7
2017	87	68.5	12.7	32.4	92.8	52.6	58.5	70.8	77.9	83.1
2018	72	66.0	14.0	27.4	88.9	48.2	57.6	68.7	77.1	82.0
2019	61	67.1	12.0	32.9	83.5	50.6	59.9	68.0	78.0	81.3
1998-2019	1376	66.4	12.8	24.5	96.3	49.5	57.8	67.6	76.3	81.8

Table 3b

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	12	69.0	12.2	51.6	90.0	54.3	59.1	68.4	77.7	85.1
1999	28	69.9	12.6	46.8	93.0	52.5	60.3	70.8	77.9	88.5
2000	16	60.8	16.3	34.4	93.2	37.6	48.3	62.6	71.0	81.0
2001	20	65.4	15.2	29.6	99.2	50.3	56.6	65.4	76.5	82.8
2002	35	67.4	12.2	44.1	101	49.4	58.9	69.2	74.8	81.0
2003	36	64.8	13.0	31.2	89.2	50.1	58.7	64.1	73.1	80.6
2004	36	66.6	12.9	38.7	94.4	51.8	57.4	67.2	72.8	83.9
2005	45	68.5	12.7	33.7	88.5	55.4	62.3	70.4	78.8	81.2
2006	47	66.6	14.0	42.7	93.7	46.1	56.0	66.2	78.2	84.8
2007	49	69.2	11.2	41.7	89.5	53.5	62.1	68.9	78.9	83.6
2008	55	67.4	12.3	27.2	88.0	52.6	58.8	67.4	78.5	84.7
2009	56	67.9	14.6	22.0	92.0	49.4	60.2	69.2	77.5	85.9
2010	72	63.8	11.2	39.7	89.6	49.0	56.7	63.5	71.0	78.0
2011	73	66.7	14.5	34.3	91.1	44.4	56.2	68.2	76.6	86.5
2012	75	69.4	13.2	30.9	94.4	52.9	60.5	69.7	78.4	86.3
2013	54	68.9	13.2	33.6	92.4	52.2	61.2	70.8	77.0	85.4
2014	76	66.7	12.2	36.4	91.0	49.1	57.2	69.3	75.4	79.5
2015	75	67.9	12.8	33.0	94.2	53.5	60.1	68.3	76.3	84.4
2016	70	66.1	13.8	32.4	98.3	46.0	56.0	68.1	77.1	81.8
2017	83	68.1	12.5	33.3	90.6	51.3	57.4	70.6	76.9	82.3
2018	56	66.4	11.7	43.8	85.2	51.9	56.4	67.8	77.1	80.4
2019	50	67.9	10.4	48.7	85.7	54.2	59.5	67.8	77.3	82.1
1998-2019	1119	67.2	12.8	22.0	101	50.0	58.2	68.1	76.9	83.2

Table 4

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

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24	2	0.1	0.1	1	0.1	0.1	1	0.1	0.1
25-29	5	0.3	0.4	4	0.4	0.5	1	0.1	0.2
30-34	21	1.1	1.5	13	1.2	1.7	8	0.9	1.2
35-39	20	1.1	2.5	13	1.2	3.0	7	0.8	2.0
40-44	52	2.8	5.3	30	2.9	5.8	22	2.6	4.6
45-49	94	5.0	10.3	53	5.1	10.9	41	4.9	9.5
50-54	153	8.1	18.4	88	8.4	19.3	65	7.7	17.2
55-59	201	10.6	29.0	103	9.9	29.2	98	11.6	28.8
60-64	231	12.2	41.3	127	12.2	41.4	104	12.3	41.1
65-69	256	13.6	54.8	137	13.1	54.5	119	14.1	55.2
70-74	274	14.5	69.3	152	14.6	69.1	122	14.5	69.7
75-79	276	14.6	84.0	162	15.5	84.6	114	13.5	83.2
80-84	181	9.6	93.5	104	10.0	94.5	77	9.1	92.3
85+	122	6.5	100.0	57	5.5	100.0	65	7.7	100.0
All ages	1888	100.0		1044	100.0		844	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=17 %	Females DCO rate n=19 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4								
5- 9								
10-14								
15-19								
20-24	1	1	0.1	0.1			0.2	0.2
25-29	4	1	0.2	0.0			0.5	0.1
30-34	13	8	0.6	0.4			1.1	0.4
35-39	13	7	0.6	0.3			0.8	0.2
40-44	30	22	1.3	1.0			1.2	0.4
45-49	52	41	2.1	1.7			1.1	0.5
50-54	88	65	3.8	2.8			1.1	0.6
55-59	103	98	5.3	4.9			0.9	0.8
60-64	127	104	7.8	5.9			0.8	0.7
65-69	137	118	9.0	7.0	0.7	0.8	0.6	0.7
70-74	152	122	10.8	7.6	2.0	0.8	0.6	0.7
75-79	162	114	14.6	8.3	3.1	2.6	0.7	0.6
80-84	104	77	15.8	7.9	1.9	7.8	0.7	0.5
85+	57	64	13.4	6.6	10.5	12.5	0.6	0.4
All ages	1043	842			1.6	2.3	0.7	0.6
Incidence								
Raw			3.5	2.7				
WS			1.8	1.3				
ES			2.6	1.8				
BRD-S			3.2	2.2				

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

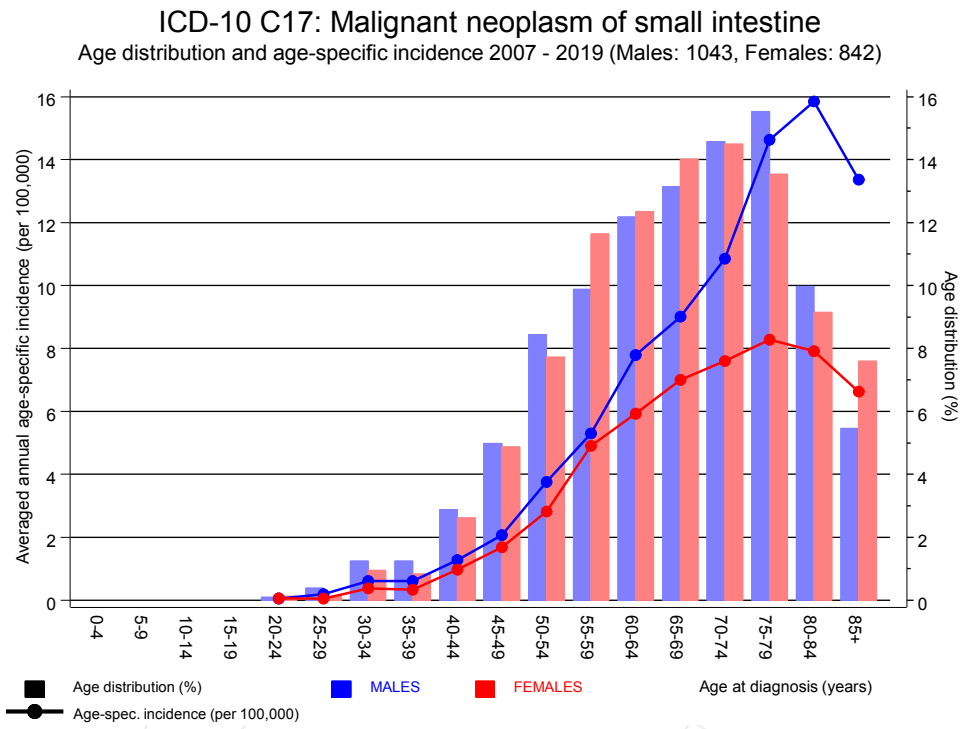


Figure 6. Age distribution (males: mean=66.9 yrs, median=68.5 yrs; females: mean=67.3 yrs, median=68.4 yrs) and age-specific incidence.

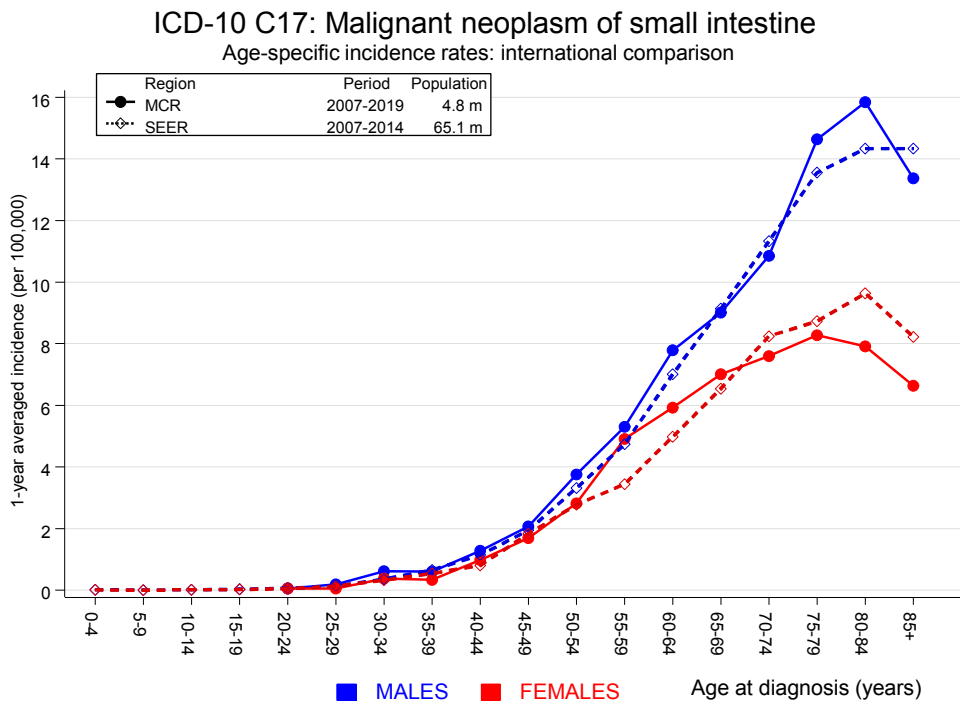


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 submission. <http://www.seer.cancer.gov>.

Table 7a

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

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03–C06 Oral cavity	2	0.6	3.4	0.4	12.4	3.1	
C07–C08 Salivary gland	1	0.2	6.5	0.2	36.0	1.9	
C09–C10 Oropharynx	1	0.7	1.4	0.0	7.7	0.6	
C12–C13 Hypopharynx	3	0.4	7.7	1.6	22.5 #	5.7	
C15 Oesophagus	5	1.4	3.6	1.2	8.3 #	7.9	
C16 Stomach	16	2.7	6.0	3.4	9.7 #	29.3	
C17 Small intestine	4	0.4	9.2	2.5	23.6 #	7.8	
C18 Colon	38	6.6	5.8	4.1	7.9 #	69.1	
C19–C20 Rectum	11	3.6	3.0	1.5	5.4 #	16.2	9.1
C21 Anus/canal	1	0.2	5.8	0.1	32.6	1.8	
C22 Liver	3	2.0	1.5	0.3	4.3	2.1	
C23–C24 Bile	4	0.7	5.4	1.5	13.8 #	7.2	
C25 Pancreas	10	2.8	3.6	1.7	6.7 #	15.9	10.0
C26 GI cancer	1	0.1	13.4	0.3	74.7	2.0	100.0
C32 Larynx	2	0.7	2.9	0.4	10.6	2.9	
C33–C34 Lung	22	8.2	2.7	1.7	4.0 #	30.3	4.5
C38,C45 Mesothelioma	2	0.5	4.1	0.5	14.7	3.3	
C43 Malign. melanoma	11	3.2	3.5	1.7	6.2 #	17.2	
C46,C49 Soft tissue	7	0.4	17.9	7.2	37.0 #	14.5	14.3
C61 Prostate	25	19.1	1.3	0.8	1.9	12.9	4.0
C64 Kidney	10	2.4	4.2	2.0	7.7 #	16.7	
C65 Renal pelvis	2	0.3	6.4	0.8	23.1	3.7	
C66 Ureter	3	0.2	16.1	3.3	47.0 #	6.2	
C67 Bladder	7	3.2	2.2	0.9	4.5	8.3	
C70–C72 CNS cancer	4	0.9	4.6	1.3	11.8 #	6.9	
C73 Thyroid	3	0.5	6.4	1.3	18.8 #	5.6	
C76–C79 CUP	1	1.2	0.9	0.0	4.8	-0.4	
C81 Hodgkin lymphoma	1	0.2	6.0	0.2	33.5	1.8	
C82–C85 NHL	14	2.9	4.8	2.6	8.0 #	24.3	
C90 Mult. myeloma	2	0.9	2.2	0.3	8.0	2.4	
C91–C96 Leukaemia	3	1.1	2.8	0.6	8.2	4.3	66.7
Not observed	0	1.4	0.0	0.0	2.6	-3.1	
All further malignancies	219	69.6	3.1	2.7	3.6 #	328.7	3.7

Patients	1306
Median age at next malignancy (years)	70.8
Person-years	4545
Mean observation time (years)	3.5
Median observation time (years)	1.9

The occurrence of further specified malignancy is statistically significant.

Table 7b

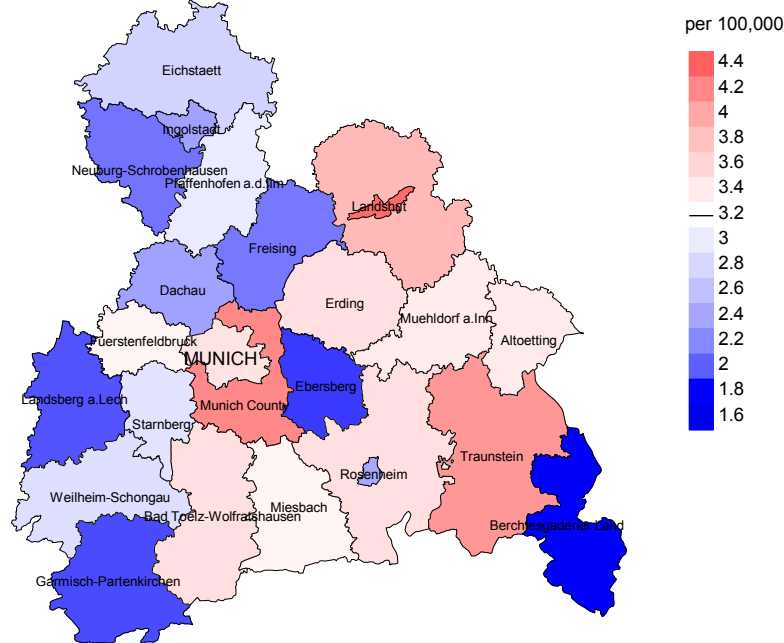
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C09–C10 Oropharynx	1	0.2	5.7	0.1	31.8	2.3	
C15 Oesophagus	1	0.3	3.7	0.1	20.6	2.0	
C16 Stomach	11	1.2	9.2	4.6	16.4 #	27.2	
C17 Small intestine	4	0.2	17.7	4.8	45.3 #	10.5	
C18 Colon	29	3.5	8.4	5.6	12.0 #	70.9	
C19–C20 Rectum	7	1.5	4.8	1.9	9.9 #	15.4	14.3
C21 Anus/canal	1	0.2	4.6	0.1	25.9	2.2	
C25 Pancreas	12	1.8	6.8	3.5	12.0 #	28.5	
C33–C34 Lung	12	3.1	3.8	2.0	6.7 #	24.6	
C43 Malign. melanoma	3	1.5	2.0	0.4	5.9	4.2	
C46,C49 Soft tissue	1	0.2	4.7	0.1	26.0	2.2	
C48 Peritoneal	1	0.2	5.9	0.2	33.1	2.3	
C50 Breast	23	12.3	1.9	1.2	2.8 #	29.8	8.7
C53 Cervix uteri	4	0.5	8.0	2.2	20.5 #	9.7	50.0
C54 Corpus uteri	7	2.2	3.1	1.3	6.5 #	13.3	
C56 Ovary	9	1.6	5.8	2.6	10.9 #	20.7	
C64 Kidney	3	0.9	3.4	0.7	9.9	5.9	
C65 Renal pelvis	1	0.1	8.3	0.2	46.4	2.4	
C67 Bladder	2	0.7	2.8	0.3	10.2	3.6	50.0
C69 Eye melanoma	1	0.0	22.0	0.6	122.6	2.7	
C70–C72 CNS cancer	2	0.5	4.1	0.5	14.7	4.2	
C76–C79 CUP	1	0.7	1.5	0.0	8.5	1.0	
C82–C85 NHL	6	1.5	4.1	1.5	8.9 #	12.6	
C91–C96 Leukaemia	1	0.5	1.8	0.0	10.3	1.3	100.0
C96 Systemic	1	0.0	112.9	2.9	629.1 #	2.8	100.0
Not observed	0	3.6	0.0	0.0	1.0	-10.0	
All further malignancies	144	38.9	3.7	3.1	4.4 #	291.9	5.6
Patients		1051					
Median age at next malignancy (years)		71.8					
Person-years		3601					
Mean observation time (years)		3.4					
Median observation time (years)		2.0					

The occurrence of further specified malignancy is statistically significant.

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



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

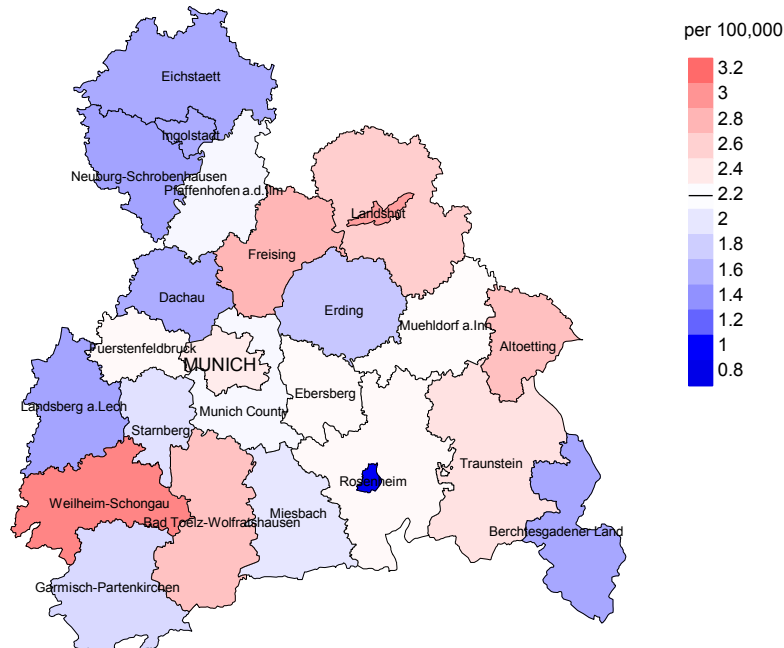
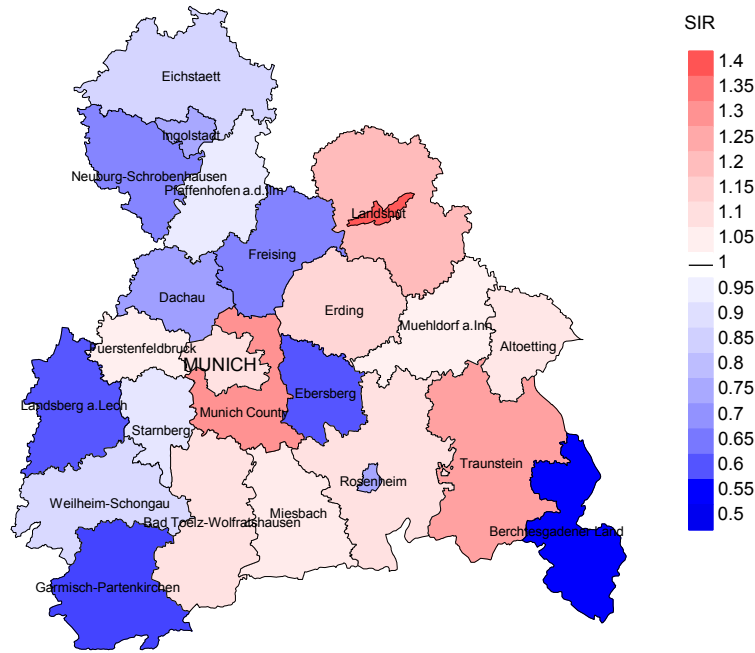


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 3.2/100,000 WS N=1,043, females 2.2/100,000 WS N=842).

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 23 women were identified with newly diagnosed small intestine cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.2 and 3.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

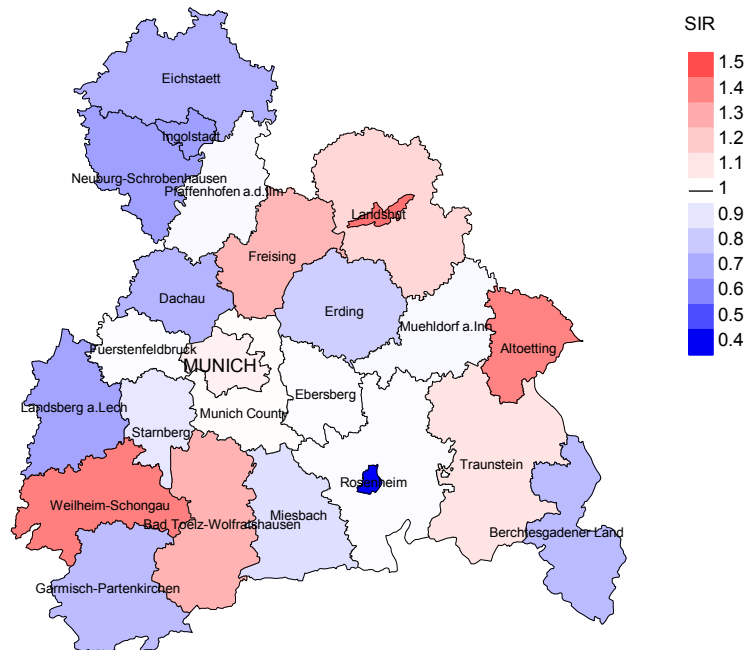


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,043, females N=842).

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 23 women were identified with newly diagnosed small intestine cancer. Therefore, the mean standardized incidence ratio (SIR) 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 0.54 and 1.66, and is therefore not statistically striking.

MORTALITY

Table 9a

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

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	28	100.0	3.6	22	78.6	90.9
1999	52	96.2	7.7	42	80.8	100.0
2000	40	100.0	5.0	30	75.0	90.0
2001	45	100.0	4.4	32	71.1	100.0
2002	68	97.1	11.8	47	69.1	97.9
2003	78	96.2	10.3	49	62.8	93.9
2004	103	91.3	3.9	67	65.0	94.0
2005	93	94.6	5.4	64	68.8	92.2
2006	100	94.0	1.0	69	69.0	97.1
2007	123	94.3	1.6	69	56.1	97.1
2008	114	99.1	5.3	56	49.1	98.2
2009	127	99.2	5.5	74	58.3	95.9
2010	147	98.6	2.0	71	48.3	93.0
2011	148	98.0	1.4	81	54.7	92.6
2012	166	95.2	2.4	80	48.2	95.0
2013	157	95.5	1.9	64	40.8	90.6
2014	164	97.6	1.2	73	44.5	79.5
2015	175	97.1	2.9	76	43.4	89.5
2016	158	100.0		59	37.3	78.0
2017	170	98.8	1.2	51	30.0	80.4
2018	128	99.2		25	19.5	52.0
2019	111	66.7		18	16.2	77.8
1998-2019	2495	95.8	2.8	1219	48.9	91.1

Table 9b

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

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

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	28	10	90.0	4	14.3
1999	52	23	91.3	11	21.2
2000	40	22	90.9	6	15.0
2001	45	17	100.0	6	13.3
2002	68	29	96.6	15	22.1
2003	78	28	96.4	12	15.4
2004	103	56	98.2	22	21.4
2005	93	35	97.1	11	11.8
2006	100	41	97.6	12	12.0
2007	123	44	100.0	9	7.3
2008	114	54	96.3	12	10.5
2009	127	62	100.0	20	15.7
2010	147	57	94.7	21	14.3
2011	148	66	98.5	19	12.8
2012	166	77	98.7	19	11.4
2013	157	78	98.7	16	10.2
2014	164	96	96.9	19	11.6
2015	175	101	99.0	28	16.0
2016	158	93	98.9	16	10.1
2017	170	107	98.1	26	15.3
2018	128	77	35.1	9	7.0
2019	111	70	50.0	10	9.0
1998–2019	2495	1243	91.2	323	12.9

Table 9c

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

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

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	10	70.0	30.0	66.7
1999	23	73.9	26.1	95.2
2000	22	72.7	27.3	85.0
2001	17	76.5	23.5	64.7
2002	29	82.8	17.2	92.9
2003	28	71.4	28.6	85.2
2004	56	83.9	16.1	85.5
2005	35	91.4	8.6	91.2
2006	41	87.8	12.2	92.5
2007	44	86.4	13.6	84.1
2008	54	85.2	14.8	92.3
2009	62	79.0	21.0	87.1
2010	57	75.4	24.6	83.3
2011	66	83.3	16.7	90.8
2012	77	70.1	29.9	80.3
2013	78	79.5	20.5	84.4
2014	96	77.1	22.9	84.9
2015	101	66.3	33.7	76.0
2016	93	75.3	24.7	83.7
2017	107	76.6	23.4	83.8
2018	77	58.4	41.6	74.1
2019	70	64.3	35.7	82.9
1998–2019	1243	75.8	24.2	84.4

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	6	63.1	66.8	59.3	66.8
1999	8	73.4	73.6	57.6	73.4
2000	14	67.6	66.3	79.6	66.3
2001	12	63.7	64.6	60.3	63.7
2002	17	72.0	72.0	69.4	72.0
2003	14	71.9	70.6	73.2	73.9
2004	32	69.6	65.3	78.6	66.4
2005	15	70.8	70.8	75.3	74.8
2006	20	72.3	72.3	69.2	72.9
2007	25	72.8	72.8	75.0	73.1
2008	29	72.1	72.0	77.0	72.0
2009	38	77.7	73.5	80.0	75.0
2010	36	73.4	73.3	73.5	73.4
2011	31	73.6	71.1	84.7	72.3
2012	39	77.9	77.7	79.8	77.7
2013	40	77.3	72.9	83.8	73.8
2014	60	76.3	74.1	79.8	74.1
2015	62	77.2	75.6	83.6	76.2
2016	59	77.2	76.9	80.9	76.9
2017	57	75.9	73.5	80.3	75.1
2018	46	72.5	70.8	81.7	77.4
2019	41	78.4	75.9	81.7	75.9
1998-2019	701	75.2	73.0	80.2	73.6

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	4	79.4	71.9	83.3	85.1
1999	15	76.5	73.1	79.7	75.3
2000	8	72.6	64.0	77.4	68.4
2001	5	83.7	83.5	92.2	83.3
2002	12	77.7	77.7	77.8	77.7
2003	14	79.3	80.6	78.1	80.6
2004	24	72.6	72.6	72.6	72.9
2005	20	70.7	70.6	83.6	70.6
2006	21	74.2	73.1	75.1	73.1
2007	19	74.2	74.2	73.3	73.8
2008	25	71.6	67.9	84.3	68.8
2009	24	77.4	77.8	77.1	76.5
2010	21	73.2	72.3	80.7	73.2
2011	35	69.3	68.5	82.7	69.0
2012	38	82.6	74.2	91.2	79.6
2013	38	75.2	73.8	84.0	74.7
2014	36	74.4	72.0	85.0	73.9
2015	39	79.1	75.6	88.1	77.5
2016	34	75.9	74.2	79.8	74.6
2017	50	77.3	76.7	84.4	75.8
2018	31	79.2	78.5	85.0	76.1
2019	29	77.5	75.8	80.0	79.1
1998-2019	542	76.3	73.9	83.8	74.8

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 years for girls.

Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 11a

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

MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	5	0.5	0.31	0.3	0.32	0.4	0.30	0.6	0.34
1999	7	0.6	0.29	0.4	0.28	0.6	0.31	0.7	0.34
2000	12	1.1	0.50	0.7	0.55	1.0	0.54	1.2	0.60
2001	9	0.8	0.36	0.5	0.35	0.7	0.37	0.8	0.37
2002	14	0.8	0.42	0.4	0.39	0.6	0.43	0.8	0.45
2003	9	0.5	0.21	0.3	0.20	0.4	0.22	0.5	0.23
2004	25	1.3	0.37	0.7	0.35	1.0	0.35	1.3	0.36
2005	13	0.7	0.27	0.4	0.26	0.6	0.28	0.7	0.29
2006	18	0.9	0.34	0.4	0.29	0.7	0.32	1.0	0.36
2007	21	0.9	0.28	0.4	0.23	0.7	0.26	1.0	0.29
2008	25	1.1	0.42	0.6	0.38	0.9	0.42	1.2	0.46
2009	28	1.3	0.39	0.6	0.35	1.0	0.37	1.3	0.41
2010	25	1.1	0.33	0.5	0.28	0.8	0.31	1.1	0.34
2011	24	1.1	0.32	0.5	0.33	0.8	0.34	1.0	0.31
2012	28	1.2	0.31	0.5	0.27	0.9	0.30	1.2	0.34
2013	30	1.3	0.29	0.6	0.24	0.9	0.26	1.2	0.29
2014	47	2.0	0.53	0.9	0.47	1.4	0.50	1.8	0.54
2015	39	1.6	0.39	0.7	0.33	1.1	0.36	1.4	0.38
2016	44	1.8	0.50	0.7	0.40	1.2	0.44	1.6	0.49
2017	43	1.8	0.50	0.7	0.44	1.2	0.47	1.5	0.49
2018	25	1.0	0.35	0.5	0.33	0.7	0.34	0.9	0.35
2019	23	0.9	0.38	0.4	0.30	0.6	0.33	0.8	0.36
1998-2019	514	1.2	0.37	0.5	0.33	0.9	0.35	1.1	0.38

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	2	0.2	0.17	0.1	0.14	0.1	0.15	0.2	0.18
1999	10	0.8	0.36	0.3	0.29	0.5	0.31	0.6	0.30
2000	4	0.3	0.25	0.2	0.21	0.2	0.24	0.3	0.22
2001	4	0.3	0.20	0.1	0.10	0.1	0.12	0.2	0.16
2002	10	0.5	0.29	0.2	0.19	0.3	0.20	0.4	0.25
2003	11	0.6	0.31	0.2	0.19	0.3	0.21	0.4	0.26
2004	22	1.1	0.61	0.5	0.49	0.7	0.52	0.9	0.55
2005	19	1.0	0.42	0.4	0.40	0.6	0.40	0.8	0.39
2006	18	0.9	0.38	0.4	0.32	0.6	0.36	0.7	0.37
2007	17	0.7	0.35	0.3	0.27	0.4	0.29	0.6	0.33
2008	21	0.9	0.38	0.4	0.35	0.6	0.36	0.7	0.37
2009	21	0.9	0.38	0.3	0.27	0.5	0.31	0.7	0.32
2010	18	0.8	0.25	0.3	0.19	0.5	0.21	0.6	0.24
2011	31	1.3	0.43	0.6	0.42	0.9	0.41	1.0	0.42
2012	26	1.1	0.35	0.4	0.29	0.6	0.30	0.8	0.31
2013	32	1.3	0.59	0.5	0.50	0.8	0.52	1.0	0.56
2014	27	1.1	0.36	0.5	0.30	0.7	0.31	0.9	0.34
2015	28	1.2	0.37	0.4	0.28	0.7	0.31	0.8	0.32
2016	26	1.1	0.37	0.4	0.29	0.6	0.31	0.8	0.34
2017	39	1.6	0.47	0.5	0.37	0.8	0.39	1.2	0.44
2018	20	0.8	0.36	0.3	0.23	0.4	0.25	0.6	0.32
2019	22	0.9	0.44	0.3	0.32	0.5	0.35	0.7	0.41
1998-2019	428	0.9	0.38	0.4	0.31	0.6	0.33	0.7	0.35

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	1	0.1	0.1			0.0	1	0.3	0.3
30-34	1	0.1	0.3			0.0	1	0.3	0.6
35-39	1	0.1	0.4			0.0	1	0.3	0.9
40-44	9	1.2	1.6	6	1.5	1.5	3	0.9	1.8
45-49	12	1.6	3.3	5	1.2	2.7	7	2.1	4.0
50-54	36	4.9	8.2	24	6.0	8.7	12	3.7	7.6
55-59	61	8.4	16.6	31	7.7	16.4	30	9.1	16.8
60-64	55	7.5	24.1	32	8.0	24.4	23	7.0	23.8
65-69	87	11.9	36.0	46	11.4	35.8	41	12.5	36.3
70-74	121	16.6	52.6	68	16.9	52.7	53	16.2	52.4
75-79	127	17.4	70.0	77	19.2	71.9	50	15.2	67.7
80-84	112	15.3	85.3	58	14.4	86.3	54	16.5	84.1
85+	107	14.7	100.0	55	13.7	100.0	52	15.9	100.0
All ages	730	100.0		402	100.0		328	100.0	

Table 13

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

Age at death Years	Males 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			0.0	1.00		1.1
30-34		1			0.0	0.13		0.6
35-39		1			0.0	0.14		0.3
40-44	6	3	0.3	0.20	0.1	0.14	1.0	0.4
45-49	5	7	0.2	0.10	0.3	0.17	0.4	0.4
50-54	24	12	1.0	0.27	0.5	0.18	1.0	0.5
55-59	31	30	1.6	0.30	1.5	0.31	0.8	0.8
60-64	32	23	2.0	0.25	1.3	0.22	0.5	0.5
65-69	46	41	3.0	0.34	2.4	0.35	0.5	0.6
70-74	68	53	4.9	0.45	3.3	0.43	0.6	0.6
75-79	77	50	7.0	0.48	3.6	0.44	0.7	0.6
80-84	58	54	8.8	0.56	5.5	0.70	0.6	0.6
85+	55	52	12.9	0.96	5.4	0.81	0.7	0.5
All ages	402	328					0.6	0.6
Mortality								
Raw			1.3	0.39	1.1	0.39		
WS			0.6	0.33	0.4	0.31		
ES			0.9	0.36	0.6	0.33		
BRD-S			1.2	0.39	0.8	0.36		
PYLL-70								
per 100,000			5.4		4.6			
ES			4.6		3.9			
AYLL-70			10.0		10.2			

Table 14a

Further malignancies in deaths in period 1998-2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	4	1.3	2	50.0			2	50.0
C07-C08 Salivary gland	1	0.3					1	100.0
C09-C10 Oropharynx	1	0.3	1	100.0				
C12-C13 Hypopharynx	4	1.3	1	25.0			3	75.0
C15 Oesophagus	6	2.0	4	66.7	1	16.7	1	16.7
C16 Stomach	8	2.6	4	50.0	4	50.0		
C17 Small intestine	1	0.3					1	100.0
C18 Colon	54	17.8	27	50.0	19	35.2	8	14.8
C19-C20 Rectum	23	7.6	14	60.9	4	17.4	5	21.7
C22 Liver	5	1.6	2	40.0			3	60.0
C23-C24 Bile	7	2.3	2	28.6	4	57.1	1	14.3
C25 Pancreas	14	4.6	2	14.3	7	50.0	5	35.7
C26 GI cancer	2	0.7			1	50.0	1	50.0
C32 Larynx	5	1.6	5	100.0				
C33-C34 Lung	25	8.2	8	32.0	7	28.0	10	40.0
C38,C45 Mesothelioma	2	0.7					2	100.0
C43 Malign. melanoma	10	3.3	6	60.0			4	40.0
C44 Skin others	20	6.6	11	55.0			9	45.0
C46,C49 Soft tissue	2	0.7	1	50.0			1	50.0
C50 Breast	1	0.3	1	100.0				
C61 Prostate	45	14.8	34	75.6			11	24.4
C62 Testis	5	1.6	5	100.0				
C64 Kidney	13	4.3	7	53.8	2	15.4	4	30.8
C65 Renal pelvis	2	0.7	1	50.0			1	50.0
C66 Ureter	2	0.7					2	100.0
C67 Bladder	11	3.6	7	63.6			4	36.4
C69 Eye carcinoma	1	0.3	1	100.0				
C70-C72 CNS cancer	2	0.7			1	50.0	1	50.0
C73 Thyroid	1	0.3					1	100.0
C76-C79 CUP	6	2.0	4	66.7	1	16.7	1	16.7
C81 Hodgkin lymphoma	3	1.0	2	66.7	1	33.3		
C82-C85 NHL	11	3.6	5	45.5	1	9.1	5	45.5
C90 Mult. myeloma	2	0.7					2	100.0
C91-C96 Leukaemia	5	1.6	1	20.0			4	80.0
All further malignancies	304	100.0	158	52.0	53	17.4	93	30.6

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

Table 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C15 Oesophagus	1	0.5					1	100.0
C16 Stomach	7	3.6	1	14.3	5	71.4	1	14.3
C18 Colon	26	13.5	10	38.5	13	50.0	3	11.5
C19-C20 Rectum	18	9.4	8	44.4	8	44.4	2	11.1
C21 Anus/canal	2	1.0	1	50.0	1	50.0		
C22 Liver	1	0.5					1	100.0
C23-C24 Bile	2	1.0	1	50.0			1	50.0
C25 Pancreas	12	6.3	1	8.3	5	41.7	6	50.0
C26 GI cancer	1	0.5	1	100.0				
C33-C34 Lung	11	5.7	2	18.2	3	27.3	6	54.5
C43 Malign. melanoma	5	2.6	4	80.0			1	20.0
C44 Skin others	11	5.7	7	63.6			4	36.4
C46,C49 Soft tissue	1	0.5			1	100.0		
C48 Peritoneal	1	0.5			1	100.0		
C50 Breast	40	20.8	31	77.5	2	5.0	7	17.5
C52 Vagina	2	1.0	2	100.0				
C53 Cervix uteri	2	1.0					2	100.0
C54 Corpus uteri	11	5.7	7	63.6	3	27.3	1	9.1
C56 Ovary	13	6.8	5	38.5	4	30.8	4	30.8
C65 Renal pelvis	3	1.6	1	33.3			2	66.7
C66 Ureter	1	0.5					1	100.0
C67 Bladder	4	2.1	1	25.0	1	25.0	2	50.0
C69 Eye melanoma	1	0.5					1	100.0
C70-C72 CNS cancer	2	1.0	1	50.0			1	50.0
C74-C80 Cancer others	1	0.5	1	100.0				
C76-C79 CUP	4	2.1	2	50.0	1	25.0	1	25.0
C81 Hodgkin lymphoma	1	0.5	1	100.0				
C82-C85 NHL	6	3.1	1	16.7	2	33.3	3	50.0
C91-C96 Leukaemia	1	0.5	1	100.0				
C96 Systemic	1	0.5					1	100.0
All further malignancies	192	100.0	90	46.9	50	26.0	52	27.1

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

Table 15

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

Age at death Years	Males 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						
30-34		1		0.0 0.13		0.7
35-39		1		0.0 0.14		0.3
40-44	6	3	0.3 0.23	0.1 0.18	1.1	0.4
45-49	5	6	0.2 0.11	0.2 0.18	0.4	0.4
50-54	20	10	0.9 0.28	0.4 0.18	0.9	0.5
55-59	26	20	1.3 0.32	1.0 0.25	0.7	0.7
60-64	25	18	1.5 0.26	1.0 0.21	0.5	0.5
65-69	29	26	1.9 0.33	1.5 0.31	0.4	0.5
70-74	45	34	3.2 0.50	2.1 0.41	0.5	0.5
75-79	42	39	3.8 0.49	2.8 0.48	0.5	0.6
80-84	29	38	4.4 0.59	3.9 0.63	0.4	0.6
85+	35	35	8.2 1.06	3.6 0.81	0.6	0.4
All ages	262	231			0.5	0.5
Mortality						
Raw			0.9 0.38	0.7 0.36		
WS			0.4 0.32	0.3 0.28		
ES			0.6 0.35	0.4 0.30		
BRD-S			0.8 0.38	0.6 0.33		
PYLL-70						
per 100,000			4.6	3.5		
ES			3.9	2.9		
AYLL-70			10.9	10.7		

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males 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						
30-34		1		0.0 0.14		0.7
35-39		1		0.0 0.17		0.3
40-44	6	2	0.3 0.23	0.1 0.13	1.1	0.3
45-49	5	6	0.2 0.11	0.2 0.18	0.4	0.4
50-54	19	10	0.8 0.30	0.4 0.20	0.9	0.5
55-59	24	18	1.2 0.30	0.9 0.23	0.7	0.6
60-64	22	17	1.3 0.26	1.0 0.20	0.4	0.5
65-69	22	25	1.4 0.31	1.5 0.35	0.3	0.5
70-74	30	28	2.1 0.39	1.7 0.35	0.4	0.5
75-79	36	34	3.3 0.47	2.5 0.45	0.5	0.5
80-84	25	32	3.8 0.57	3.3 0.59	0.4	0.5
85+	27	33	6.3 0.84	3.4 0.79	0.5	0.4
All ages	216	207			0.5	0.5
Mortality						
Raw			0.7 0.35	0.7 0.35		
WS			0.3 0.30	0.3 0.27		
ES			0.5 0.32	0.4 0.29		
BRD-S			0.7 0.35	0.5 0.32		
PYLL-70						
per 100,000			4.3	3.2		
ES			3.6	2.7		
AYLL-70			11.5	10.6		

* See corresponding tables with multiple malignancies.

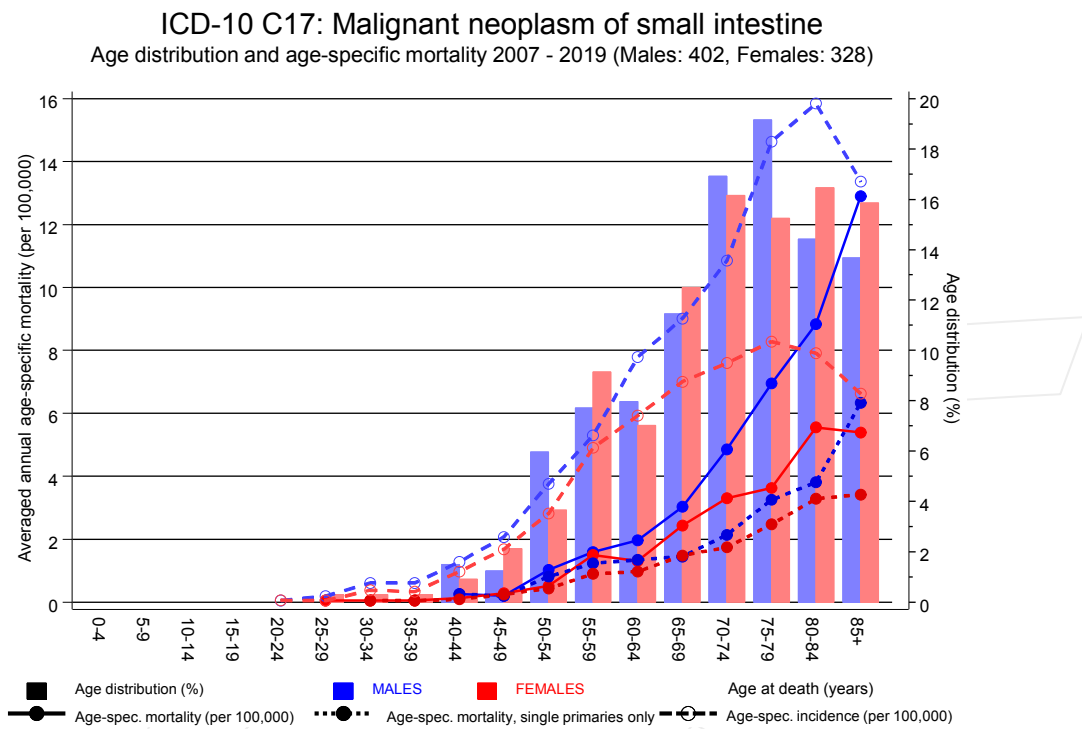
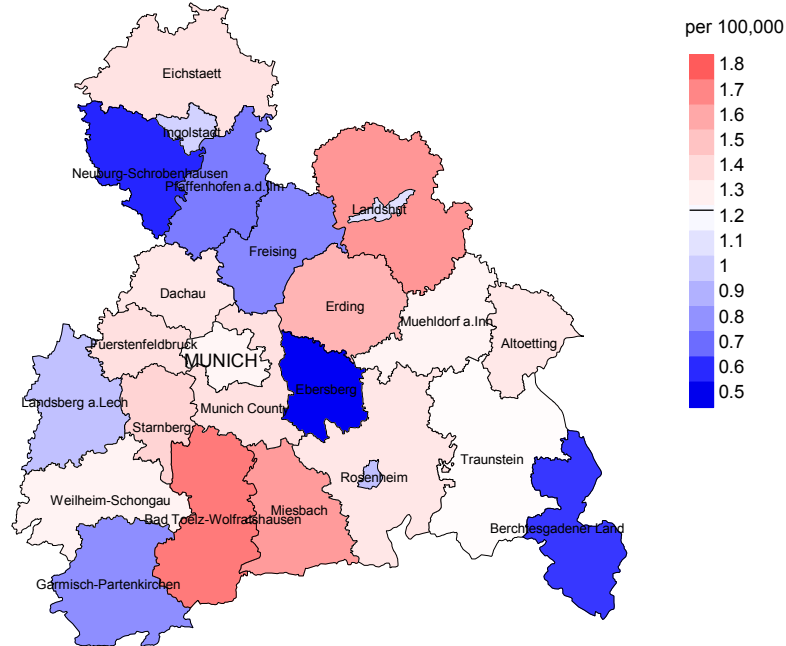


Figure 17. Distribution of age at death (bars; males: mean=69.2 yrs, median=70.6 yrs; females: mean=69.5 yrs, median=70.7 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

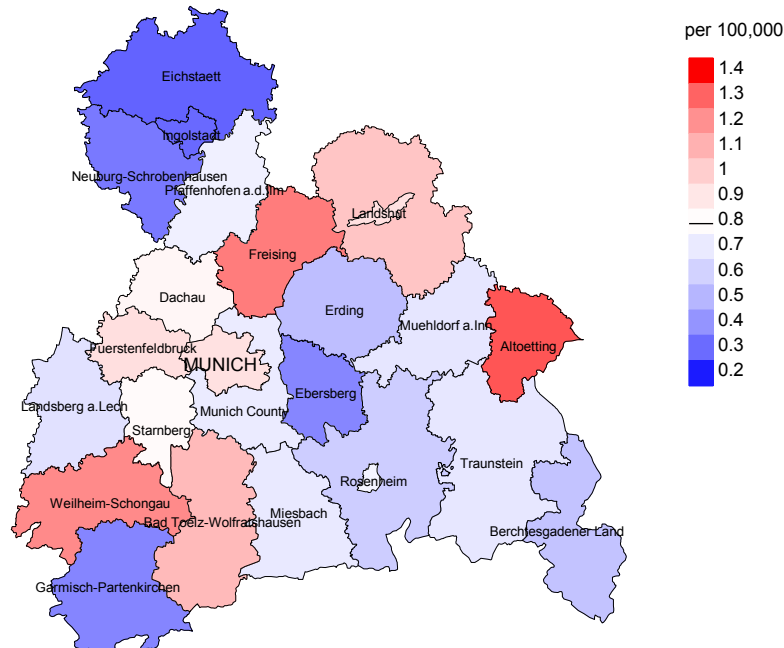
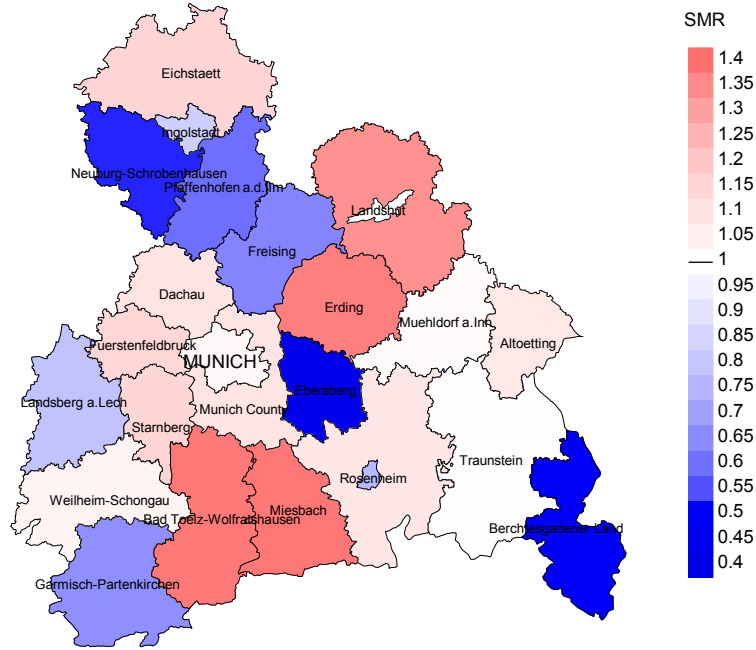


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.2/100,000 WS N=402, females 0.8/100,000 WS N=328).

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 4 women died from small intestine cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 1.2/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

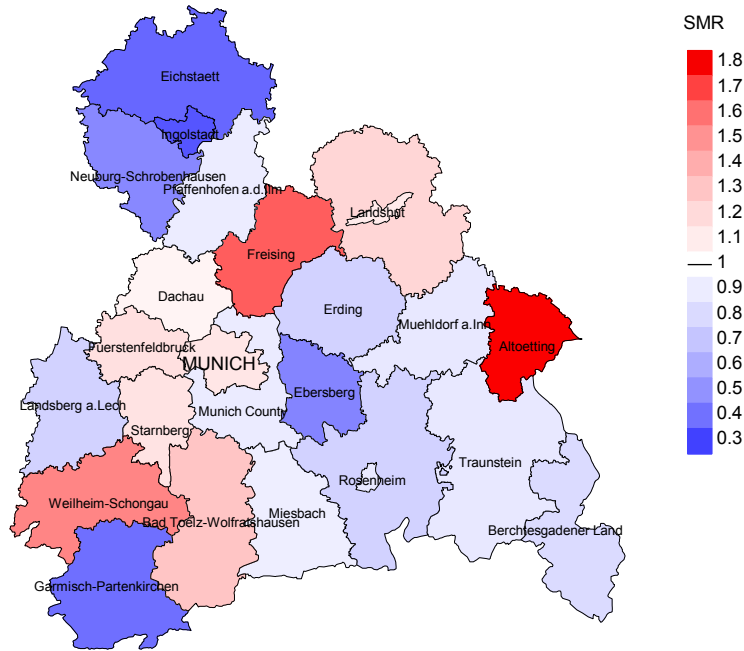


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=402, females N=328).

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 4 women died from small intestine cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.45. Though, the value of this parameter may vary with an underlying probability of 99% between 0.08 and 1.42, and is therefore not statistically striking.

Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. All multiple primaries included

The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. First singular primary (no information about other prior or synchronous malignancy)

The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. Single primary (no information about other prior, syn- or metachronous malignancy)

The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head&neck and lung).

The ratio of mortality and incidence (mortality-to-incidence ratio, **MIR, MI-Index**) is a statistical index that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MIR. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

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

Recommended Citation

Munich Cancer Registry. ICD-10 C17: Small intestine cancer - Incidence and Mortality [Internet]. 2021 [updated 2021 Jan 25; cited 2021 Mar 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bC17__E-ICD-10-C17-Small-intestine-cancer-incidence-and-mortality.pdf

Copyright

The content of the public web site provided by the Munich Cancer Registry is available worldwide and free of charge. All documents are free to download, utilize, copy, print-out and distribute, providing that the MCR is referenced.

Disclaimer

The Munich Cancer Registry reserves the right to not be responsible for the topicality, correctness, completeness or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected.