

Munich Cancer Registry



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

ICD-10 C38: Heart, mediastinum and pleura

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	377
Diseases	377
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m





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

https://www.tumorregister-muenchen.de/en/facts/base/bC38__E-ICD-10-C38-Heart-mediastinum-and-pleura-incidence-and-mortality.pdf

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

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

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

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

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

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

Munich Cancer Registry, January 2021

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

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

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

ICD-10 codes (ICD-10 2016) used for specifying cancer site

Code	Description
C38.-	Malignant neoplasm of heart, mediastinum and pleura
C38.0	Heart
C38.1	Anterior mediastinum
C38.2	Posterior mediastinum
C38.3	Mediastinum, part unspecified
C38.4	Pleura
C38.8	Overlapping lesion of heart, mediastinum and pleura

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	8	4	50.0	12.5	3.5	100.0	100.0
1999	11	5	45.5	10.5	3.6	100.0	100.0
2000	14	6	42.9	6.1	3.4	85.7	100.0
2001	10			14.0	3.5	100.0	100.0
2002	27	2	7.4	12.9	3.3	77.8	96.3 #
2003	23	4	17.4	10.8	3.6	95.7	100.0
2004	18	2	11.1	11.7	3.9	100.0	100.0
2005	18	1	5.6	10.9	3.8	94.4	100.0
2006	24	4	16.7	13.7	3.7	95.8	100.0
2007	21	3	14.3	13.8	3.6	90.5	95.2 #
2008	17			15.7	4.0	82.4	100.0
2009	20	1	5.0	15.6	3.8	75.0	100.0
2010	16	2	12.5	15.9	3.6	87.5	100.0
2011	17			16.0	4.0	88.2	100.0
2012	18	1	5.6	16.4	3.8	77.8	100.0
2013	26	3	11.5	16.0	3.5	92.3	100.0
2014	21	1	4.8	15.9	2.3	90.5	100.0
2015	21	7	33.3	17.3	1.5	95.2	100.0
2016	18	2	11.1	17.2	2.2	66.7	100.0
2017	12			17.2	3.6	66.7	100.0
2018	11			17.8	5.9	63.6	100.0
2019	6			17.5	0.0	33.3	100.0 ##
1998–2019	377	48	12.7	17.5	3.5	86.2	99.5

377 cases diagnosed 1998-2019 are related to a total of 377 patients. Currently, in 79 (21.0 %) of these 377 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 57 / 19 / 3 (15.1 % / 5.0 % / 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 2017, a subgroup of 12 cases has been diagnosed, of which 17.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.6 % 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	4	50.0	2	50.0	25.0	3.9	100.0	100.0
1999	6	54.5	3	50.0	20.0	4.0	100.0	100.0
2000	8	57.1	4	50.0	11.1	4.1	100.0	100.0
2001	7	70.0			16.0	4.3	100.0	100.0
2002	16	59.3	2	12.5	12.2	3.9	68.8	93.8 #
2003	16	69.6	4	25.0	8.8	4.3	93.8	100.0
2004	13	72.2	1	7.7	11.4	4.6	100.0	100.0
2005	11	61.1	1	9.1	9.9	4.4	100.0	100.0
2006	12	50.0	2	16.7	12.9	4.7	91.7	100.0
2007	12	57.1	1	8.3	12.4	4.4	91.7	91.7 #
2008	8	47.1			13.3	4.8	75.0	100.0
2009	14	70.0			12.6	4.3	64.3	100.0
2010	9	56.3	1	11.1	13.2	3.9	77.8	100.0
2011	11	64.7			12.9	4.3	90.9	100.0
2012	13	72.2	1	7.7	13.8	3.6	84.6	100.0
2013	20	76.9	3	15.0	13.9	2.9	90.0	100.0
2014	12	57.1	1	8.3	13.5	2.0	91.7	100.0
2015	15	71.4	6	40.0	15.0	2.6	100.0	100.0
2016	7	38.9	1	14.3	15.0	4.3	71.4	100.0
2017	6	50.0			15.0	6.3	50.0	100.0
2018	7	63.6			15.9	9.1	57.1	100.0
2019	4	66.7			15.6	0.0	50.0	100.0 ##
1998–2019	231	61.3	33	14.3	15.6	3.9	85.7	99.1

231 cases diagnosed 1998-2019 are related to a total of 231 patients. Currently, in 43 (18.6 %) of these 231 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 30 / 12 / 1 (13.0 % / 5.2 % / 0.4 %) 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 6 cases has been diagnosed, of which 15.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	4	50.0	2	50.0	0.0	2.8	100.0	100.0
1999	5	45.5	2	40.0	0.0	2.9	100.0	100.0
2000	6	42.9	2	33.3	0.0	2.2	66.7	100.0
2001	3	30.0			11.1	2.3	100.0	100.0
2002	11	40.7			13.8	2.4	90.9	100.0 #
2003	7	30.4			13.9	2.6	100.0	100.0
2004	5	27.8	1	20.0	12.2	2.8	100.0	100.0
2005	7	38.9			12.5	2.9	85.7	100.0
2006	12	50.0	2	16.7	15.0	2.1	100.0	100.0
2007	9	42.9	2	22.2	15.9	2.4	88.9	100.0 #
2008	9	52.9			19.2	2.6	88.9	100.0
2009	6	30.0	1	16.7	20.2	2.9	100.0	100.0
2010	7	43.8	1	14.3	19.8	3.2	100.0	100.0
2011	6	35.3			20.6	3.6	83.3	100.0
2012	5	27.8			20.6	4.1	60.0	100.0
2013	6	23.1			19.4	4.5	100.0	100.0
2014	9	42.9			19.7	2.6	88.9	100.0
2015	6	28.6	1	16.7	21.1	0.0	83.3	100.0
2016	11	61.1	1	9.1	20.9	0.0	63.6	100.0
2017	6	50.0			20.7	0.0	83.3	100.0
2018	4	36.4			20.8	0.0	75.0	100.0
2019	2	33.3			20.5	0.0		100.0 ##
1998-2019	146	38.7	15	10.3	20.5	2.8	87.0	100.0

146 cases diagnosed 1998-2019 are related to a total of 146 patients. Currently, in 36 (24.7 %) of these 146 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 27 / 7 / 2 (18.5 % / 4.8 % / 1.4 %) 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 6 cases has been diagnosed, of which 20.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % 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 4.92 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	4	4	0.4	0.3	0.2	0.1	0.3	0.2	0.4	0.3
1999	6	5	0.5	0.4	0.3	0.3	0.5	0.3	0.8	0.4
2000	8	6	0.7	0.5	0.4	0.2	0.6	0.3	0.8	0.4
2001	7	3	0.6	0.2	0.3	0.2	0.5	0.2	0.7	0.2
2002	16	11	0.9	0.6	0.6	0.3	0.8	0.4	1.0	0.5
2003	16	7	0.9	0.4	0.6	0.2	0.8	0.2	0.9	0.3
2004	13	5	0.7	0.3	0.4	0.1	0.6	0.2	0.7	0.2
2005	11	7	0.6	0.4	0.4	0.2	0.5	0.2	0.6	0.3
2006	12	12	0.6	0.6	0.3	0.3	0.5	0.4	0.6	0.5
2007	12	9	0.5	0.4	0.4	0.2	0.5	0.2	0.6	0.3
2008	8	9	0.4	0.4	0.2	0.2	0.3	0.3	0.3	0.3
2009	14	6	0.6	0.3	0.5	0.1	0.6	0.2	0.6	0.2
2010	9	7	0.4	0.3	0.3	0.2	0.4	0.2	0.4	0.3
2011	11	6	0.5	0.3	0.2	0.1	0.3	0.2	0.5	0.2
2012	13	5	0.6	0.2	0.3	0.2	0.4	0.2	0.6	0.2
2013	20	6	0.9	0.3	0.5	0.1	0.6	0.2	0.8	0.2
2014	12	9	0.5	0.4	0.3	0.1	0.4	0.2	0.5	0.3
2015	15	6	0.6	0.2	0.3	0.1	0.4	0.2	0.6	0.2
2016	7	11	0.3	0.4	0.1	0.2	0.2	0.3	0.3	0.4
2017	6	6	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.2
2018	7	4	0.3	0.2	0.2	0.1	0.2	0.1	0.3	0.1
2019	4	2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1
1998-2019	231	146	0.5	0.3	0.3	0.2	0.4	0.2	0.5	0.3

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	Mean	Std. dev.	Min.	Max.	Median				
						10%	25%	50%	75%	90%
1998	8	65.8	13.4	51.1	83.9	51.1	56.6	58.7	80.3	83.9
1999	11	63.3	15.8	38.6	86.7	47.2	51.7	60.8	80.3	81.7
2000	14	71.8	16.0	36.7	95.3	57.1	61.0	73.3	78.1	93.7
2001	10	64.8	10.7	44.6	78.7	47.7	62.7	65.5	69.7	78.5
2002	27	63.3	19.5	14.1	89.7	40.7	53.8	64.3	80.3	83.6
2003	23	67.5	18.8	0.3	92.4	53.9	61.1	67.9	80.3	85.8
2004	18	65.6	13.2	35.7	83.0	48.2	53.2	67.1	78.3	82.0
2005	18	64.9	13.4	33.4	86.5	48.5	55.0	66.7	77.5	78.7
2006	24	70.3	11.8	46.5	92.2	51.8	63.9	72.4	77.8	84.1
2007	21	63.9	18.3	22.0	84.2	39.9	54.6	68.1	77.9	82.6
2008	17	68.5	12.7	43.3	93.9	47.0	65.9	67.2	77.6	81.6
2009	20	57.2	15.4	25.6	89.7	36.4	49.8	56.3	65.3	77.8
2010	16	61.0	15.2	29.7	93.2	34.7	56.6	61.8	69.6	74.8
2011	17	65.3	15.3	28.1	82.5	37.7	62.6	70.4	74.4	81.0
2012	18	63.1	19.1	18.5	90.7	27.0	53.1	66.5	78.6	83.7
2013	26	68.0	13.2	22.1	86.7	50.7	62.6	69.8	75.2	80.6
2014	21	71.9	14.5	24.3	93.6	61.4	64.9	75.7	78.7	87.6
2015	21	70.8	18.4	18.5	90.4	50.8	59.3	77.8	85.2	86.5
2016	18	67.2	21.1	18.3	84.9	27.9	57.8	78.5	81.5	83.4
2017	12	67.4	21.2	25.8	95.7	39.5	51.6	73.5	82.1	87.5
2018	11	67.7	9.6	49.7	78.5	56.5	62.5	65.6	76.9	77.5
2019	6	53.0	25.7	31.3	98.7	31.3	33.7	43.9	66.5	98.7
1998-2019	377	66.0	16.3	0.3	98.7	44.7	57.1	67.8	77.8	83.7

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	4	61.1	11.0	51.1	76.8	51.1	54.1	58.2	68.1	76.8
1999	6	68.5	12.6	53.3	81.7	53.3	57.0	69.5	80.3	81.7
2000	8	73.0	10.8	59.3	93.7	59.3	65.0	73.3	77.1	93.7
2001	7	69.0	6.9	62.7	78.7	62.7	62.8	65.6	78.3	78.7
2002	16	62.5	21.5	14.1	89.7	17.7	55.2	64.1	80.4	83.6
2003	16	65.9	21.2	0.3	92.4	50.0	59.0	67.6	78.2	85.8
2004	13	63.3	14.1	35.7	82.0	48.2	52.8	66.8	74.5	79.2
2005	11	60.3	14.4	33.4	78.7	48.5	52.3	57.6	77.6	77.6
2006	12	69.4	8.6	46.5	78.2	63.0	66.6	71.4	75.3	77.4
2007	12	60.9	17.4	22.2	84.2	39.9	54.5	61.5	73.7	77.9
2008	8	68.0	14.5	47.0	93.9	47.0	60.6	66.7	74.4	93.9
2009	14	54.3	16.6	25.6	89.7	29.1	44.7	53.8	63.4	72.2
2010	9	58.6	18.8	29.7	93.2	29.7	55.9	59.1	65.1	93.2
2011	11	65.5	18.4	28.1	82.5	37.7	52.5	71.0	80.6	81.0
2012	13	67.5	16.2	27.0	90.7	52.3	62.0	67.9	78.6	83.3
2013	20	66.5	14.2	22.1	85.4	49.8	60.9	69.6	75.4	79.7
2014	12	71.0	17.3	24.3	93.6	64.2	64.9	74.7	78.8	87.6
2015	15	74.4	19.4	18.5	90.4	50.8	73.2	81.7	86.3	89.4
2016	7	64.8	24.4	27.9	84.9	27.9	32.4	79.2	83.4	84.9
2017	6	59.3	26.8	25.8	95.7	25.8	39.5	58.6	77.4	95.7
2018	7	66.4	10.8	49.7	78.5	49.7	56.5	65.6	76.9	78.5
2019	4	61.2	28.4	33.7	98.7	33.7	39.8	56.3	82.6	98.7
1998-2019	231	65.3	17.1	0.3	98.7	44.1	55.9	67.3	77.6	83.4

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	4	70.5	15.5	56.2	83.9	56.2	57.1	70.9	83.9	83.9
1999	5	57.0	18.4	38.6	86.7	38.6	47.2	51.7	60.8	86.7
2000	6	70.2	22.2	36.7	95.3	36.7	57.1	70.6	91.1	95.3
2001	3	55.1	13.1	44.6	69.7	44.6	44.6	50.9	69.7	69.7
2002	11	64.4	17.3	40.7	85.4	40.9	41.5	71.4	80.3	81.0
2003	7	71.1	12.3	53.9	87.6	53.9	61.1	70.9	80.9	87.6
2004	5	71.7	9.0	63.8	83.0	63.8	64.3	67.9	79.6	83.0
2005	7	72.0	7.9	63.9	86.5	63.9	66.5	69.0	77.5	86.5
2006	12	71.3	14.6	47.4	92.2	51.8	58.4	75.1	82.8	85.5
2007	9	67.9	19.8	22.0	83.2	22.0	65.4	74.6	81.5	83.2
2008	9	68.9	11.9	43.3	79.8	43.3	66.9	71.3	77.6	79.8
2009	6	64.1	10.5	56.1	83.5	56.1	56.1	60.4	68.0	83.5
2010	7	64.2	9.4	46.8	74.8	46.8	61.0	62.9	73.8	74.8
2011	6	65.0	8.6	50.5	74.4	50.5	62.6	64.8	73.1	74.4
2012	5	51.5	23.2	18.5	83.7	18.5	48.5	53.1	53.9	83.7
2013	6	72.7	8.1	63.5	86.7	63.5	68.1	71.2	75.2	86.7
2014	9	73.1	10.5	57.4	89.6	57.4	62.6	76.6	78.7	89.6
2015	6	61.7	12.9	43.5	77.8	43.5	52.6	61.2	73.7	77.8
2016	11	68.7	19.8	18.3	82.7	50.0	57.8	77.8	81.5	81.7
2017	6	75.5	10.6	59.1	87.5	59.1	71.2	74.2	86.8	87.5
2018	4	70.1	7.8	62.5	77.5	62.5	63.4	70.2	76.8	77.5
2019	2	36.5	7.3	31.3	41.7	31.3	31.3	36.5	41.7	41.7
1998-2019	146	67.2	15.0	18.3	95.3	47.2	58.5	68.3	79.2	83.9

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	3	1.3	1.3	1	0.7	0.7	2	2.3	2.3
20-24	4	1.8	3.1	3	2.2	2.9	1	1.2	3.5
25-29	7	3.1	6.3	7	5.1	8.0			3.5
30-34	4	1.8	8.0	3	2.2	10.1	1	1.2	4.7
35-39	3	1.3	9.4	3	2.2	12.3			4.7
40-44	6	2.7	12.1	3	2.2	14.5	3	3.5	8.1
45-49	7	3.1	15.2	5	3.6	18.1	2	2.3	10.5
50-54	15	6.7	21.9	9	6.5	24.6	6	7.0	17.4
55-59	20	8.9	30.8	12	8.7	33.3	8	9.3	26.7
60-64	23	10.3	41.1	11	8.0	41.3	12	14.0	40.7
65-69	27	12.1	53.1	18	13.0	54.3	9	10.5	51.2
70-74	31	13.8	67.0	18	13.0	67.4	13	15.1	66.3
75-79	33	14.7	81.7	17	12.3	79.7	16	18.6	84.9
80-84	22	9.8	91.5	13	9.4	89.1	9	10.5	95.3
85+	19	8.5	100.0	15	10.9	100.0	4	4.7	100.0
All ages	224	100.0		138	100.0		86	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=14 %	Females DCO rate n=6 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4								
5- 9								
10-14								
15-19	1	2	0.1	0.1			0.3	0.8
20-24	3	1	0.2	0.1			0.5	0.2
25-29	7		0.3				0.8	
30-34	3	1	0.1	0.0			0.3	0.1
35-39	3		0.1				0.2	
40-44	3	3	0.1	0.1			0.1	0.1
45-49	5	2	0.2	0.1			0.1	0.0
50-54	9	6	0.4	0.3			0.1	0.1
55-59	12	8	0.6	0.4			0.1	0.1
60-64	11	12	0.7	0.7		16.7	0.1	0.1
65-69	18	9	1.2	0.5	5.6		0.1	0.1
70-74	18	13	1.3	0.8	11.1		0.1	0.1
75-79	17	16	1.5	1.2	11.8	6.3	0.1	0.1
80-84	13	9	2.0	0.9	15.4	33.3	0.1	0.1
85+	15	4	3.5	0.4	46.7		0.2	0.0
All ages	138	86			10.1	7.0	0.1	0.1
Incidence								
Raw			0.5	0.3				
WS			0.3	0.1				
ES			0.4	0.2				
BRD-S			0.4	0.2				

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).

ICD-10 C38: Malignant neoplasm of heart, mediastinum and pleura

Age distribution and age-specific incidence 2007 - 2019 (Males: 138, Females: 86)

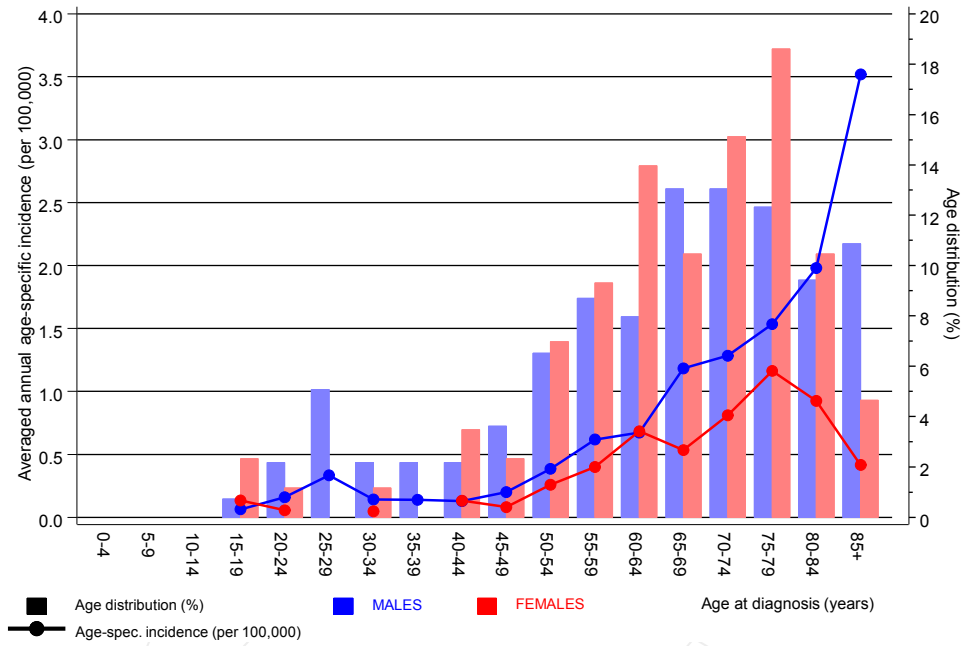


Figure 6. Age distribution (males: mean=65.0 yrs, median=67.2 yrs; females: mean=66.7 yrs, median=68.3 yrs) and age-specific incidence.

ICD-10 C38: Malignant neoplasm of heart, mediastinum and pleura

Age-specific incidence rates: international comparison

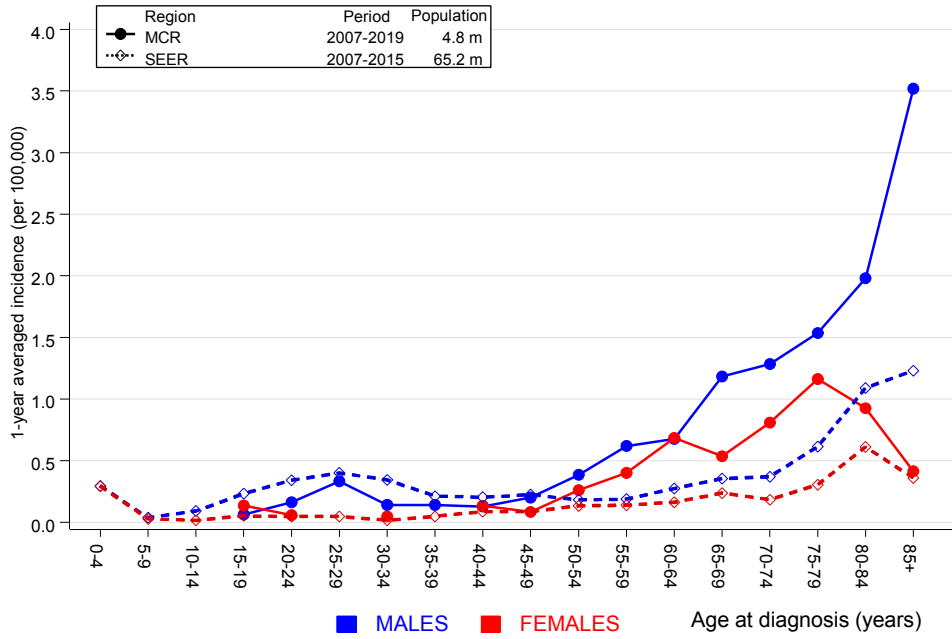


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 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 %
C18 Colon	2	0.3	6.6	0.8	23.8	58.6	100.0
C32 Larynx	1	0.0	30.3	0.8	169.0	33.4	100.0
C38,C45 Mesothelioma	1	0.0	48.4	1.2	269.7 #	33.8	
C61 Prostate	1	0.9	1.2	0.0	6.5	5.1	
C62 Testis	1	0.0	48.7	1.2	271.6 #	33.8	
C82-C85 NHL	1	0.1	7.4	0.2	41.4	29.9	100.0
C90 Mult. myeloma	1	0.0	24.9	0.6	138.8	33.2	
Not observed	0	1.8	0.0	0.0	2.1	-61.5	
All further malignancies	8	3.2	2.5	1.1	4.9 #	166.3	50.0
Patients		200					
Median age at next malignancy (years)		71.3					
Person-years		289					
Mean observation time (years)		1.4					
Median observation time (years)		0.5					

The occurrence of further specified malignancy is statistically significant.

Table 7b

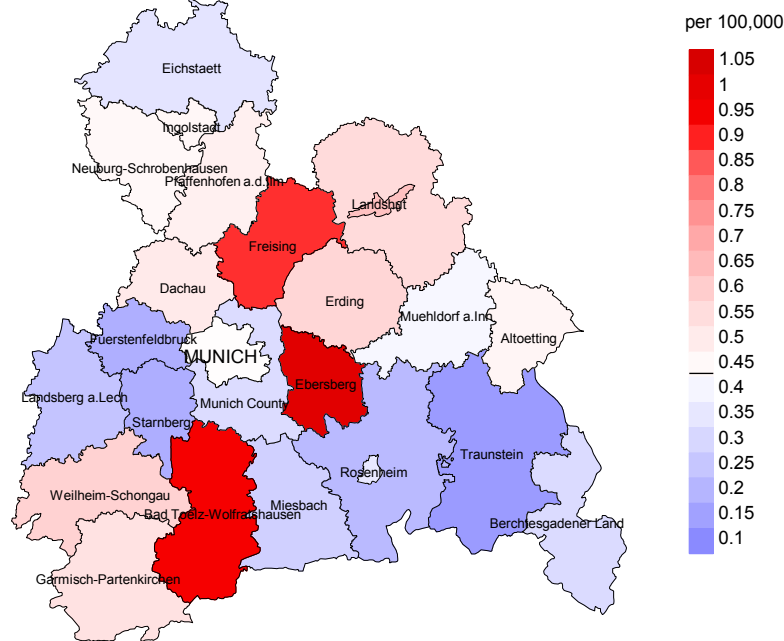
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C33-C34 Lung	1	0.2	6.6	0.2	36.8	45.0	
C43 Malign. melanoma	1	0.1	13.8	0.3	76.9	49.2	
C50 Breast	4	0.6	6.4	1.7	16.4 #	179.0	50.0
C81 Hodgkin lymphoma	1	0.0	283.2	7.2	1578 #	52.8	
Not observed	0	1.1	0.0	0.0	3.4	-57.0	
All further malignancies	7	1.9	3.6	1.5	7.5 #	269.0	28.6
Patients		134					
Median age at next malignancy (years)		80.8					
Person-years		189					
Mean observation time (years)		1.4					
Median observation time (years)		0.6					

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

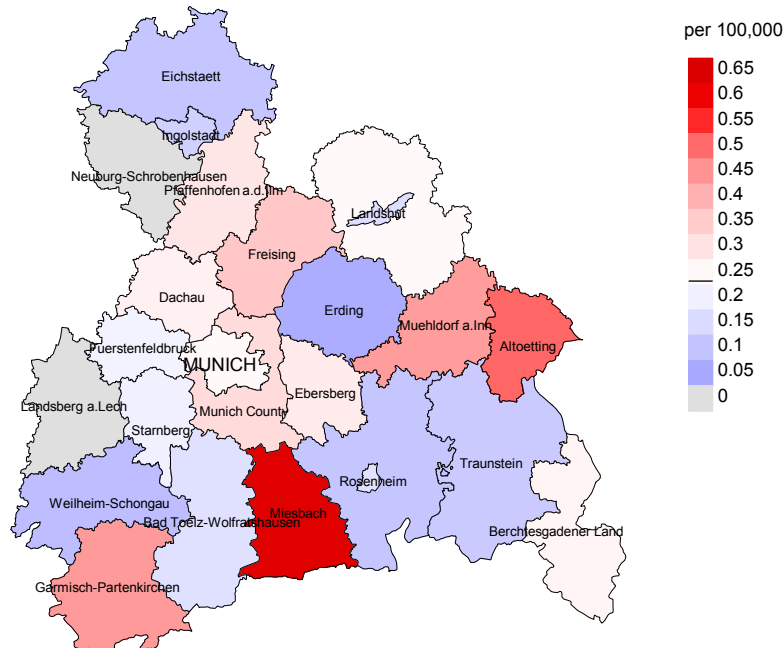
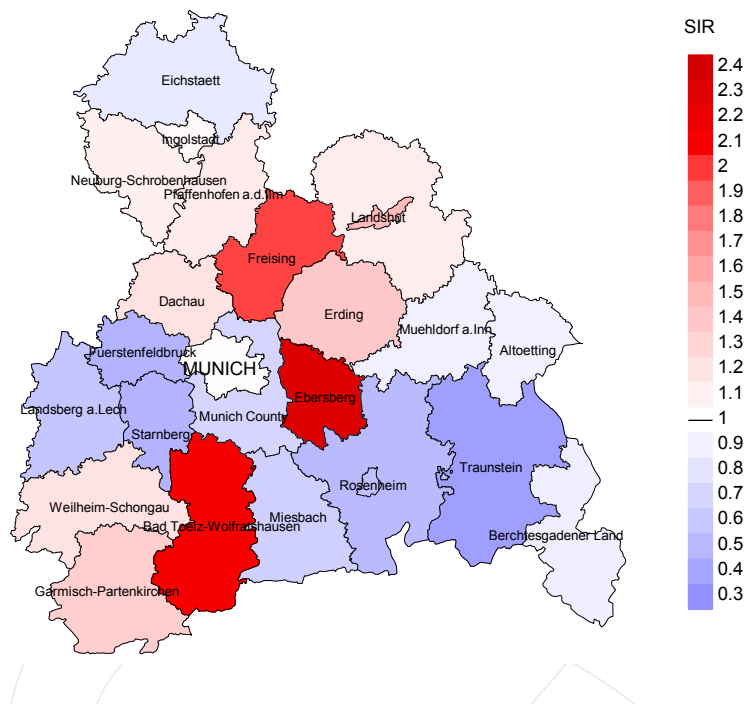


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.4/100,000 WS N=138, females 0.2/100,000 WS N=86).

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 3 women were identified with newly diagnosed heart, mediastinum and pleura. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.3/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.1/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

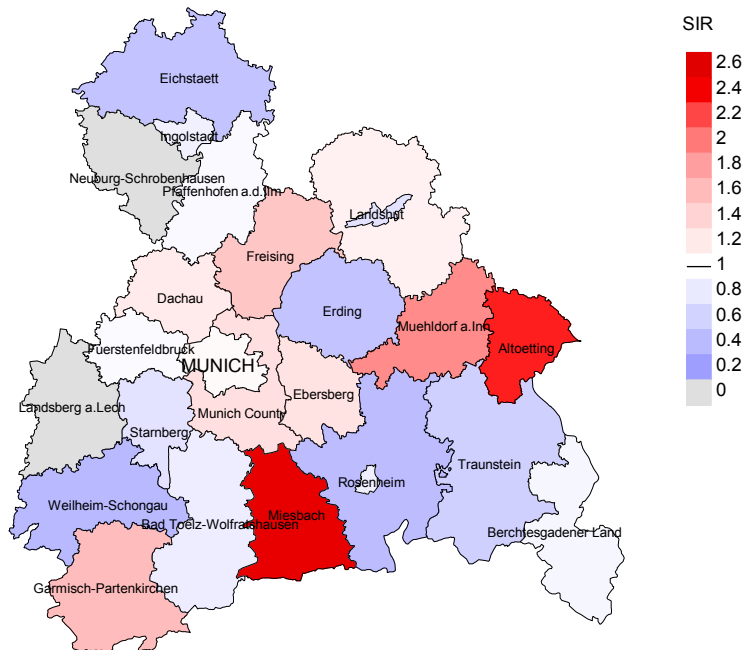


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=138, females N=86).

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 3 women were identified with newly diagnosed heart, mediastinum and pleura. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.27. Though, the value of this parameter may vary with an underlying probability of 99% between 0.14 and 4.63, 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	8	100.0	50.0	8	100.0	100.0
1999	11	100.0	45.5	11	100.0	90.9
2000	14	100.0	42.9	12	85.7	100.0
2001	10	100.0		10	100.0	90.0
2002	27	96.3	7.4	21	77.8	100.0
2003	23	100.0	17.4	22	95.7	100.0
2004	18	100.0	11.1	18	100.0	94.4
2005	18	100.0	5.6	17	94.4	94.1
2006	24	100.0	16.7	23	95.8	100.0
2007	21	95.2	14.3	19	90.5	94.7
2008	17	100.0		14	82.4	100.0
2009	20	100.0	5.0	15	75.0	100.0
2010	16	100.0	12.5	14	87.5	100.0
2011	17	100.0		15	88.2	93.3
2012	18	100.0	5.6	14	77.8	92.9
2013	26	100.0	11.5	24	92.3	95.8
2014	21	100.0	4.8	19	90.5	94.7
2015	21	100.0	33.3	20	95.2	95.0
2016	18	100.0	11.1	12	66.7	100.0
2017	12	100.0		8	66.7	75.0
2018	11	100.0		7	63.6	42.9
2019	6	100.0		2	33.3	100.0
1998-2019	377	99.5	12.7	325	86.2	95.1

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. %	Prop. deaths in same year	
				Deaths in same year n	Prop. deaths in same year %
1998	8	7	100.0	6	75.0
1999	11	5	100.0	4	36.4
2000	14	13	92.3	8	57.1
2001	10	13	100.0	5	50.0
2002	27	18	100.0	9	33.3
2003	23	24	100.0	11	47.8
2004	18	17	100.0	6	33.3
2005	18	16	93.8	9	50.0
2006	24	19	89.5	12	50.0
2007	21	23	100.0	14	66.7
2008	17	16	100.0	5	29.4
2009	20	13	100.0	5	25.0
2010	16	15	100.0	7	43.8
2011	17	17	100.0	7	41.2
2012	18	11	100.0	6	33.3
2013	26	22	95.5	13	50.0
2014	21	11	100.0	7	33.3
2015	21	21	100.0	13	61.9
2016	18	19	89.5	9	50.0
2017	12	17	100.0	6	50.0
2018	11	9	11.1	4	36.4
2019	6	4	25.0		
1998–2019	377	330	94.5	166	44.0

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	7	71.4	28.6	100.0
1999	5	60.0	40.0	100.0
2000	13	92.3	7.7	100.0
2001	13	92.3	7.7	100.0
2002	18	94.4	5.6	100.0
2003	24	91.7	8.3	95.8
2004	17	88.2	11.8	94.1
2005	16	87.5	12.5	93.3
2006	19	84.2	15.8	94.1
2007	23	100.0		95.7
2008	16	100.0		93.8
2009	13	92.3	7.7	100.0
2010	15	100.0		100.0
2011	17	94.1	5.9	94.1
2012	11	81.8	18.2	81.8
2013	22	90.9	9.1	90.5
2014	11	81.8	18.2	90.9
2015	21	90.5	9.5	90.5
2016	19	89.5	10.5	88.2
2017	17	88.2	11.8	94.1
2018	9	55.6	44.4	100.0
2019	4	100.0		100.0
1998–2019	330	89.7	10.3	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	5	59.8	57.6	76.4	59.8
1999	3	80.3	81.0	76.9	80.3
2000	8	66.7	66.7		66.7
2001	8	67.8	67.8		67.8
2002	9	79.0	77.6	79.0	79.0
2003	16	66.2	66.2	71.2	65.2
2004	12	69.8	69.3	78.3	69.8
2005	9	66.1	62.2	78.9	67.3
2006	13	67.7	67.7	67.7	67.7
2007	11	71.5	71.5		71.5
2008	14	66.5	66.5		66.1
2009	8	56.7	49.5	77.6	56.7
2010	6	62.6	62.6		62.6
2011	10	65.6	65.3	86.0	65.3
2012	8	78.6	80.8	73.4	80.8
2013	16	72.8	71.9	77.7	72.6
2014	6	78.4	81.6	64.4	78.4
2015	14	79.9	78.0	90.4	78.0
2016	11	76.7	77.1	74.0	77.1
2017	8	70.6	74.1	65.2	73.1
2018	6	65.2	57.5	68.6	
2019	2	61.2	61.2		
1998-2019	203	69.9	69.3	76.4	70.1

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 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	2	70.1	70.1		70.1
1999	2	61.7	84.8	38.6	61.7
2000	5	57.1	57.4	57.1	55.4
2001	5	62.6	61.7	88.8	62.6
2002	9	71.5	71.5		71.5
2003	8	70.4	70.4		70.4
2004	5	64.7	59.9	83.1	59.9
2005	7	72.9	71.2	80.6	71.2
2006	6	70.9	70.9		70.9
2007	12	78.0	78.0		76.2
2008	2	72.4	72.4		72.4
2009	5	72.2	72.2		72.2
2010	9	62.6	62.6		62.6
2011	7	74.1	74.1		74.1
2012	3	63.5	63.5		63.5
2013	6	74.8	74.8		74.8
2014	5	78.9	73.9	90.5	73.9
2015	7	73.4	70.3	73.4	70.3
2016	8	80.6	79.5	90.0	79.5
2017	9	75.8	75.8		75.8
2018	3	65.3	65.3	71.4	65.3
2019	2	75.3	75.3		74.6
1998-2019	127	73.4	72.9	79.3	72.2

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	3	0.3	0.75	0.2	0.79	0.2	0.73	0.2	0.59
1999	2	0.2	0.33	0.1	0.30	0.2	0.36	0.4	0.51
2000	8	0.7	1.00	0.4	1.03	0.6	1.01	0.8	0.91
2001	8	0.7	1.14	0.4	1.21	0.6	1.25	0.8	1.20
2002	8	0.4	0.50	0.2	0.34	0.3	0.42	0.5	0.52
2003	14	0.7	0.88	0.4	0.75	0.6	0.79	0.8	0.80
2004	11	0.6	0.85	0.4	0.90	0.5	0.89	0.6	0.89
2005	8	0.4	0.73	0.2	0.63	0.3	0.62	0.4	0.65
2006	10	0.5	0.83	0.3	0.96	0.4	0.93	0.5	0.85
2007	11	0.5	0.92	0.3	0.72	0.4	0.78	0.5	0.83
2008	14	0.6	1.75	0.4	2.00	0.5	1.94	0.6	1.96
2009	7	0.3	0.50	0.2	0.44	0.3	0.45	0.3	0.47
2010	6	0.3	0.67	0.2	0.55	0.2	0.63	0.2	0.62
2011	9	0.4	0.82	0.2	0.90	0.3	0.92	0.4	0.77
2012	6	0.3	0.46	0.1	0.32	0.2	0.38	0.3	0.48
2013	14	0.6	0.70	0.3	0.64	0.4	0.69	0.5	0.67
2014	5	0.2	0.42	0.1	0.31	0.1	0.37	0.2	0.40
2015	13	0.5	0.87	0.3	0.93	0.4	0.91	0.5	0.89
2016	10	0.4	1.43	0.2	1.30	0.3	1.38	0.4	1.35
2017	6	0.2	1.00	0.1	0.64	0.2	0.82	0.2	0.91
2018	4	0.2	0.57	0.1	0.64	0.1	0.60	0.2	0.57
2019	2	0.1	0.50	0.1	0.48	0.1	0.50	0.1	0.47
1998-2019	179	0.4	0.77	0.2	0.72	0.3	0.76	0.4	0.77

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	0.50	0.1	0.50	0.1	0.50	0.1	0.50
1999	1	0.1	0.20	0.0	0.07	0.0	0.11	0.1	0.24
2000	4	0.3	0.67	0.2	0.98	0.3	0.88	0.3	0.81
2001	4	0.3	1.33	0.2	0.95	0.2	1.01	0.2	1.10
2002	9	0.5	0.82	0.2	0.75	0.3	0.78	0.4	0.83
2003	8	0.4	1.14	0.2	1.14	0.2	1.09	0.3	1.11
2004	4	0.2	0.80	0.1	1.11	0.2	1.06	0.2	0.88
2005	6	0.3	0.86	0.1	0.85	0.2	0.85	0.2	0.81
2006	6	0.3	0.50	0.1	0.47	0.2	0.47	0.2	0.48
2007	12	0.5	1.33	0.2	1.00	0.3	1.17	0.4	1.18
2008	2	0.1	0.22	0.0	0.20	0.1	0.20	0.1	0.22
2009	5	0.2	0.83	0.1	0.64	0.1	0.66	0.2	0.77
2010	9	0.4	1.29	0.2	1.29	0.3	1.35	0.3	1.35
2011	7	0.3	1.17	0.1	0.81	0.2	0.89	0.2	1.10
2012	3	0.1	0.60	0.1	0.50	0.1	0.60	0.1	0.57
2013	6	0.3	1.00	0.1	0.87	0.1	0.91	0.2	0.99
2014	4	0.2	0.44	0.1	0.47	0.1	0.47	0.1	0.42
2015	6	0.2	1.00	0.1	0.81	0.2	0.83	0.2	0.97
2016	7	0.3	0.64	0.1	0.31	0.1	0.44	0.2	0.53
2017	9	0.4	1.50	0.1	1.39	0.2	1.38	0.3	1.53
2018	1	0.0	0.25	0.0	0.32	0.0	0.31	0.0	0.25
2019	2	0.1	1.00	0.0	0.35	0.0	0.50	0.1	0.78
1998-2019	117	0.3	0.80	0.1	0.70	0.2	0.74	0.2	0.77

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	1	0.6	0.6	1	0.9	0.9			0.0
20-24	2	1.1	1.7	2	1.9	2.8			0.0
25-29	0	0.0	1.7			2.8			0.0
30-34	0	0.0	1.7			2.8			0.0
35-39	1	0.6	2.2	1	0.9	3.7			0.0
40-44	3	1.7	3.9	2	1.9	5.6	1	1.4	1.4
45-49	8	4.4	8.3	5	4.7	10.3	3	4.1	5.5
50-54	11	6.1	14.4	8	7.5	17.8	3	4.1	9.6
55-59	14	7.8	22.2	9	8.4	26.2	5	6.8	16.4
60-64	18	10.0	32.2	9	8.4	34.6	9	12.3	28.8
65-69	22	12.2	44.4	14	13.1	47.7	8	11.0	39.7
70-74	28	15.6	60.0	16	15.0	62.6	12	16.4	56.2
75-79	30	16.7	76.7	15	14.0	76.6	15	20.5	76.7
80-84	20	11.1	87.8	10	9.3	86.0	10	13.7	90.4
85+	22	12.2	100.0	15	14.0	100.0	7	9.6	100.0
All ages	180	100.0		107	100.0		73	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. MI-index	Females Age- spec. mortal. MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4						
5- 9						
10-14						
15-19	1		0.1	1.00	2.1	
20-24	2		0.1	0.67	3.0	
25-29						
30-34						
35-39	1		0.0	0.33	0.4	
40-44	2	1	0.1	0.67	0.3	0.1
45-49	5	3	0.2	1.00	0.4	0.2
50-54	8	3	0.3	0.89	0.3	0.1
55-59	9	5	0.5	0.75	0.2	0.1
60-64	9	9	0.6	0.82	0.2	0.2
65-69	14	8	0.9	0.78	0.2	0.1
70-74	16	12	1.1	0.89	0.1	0.1
75-79	15	15	1.4	0.88	0.1	0.2
80-84	10	10	1.5	0.77	0.1	0.1
85+	15	7	3.5	1.00	0.2	0.1
All ages	107	73			0.2	0.1
Mortality						
Raw			0.4	0.78	0.2	0.85
WS			0.2	0.71	0.1	0.69
ES			0.3	0.75	0.1	0.75
BRD-S			0.3	0.76	0.2	0.79
PYLL-70						
per 100,000			2.6	1.1		
ES			2.4	0.9		
AYLL-70			13.8	10.3		

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 ←%
C15 Oesophagus	1	2.5	1	100.0				
C18 Colon	5	12.5	2	40.0	1	20.0	2	40.0
C19-C20 Rectum	1	2.5			1	100.0		
C25 Pancreas	2	5.0	1	50.0			1	50.0
C33-C34 Lung	2	5.0			1	50.0	1	50.0
C38,C45 Mesothelioma	2	5.0			1	50.0	1	50.0
C43 Malign. melanoma	2	5.0	2	100.0				
C44 Skin others	3	7.5	2	66.7			1	33.3
C60 Penis	1	2.5	1	100.0				
C61 Prostate	12	30.0	11	91.7	1	8.3		
C64 Kidney	2	5.0	2	100.0				
C67 Bladder	2	5.0	2	100.0				
C70-C72 CNS cancer	1	2.5	1	100.0				
C73 Thyroid	1	2.5	1	100.0				
C82-C85 NHL	3	7.5	2	66.7			1	33.3
All further malignancies	40	100.0	28	70.0	5	12.5	7	17.5

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

Table 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	1	2.5	1	100.0				
C12-C13 Hypopharynx	1	2.5	1	100.0				
C18 Colon	3	7.5	3	100.0				
C19-C20 Rectum	1	2.5	1	100.0				
C33-C34 Lung	2	5.0			1	50.0	1	50.0
C43 Malign. melanoma	3	7.5	2	66.7			1	33.3
C46,C49 Soft tissue	1	2.5	1	100.0				
C50 Breast	19	47.5	15	78.9	1	5.3	3	15.8
C54 Corpus uteri	1	2.5	1	100.0				
C56 Ovary	1	2.5	1	100.0				
C64 Kidney	1	2.5	1	100.0				
C65 Renal pelvis	1	2.5	1	100.0				
C70-C72 CNS cancer	1	2.5	1	100.0				
C81 Hodgkin lymphoma	1	2.5			1	100.0		
C82-C85 NHL	2	5.0	2	100.0				
C91-C96 Leukaemia	1	2.5	1	100.0				
All further malignancies	40	100.0	32	80.0	3	7.5	5	12.5

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

Table 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	1		0.1	1.00	2.2	
20-24	2		0.1	0.67	3.3	
25-29						
30-34						
35-39	1		0.0	0.50	0.4	
40-44	1		0.0	0.50	0.2	
45-49	5	3	0.2	1.25	0.4	0.2
50-54	7	2	0.3	0.78	0.3	0.1
55-59	7	3	0.4	0.78	0.2	0.1
60-64	9	7	0.6	0.90	0.2	0.2
65-69	13	7	0.9	0.76	0.2	0.1
70-74	14	6	1.0	0.88	0.2	0.1
75-79	10	13	0.9	1.11	0.1	0.2
80-84	8	5	1.2	0.80	0.1	0.1
85+	11	6	2.6	1.00	0.2	0.1
All ages	89	52			0.2	0.1
Mortality						
Raw			0.3	0.79		
WS			0.2	0.71		
ES			0.2	0.76		
BRD-S			0.3	0.78		
PYLL-70						
per 100,000			2.4			0.8
ES			2.2			0.6
AYLL-70			13.7			9.5

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males 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	1		0.1	1.00			2.2	
20-24	2		0.1	0.67			3.3	
25-29								
30-34								
35-39	1		0.0	0.50			0.4	
40-44	1		0.0	0.50			0.2	
45-49	5	3	0.2	1.25	0.1	1.50	0.4	0.2
50-54	7	2	0.3	0.78	0.1	0.40	0.3	0.1
55-59	7	3	0.4	0.78	0.2	0.60	0.2	0.1
60-64	8	7	0.5	0.80	0.4	0.70	0.2	0.2
65-69	12	6	0.8	0.75	0.4	0.75	0.2	0.1
70-74	13	6	0.9	1.00	0.4	1.00	0.2	0.1
75-79	10	13	0.9	1.11	0.9	1.08	0.1	0.2
80-84	7	5	1.1	0.70	0.5	0.83	0.1	0.1
85+	11	5	2.6	1.00	0.5	1.67	0.2	0.1
All ages	85	50					0.2	0.1
Mortality								
Raw			0.3	0.78	0.2	0.79		
WS			0.1	0.70	0.1	0.61		
ES			0.2	0.75	0.1	0.68		
BRD-S			0.3	0.76	0.1	0.74		
PYLL-70								
per 100,000			2.3		0.8			
ES			2.1		0.6			
AYLL-70			14.1		9.9			

* See corresponding tables with multiple malignancies.

ICD-10 C38: Malignant neoplasm of heart, mediastinum and pleura

Age distribution and age-specific mortality 2007 - 2019 (Males: 107, Females: 73)

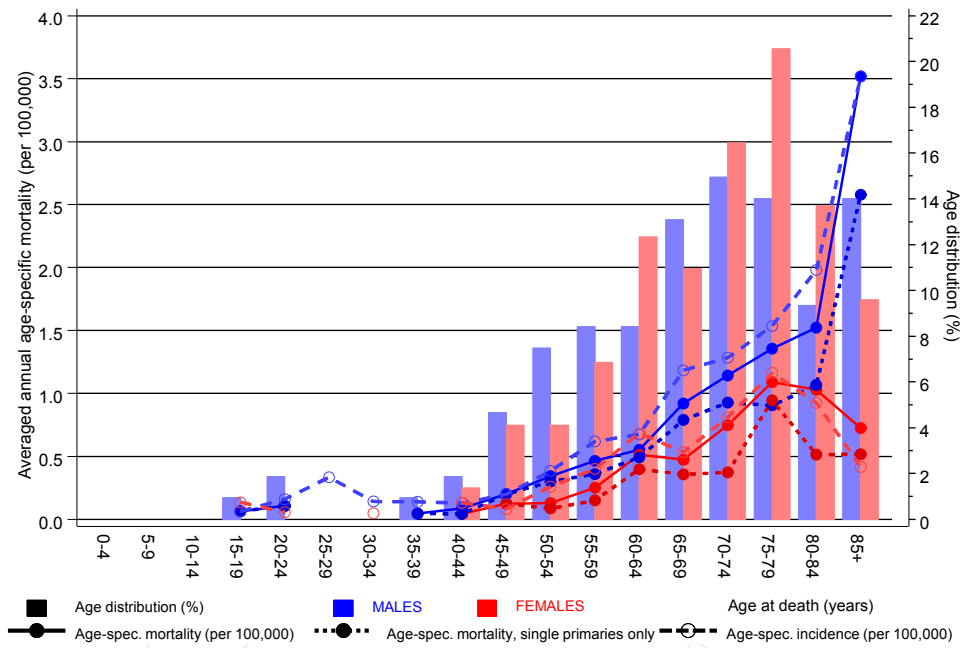
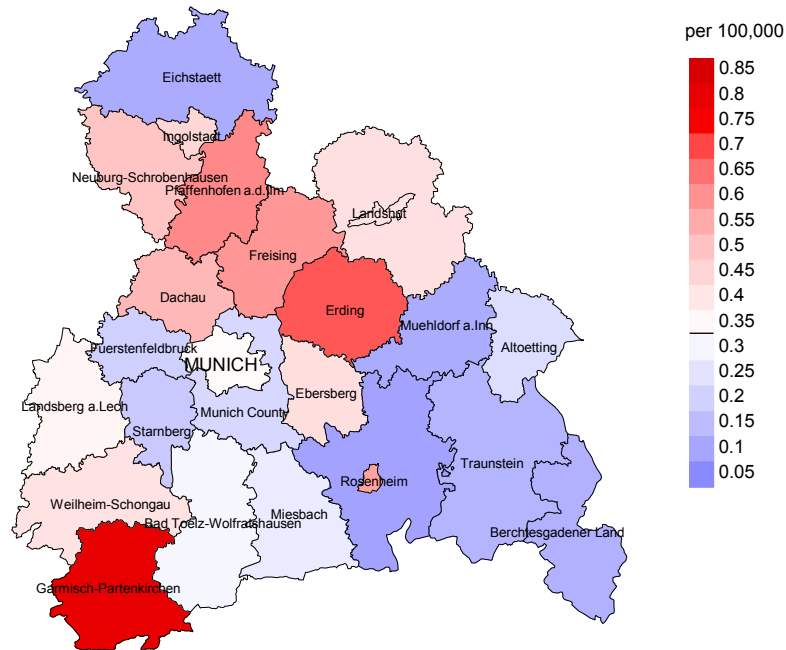


Figure 17. Distribution of age at death (bars; males: mean=67.0 yrs, median=68.7 yrs; females: mean=70.0 yrs, median=73.1 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at heart, mediastinum and pleura-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

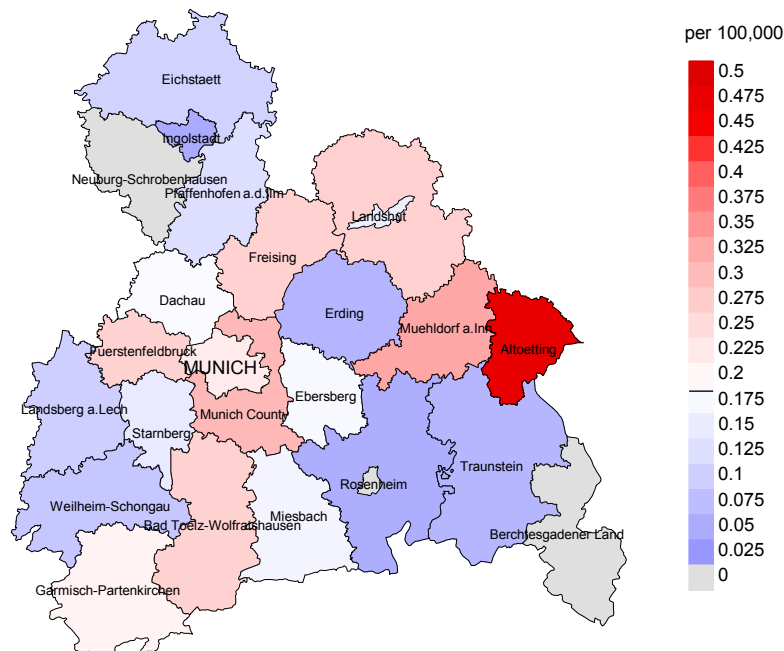
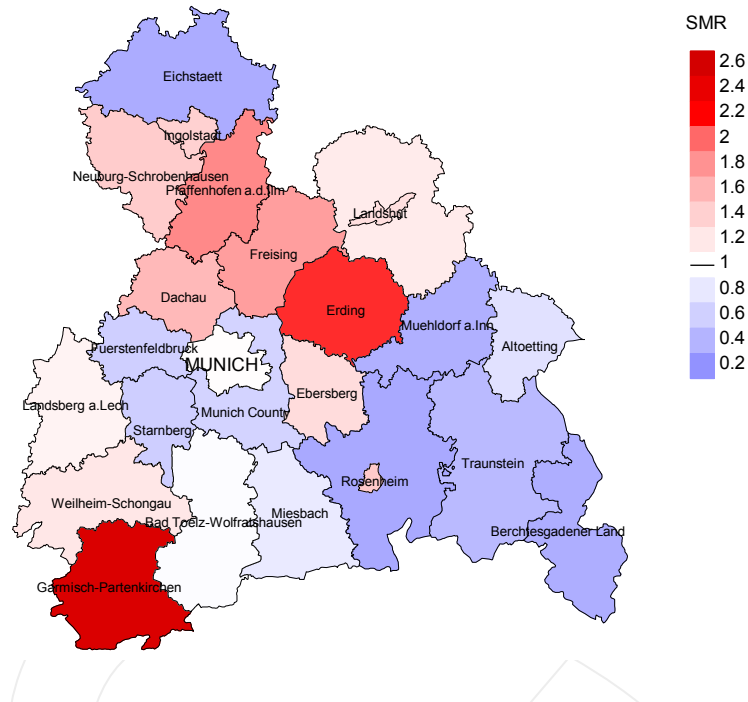


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.3/100,000 WS N=107, females 0.2/100,000 WS N=73).

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 2 women died from heart, mediastinum and pleura. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.9/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

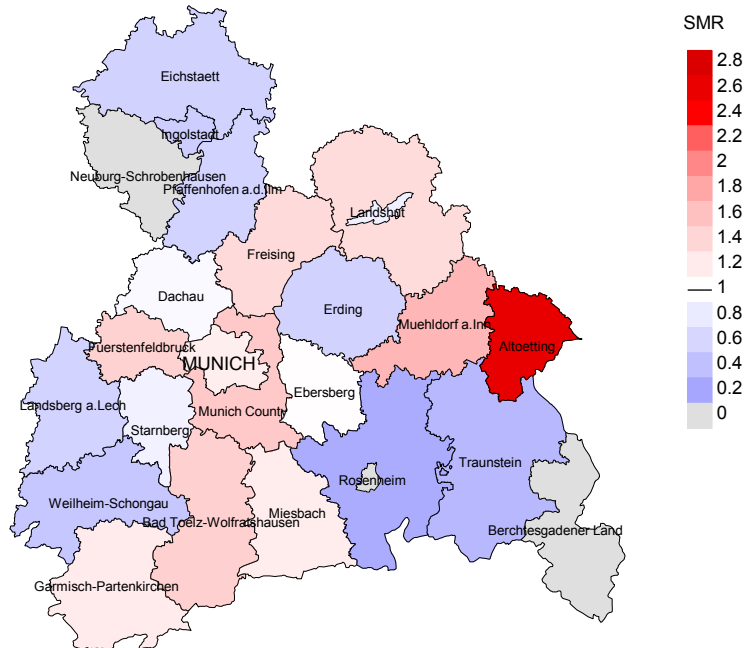


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=107, females N=73).

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 2 women died from heart, mediastinum and pleura. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.00. Though, the value of this parameter may vary with an underlying probability of 99% between 0.05 and 4.65, 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

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