

Munich Cancer Registry



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- ▶ *Deutsch*

ICD-10 C16: Stomach cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	16,067
Diseases	16,136
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/bC16__E-ICD-10-C16-Stomach-cancer-incidence-and-mortality.pdf

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

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

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

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

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

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

Munich Cancer Registry, 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
C16.-	Malignant neoplasm of stomach
C16.0	Cardia
C16.1	Fundus of stomach
C16.2	Body of stomach
C16.3	Pyloric antrum
C16.4	Pylorus
C16.5	Lesser curvature of stomach, unspecified
C16.6	Greater curvature of stomach, unspecified
C16.8	Overlapping lesion of stomach
C16.9	Stomach, 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	568	73	12.9	11.3	6.5	89.6	98.6
1999	510	67	13.1	12.0	6.5	89.4	97.8
2000	487	64	13.1	12.8	6.5	91.8	98.2
2001	518	69	13.3	12.5	6.5	86.1	97.3
2002	877	173	19.7	12.1	6.5	91.1	98.7 #
2003	765	105	13.7	12.6	6.4	88.8	98.7
2004	842	93	11.0	12.8	6.3	85.4	97.9
2005	773	94	12.2	13.2	6.2	86.2	97.4
2006	763	48	6.3	13.3	6.1	82.3	96.6
2007	881	83	9.4	13.9	5.9	81.2	94.9 #
2008	882	62	7.0	14.2	5.8	80.7	98.9
2009	868	71	8.2	14.5	5.6	78.3	98.7
2010	798	59	7.4	14.9	5.4	76.7	98.7
2011	866	48	5.5	15.1	5.2	75.5	98.3
2012	848	49	5.8	15.4	4.9	70.9	98.5
2013	792	48	6.1	15.8	4.7	67.0	97.7
2014	802	60	7.5	16.1	4.1	66.1	97.9
2015	789	55	7.0	16.2	3.7	64.1	94.4
2016	764	46	6.0	16.5	3.3	59.6	99.3
2017	711	38	5.3	16.9	2.8	50.2	99.2
2018	563	6	1.1	17.0	2.1	37.1	99.5
2019	469	2	0.4	17.2	1.5	27.9	78.5 ##
1998-2019	16136	1413	8.8	17.2	6.5	74.6	97.4

16,136 cases diagnosed 1998-2019 are related to a total of 16,067 patients. Currently, in 3,916 (24.4 %) of these 16,067 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,133 / 623 / 160 (19.5 % / 3.9 % / 1.0 %) 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 711 cases has been diagnosed, of which 16.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (MALES) (incl. DCO)

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	295	51.9	38	12.9	12.2	7.1	89.8	98.0
1999	262	51.4	28	10.7	12.4	7.1	87.4	97.7
2000	265	54.4	26	9.8	13.3	7.1	92.5	98.1
2001	262	50.6	29	11.1	12.6	7.0	84.4	97.3
2002	456	52.0	73	16.0	12.1	7.0	91.2	98.5 #
2003	406	53.1	46	11.3	12.8	6.9	89.4	99.0
2004	470	55.8	38	8.1	13.2	6.9	86.4	98.5
2005	412	53.3	41	10.0	13.7	6.7	87.1	97.6
2006	429	56.2	18	4.2	14.0	6.4	82.1	96.7
2007	497	56.4	34	6.8	14.7	6.2	81.3	95.4 #
2008	497	56.3	28	5.6	14.9	6.1	82.5	99.4
2009	504	58.1	31	6.2	15.1	5.8	79.2	98.6
2010	476	59.6	23	4.8	15.5	5.5	75.2	98.9
2011	522	60.3	21	4.0	16.0	5.4	76.2	98.5
2012	494	58.3	21	4.3	16.3	4.9	71.1	98.4
2013	476	60.1	21	4.4	16.7	4.5	66.2	98.7
2014	484	60.3	22	4.5	17.1	4.2	64.7	96.7
2015	493	62.5	31	6.3	17.1	3.8	63.9	95.9
2016	446	58.4	24	5.4	17.4	3.3	60.1	99.3
2017	433	60.9	21	4.8	17.9	2.7	52.2	99.1
2018	342	60.7	2	0.6	18.1	2.3	37.4	99.4
2019	299	63.8	1	0.3	18.2	1.4	26.4	79.6 ##
1998-2019	9220	57.1	617	6.7	18.2	7.1	74.0	97.5

9,220 cases diagnosed 1998-2019 are related to a total of 9,177 patients. Currently, in 2,368 (25.8 %) of these 9,177 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,871 / 390 / 107 (20.4 % / 4.2 % / 1.2 %) 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 433 cases has been diagnosed, of which 17.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.7 % 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	273	48.1	35	12.8	10.3	5.8	89.4	99.3
1999	248	48.6	39	15.7	11.5	5.7	91.5	98.0
2000	222	45.6	38	17.1	12.4	5.8	91.0	98.2
2001	256	49.4	40	15.6	12.4	5.8	87.9	97.3
2002	421	48.0	100	23.8	12.0	5.8	91.0	99.0 #
2003	359	46.9	59	16.4	12.3	5.6	88.0	98.3
2004	372	44.2	55	14.8	12.4	5.6	84.1	97.0
2005	361	46.7	53	14.7	12.6	5.6	85.0	97.2
2006	334	43.8	30	9.0	12.5	5.6	82.6	96.4
2007	384	43.6	49	12.8	12.9	5.4	81.0	94.3 #
2008	385	43.7	34	8.8	13.4	5.3	78.4	98.2
2009	364	41.9	40	11.0	13.6	5.1	77.2	98.9
2010	322	40.4	36	11.2	14.1	5.1	78.9	98.4
2011	344	39.7	27	7.8	14.1	5.0	74.4	98.0
2012	354	41.7	28	7.9	14.4	4.8	70.6	98.6
2013	316	39.9	27	8.5	14.5	4.8	68.4	96.2
2014	318	39.7	38	11.9	14.9	3.9	68.2	99.7
2015	296	37.5	24	8.1	15.1	3.6	64.5	91.9
2016	318	41.6	22	6.9	15.3	3.1	58.8	99.4
2017	278	39.1	17	6.1	15.6	2.9	47.1	99.3
2018	221	39.3	4	1.8	15.6	1.8	36.7	99.5
2019	170	36.2	1	0.6	15.8	1.8	30.6	76.5 ##
1998-2019	6916	42.9	796	11.5	15.8	5.8	75.5	97.2

6,916 cases diagnosed 1998-2019 are related to a total of 6,890 patients. Currently, in 1,548 (22.5 %) of these 6,890 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,262 / 233 / 53 (18.3 % / 3.4 % / 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 278 cases has been diagnosed, of which 15.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.9 % 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 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	295	273	26.6	23.2	15.7	9.0	24.7	14.0	33.7	19.2
1999	262	248	23.4	20.9	13.5	7.8	21.3	12.0	29.3	16.7
2000	265	222	23.3	18.5	13.6	6.8	21.0	10.8	28.1	15.1
2001	262	256	22.6	21.0	13.1	8.6	20.1	13.0	26.7	17.1
2002	456	421	24.5	21.5	13.2	8.2	20.8	12.6	28.3	16.9
2003	406	359	21.7	18.2	11.6	6.6	18.1	10.4	24.5	14.1
2004	470	372	25.0	18.8	13.1	7.9	20.3	11.8	27.5	15.3
2005	412	361	21.8	18.1	10.9	6.9	17.1	10.5	23.6	14.1
2006	429	334	22.4	16.6	11.3	6.3	17.4	9.6	23.4	12.8
2007	497	384	22.4	16.6	11.2	5.9	17.2	9.1	23.4	12.4
2008	497	385	22.3	16.6	11.1	6.3	16.8	9.6	22.3	12.7
2009	504	364	22.6	15.7	10.8	5.8	16.7	8.9	22.2	11.8
2010	476	322	21.1	13.8	10.5	5.0	15.7	7.7	20.3	10.3
2011	522	344	23.3	14.7	11.0	5.5	16.8	8.4	22.1	10.9
2012	494	354	21.8	15.0	10.6	5.8	15.9	8.6	20.3	11.1
2013	476	316	20.7	13.3	9.7	5.1	14.6	7.6	19.0	9.8
2014	484	318	20.8	13.2	9.7	5.1	14.6	7.5	18.8	9.5
2015	493	296	20.7	12.2	9.9	4.4	14.8	6.7	18.7	8.7
2016	446	318	18.6	13.0	8.7	5.0	13.0	7.5	16.7	9.6
2017	433	278	17.9	11.3	8.2	4.6	12.3	6.7	15.8	8.4
2018	342	221	14.0	8.9	6.9	3.6	10.0	5.3	12.5	6.7
2019	299	170	12.3	6.8	5.9	2.8	8.6	4.1	10.9	5.2
1998-2019	9220	6916	20.9	15.1	10.3	5.7	15.5	8.6	20.4	11.4

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

Table 3

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	568	72.3	13.1	30.9	98.1	52.3	64.3	74.5	82.4	87.5
1999	510	73.2	13.2	18.8	99.9	56.5	64.5	75.1	83.1	88.4
2000	487	72.3	13.2	28.8	98.7	53.6	63.9	74.7	81.1	88.4
2001	518	71.3	13.7	14.5	96.8	53.6	62.8	73.1	81.2	88.3
2002	877	72.9	12.8	19.3	102	55.5	65.0	74.7	81.9	88.6
2003	765	72.9	12.6	17.9	98.5	56.2	64.7	74.9	82.5	87.5
2004	842	70.9	12.6	28.0	98.8	52.9	62.7	72.6	80.8	85.4
2005	773	72.7	13.1	20.3	99.3	55.2	65.1	74.5	82.2	86.8
2006	763	72.1	13.0	21.9	99.1	55.3	63.3	73.7	81.8	86.8
2007	881	72.7	12.9	27.8	101	54.6	65.4	74.5	82.3	87.4
2008	882	71.8	12.8	24.2	101	53.8	64.1	73.1	81.2	86.3
2009	868	72.0	12.8	31.1	102	53.5	64.6	73.7	81.5	87.2
2010	798	71.7	12.7	24.4	103	54.7	63.2	72.6	81.7	87.2
2011	866	71.9	12.9	18.9	98.3	53.8	64.5	73.3	81.3	87.7
2012	848	71.2	13.1	27.0	99.4	53.0	63.0	72.4	81.3	87.0
2013	792	71.2	13.3	16.2	99.5	52.9	63.2	73.4	80.5	87.3
2014	802	71.3	13.8	0.4	100	51.9	62.6	73.6	81.6	87.6
2015	789	71.7	13.0	26.0	100	53.8	63.4	73.4	81.2	87.7
2016	764	71.1	12.9	27.0	96.6	53.1	63.1	73.0	80.5	86.4
2017	711	71.1	12.9	22.8	96.1	53.6	62.6	73.5	80.1	86.5
2018	563	69.6	12.9	30.4	96.4	51.5	60.9	71.4	78.7	84.3
2019	469	69.6	12.5	32.0	95.9	52.5	60.9	71.8	79.4	84.4
1998-2019	16136	71.7	13.0	0.4	103	53.8	63.6	73.5	81.3	87.2

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median				
						10%	25%	50%	75%	90%
1998	295	70.2	13.1	32.1	94.1	50.0	60.5	72.3	79.2	87.1
1999	262	70.9	12.6	29.8	97.4	54.7	63.3	71.7	79.5	86.5
2000	265	69.9	12.8	28.8	97.2	53.3	62.2	71.2	78.3	86.7
2001	262	68.7	13.1	14.5	96.8	53.0	60.8	70.2	78.4	84.6
2002	456	71.2	11.9	32.8	95.8	55.5	63.6	72.6	79.3	85.8
2003	406	70.5	12.4	17.9	97.8	53.5	62.7	72.2	79.8	85.7
2004	470	70.2	11.9	33.1	97.4	53.7	62.5	71.3	78.9	84.5
2005	412	71.3	12.6	29.8	96.5	54.4	64.3	73.1	80.5	85.2
2006	429	70.2	12.2	29.5	99.1	54.9	62.4	71.6	79.1	84.3
2007	497	70.6	12.2	35.3	99.0	52.7	63.4	71.8	80.1	85.2
2008	497	70.0	11.8	24.2	99.5	54.0	63.5	71.2	78.4	83.7
2009	504	70.8	11.7	31.1	102	54.1	63.7	72.3	79.0	85.0
2010	476	69.9	11.9	24.4	96.4	54.7	61.0	70.1	79.9	84.2
2011	522	70.8	12.5	18.9	94.7	53.6	63.4	72.6	80.1	85.5
2012	494	70.0	12.5	27.0	99.4	53.3	61.5	70.8	79.3	85.0
2013	476	70.3	12.8	20.9	99.1	53.2	62.9	72.8	78.7	85.4
2014	484	70.0	12.8	30.9	97.7	52.3	61.1	72.2	78.9	85.0
2015	493	70.1	12.4	32.1	96.0	52.9	61.9	70.9	79.5	85.9
2016	446	70.5	12.4	27.0	96.6	53.4	62.9	71.7	79.5	85.3
2017	433	71.0	12.2	35.2	95.5	53.8	62.4	73.0	79.3	85.9
2018	342	68.6	12.2	30.4	96.4	51.5	60.3	69.9	78.1	82.7
2019	299	69.4	12.0	34.5	94.6	53.2	60.4	71.3	78.8	83.9
1998-2019	9220	70.3	12.3	14.5	102	53.5	62.5	71.8	79.2	85.1

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	273	74.5	12.7	30.9	98.1	56.5	68.2	76.5	84.2	88.0
1999	248	75.7	13.4	18.8	99.9	59.4	68.6	78.5	85.4	89.8
2000	222	75.2	13.1	33.1	98.7	55.3	68.4	78.4	84.4	89.9
2001	256	74.0	13.8	26.4	96.7	54.4	65.5	75.8	84.0	90.7
2002	421	74.7	13.4	19.3	102	55.6	67.5	77.3	84.4	89.6
2003	359	75.7	12.3	30.3	98.5	59.7	68.4	77.8	83.9	89.6
2004	372	71.8	13.5	28.0	98.8	52.2	63.2	74.5	82.5	87.0
2005	361	74.4	13.4	20.3	99.3	56.6	65.7	77.3	83.8	90.8
2006	334	74.4	13.6	21.9	98.3	56.5	65.6	77.1	84.7	88.5
2007	384	75.3	13.3	27.8	101	56.7	68.3	78.1	85.4	88.7
2008	385	74.1	13.7	35.1	101	53.6	65.9	77.1	84.4	88.5
2009	364	73.6	14.1	32.6	101	51.6	66.1	77.2	84.6	88.4
2010	322	74.3	13.5	26.6	103	54.8	67.1	77.4	83.9	88.8
2011	344	73.4	13.3	28.6	98.3	54.0	66.8	74.6	82.6	89.6
2012	354	72.8	13.7	29.6	99.3	52.6	64.6	74.0	83.5	88.2
2013	316	72.6	14.1	16.2	99.5	52.8	64.0	74.8	82.9	89.3
2014	318	73.4	15.1	0.4	100	51.1	65.1	75.5	84.9	89.6
2015	296	74.2	13.5	26.0	100	56.2	67.2	75.9	84.5	89.3
2016	318	72.0	13.6	30.2	96.6	51.4	63.5	74.9	81.8	87.8
2017	278	71.4	13.9	22.8	96.1	53.0	63.2	73.9	81.5	87.8
2018	221	71.0	13.7	31.7	94.4	51.5	62.3	73.8	80.7	87.1
2019	170	70.1	13.4	32.0	95.9	51.2	61.7	73.8	79.8	85.2
1998-2019	6916	73.7	13.6	0.4	103	54.2	65.7	76.1	83.8	89.0

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	1	0.0	0.0			0.0	1	0.0	0.0
5-9	0	0.0	0.0			0.0			0.0
10-14	0	0.0	0.0			0.0			0.0
15-19	2	0.0	0.0	1	0.0	0.0	1	0.0	0.0
20-24	4	0.0	0.1	3	0.1	0.1	1	0.0	0.1
25-29	16	0.2	0.2	7	0.1	0.2	9	0.2	0.3
30-34	56	0.6	0.8	21	0.4	0.5	35	0.9	1.2
35-39	102	1.0	1.8	53	0.9	1.4	49	1.2	2.4
40-44	164	1.6	3.4	99	1.7	3.1	65	1.6	4.0
45-49	337	3.4	6.8	207	3.5	6.6	130	3.2	7.1
50-54	545	5.4	12.2	344	5.8	12.3	201	4.9	12.1
55-59	714	7.1	19.3	484	8.1	20.4	230	5.7	17.7
60-64	876	8.7	28.1	604	10.1	30.6	272	6.7	24.4
65-69	1241	12.4	40.4	835	14.0	44.6	406	10.0	34.4
70-74	1553	15.5	55.9	986	16.5	61.1	567	13.9	48.3
75-79	1622	16.2	72.1	973	16.3	77.4	649	15.9	64.3
80-84	1366	13.6	85.7	756	12.7	90.1	610	15.0	79.3
85+	1434	14.3	100.0	590	9.9	100.0	844	20.7	100.0
All ages	10033	100.0		5963	100.0		4070	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=279 %	Females DCO rate n=347 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4		1		0.1		100.0		0.6
5- 9								
10-14								
15-19	1	1	0.1	0.1			0.3	0.4
20-24	3	1	0.2	0.1	33.3		0.5	0.2
25-29	7	9	0.3	0.4			0.8	0.8
30-34	21	35	1.0	1.7			1.8	1.8
35-39	53	49	2.5	2.3		2.0	3.1	1.5
40-44	99	65	4.2	2.9		1.5	3.8	1.1
45-49	207	130	8.2	5.3			4.3	1.5
50-54	344	201	14.7	8.7	1.2	3.0	4.4	1.7
55-59	483	229	24.8	11.5	0.8	1.3	4.1	1.9
60-64	602	270	36.9	15.4	2.5	1.9	3.7	1.9
65-69	829	404	54.5	24.0	2.4	3.2	3.6	2.3
70-74	982	564	70.1	35.1	3.0	3.5	3.8	3.0
75-79	966	646	87.3	46.9	4.1	5.6	4.4	3.6
80-84	753	609	114.7	62.6	7.6	9.5	5.3	4.3
85+	588	842	137.9	87.2	18.5	24.1	6.0	5.4
All ages	5938	4056			4.7	8.6	4.2	2.8
Incidence								
Raw			19.7	13.0				
WS			9.4	4.9				
ES			14.1	7.4				
BRD-S			18.2	9.6				

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).

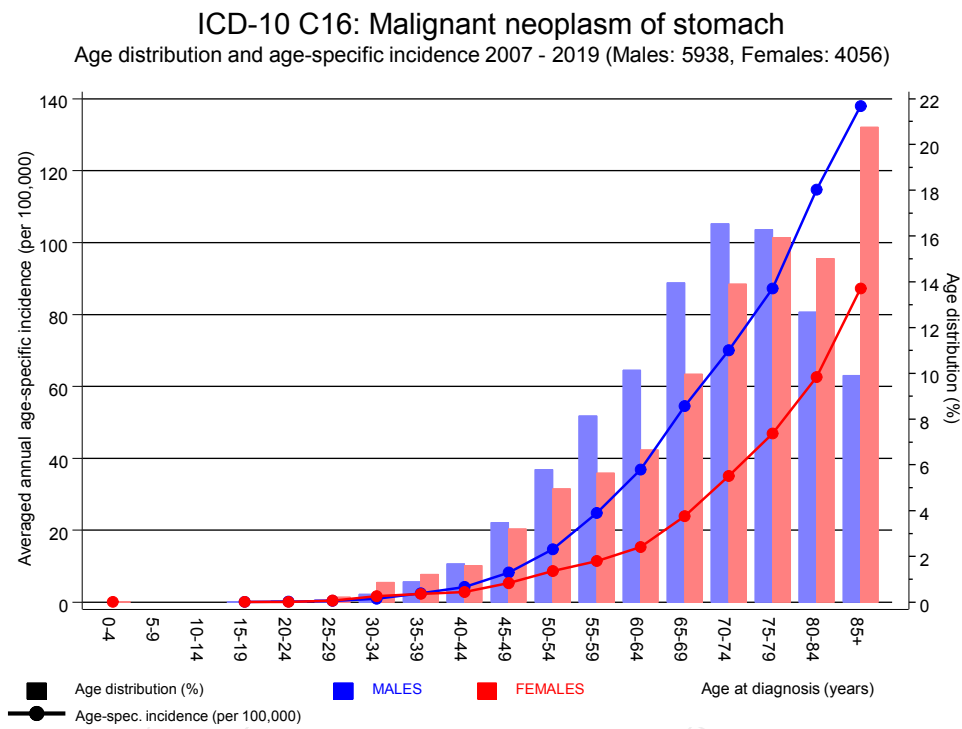


Figure 6. Age distribution (males: mean=70.2 yrs, median=71.8 yrs; females: mean=73.2 yrs, median=75.6 yrs) and age-specific incidence.

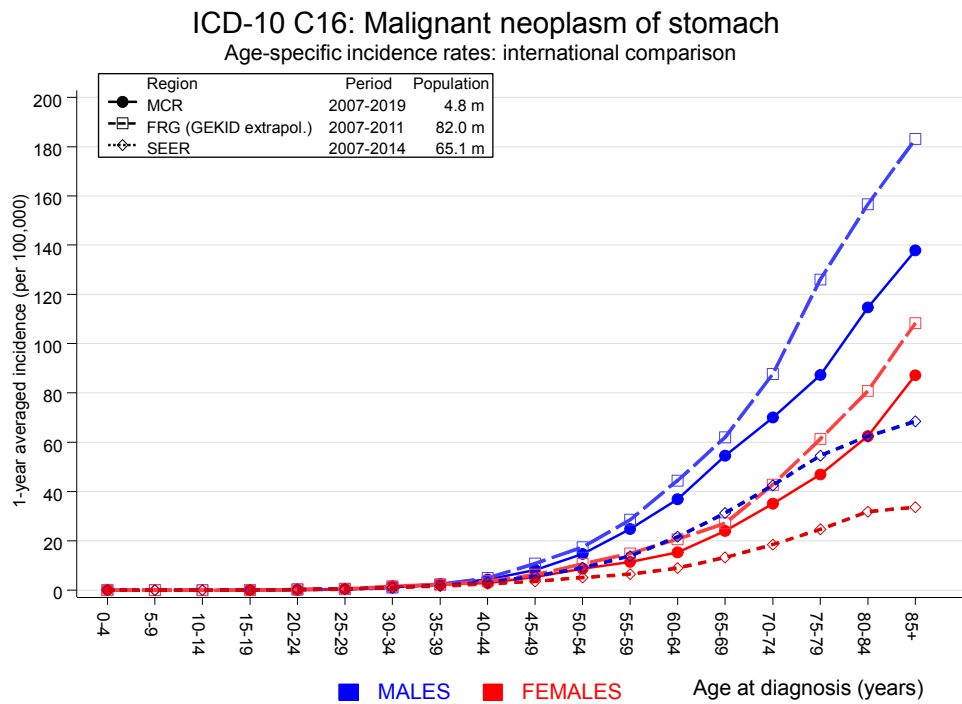


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. <http://www.gekid.de>. Last access: 02/11/2015
 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 %
C07-C08 Salivary gland	2	0.8	2.5	0.3	9.0	0.6	
C09-C10 Oropharynx	6	3.0	2.0	0.7	4.3	1.6	
C14 ENT cancer	2	0.1	21.6	2.6	77.9 #	1.0	50.0
C15 Oesophagus	34	6.2	5.5	3.8	7.7 #	14.6	2.9
C16 Stomach	37	14.7	2.5	1.8	3.5 #	11.7	5.4
C17 Small intestine	25	1.9	12.9	8.4	19.1 #	12.1	
C18 Colon	124	34.8	3.6	3.0	4.2 #	46.8	10.5
C19-C20 Rectum	50	17.8	2.8	2.1	3.7 #	16.9	4.0
C21 Anus/canal	3	0.8	3.9	0.8	11.5	1.2	33.3
C22 Liver	30	9.6	3.1	2.1	4.4 #	10.7	20.0
C23-C24 Bile	11	3.7	3.0	1.5	5.4 #	3.8	18.2
C25 Pancreas	60	13.5	4.5	3.4	5.7 #	24.4	20.0
C26 GI cancer	2	0.5	4.3	0.5	15.5	0.8	50.0
C32 Larynx	6	3.2	1.9	0.7	4.1	1.5	33.3
C33-C34 Lung	118	39.8	3.0	2.5	3.5 #	41.0	15.3
C38,C45 Mesothelioma	7	2.3	3.0	1.2	6.2 #	2.5	
C43 Malign. melanoma	18	14.3	1.3	0.7	2.0	1.9	
C50 Breast	2	0.9	2.2	0.3	7.8	0.6	50.0
C61 Prostate	143	96.8	1.5	1.2	1.7 #	24.3	18.9
C62 Testis	2	0.7	2.7	0.3	9.9	0.7	
C64 Kidney	39	11.4	3.4	2.4	4.7 #	14.5	17.9
C65 Renal pelvis	7	1.6	4.5	1.8	9.2 #	2.9	
C67 Bladder	36	17.2	2.1	1.5	2.9 #	9.9	13.9
C68 Urethra	2	0.3	6.5	0.8	23.5	0.9	
C69 Eye carcinoma	2	0.1	14.2	1.7	51.3 #	1.0	
C70-C72 CNS cancer	8	4.2	1.9	0.8	3.8	2.0	37.5
C73 Thyroid	5	2.0	2.6	0.8	6.0	1.6	
C76-C79 CUP	7	6.1	1.2	0.5	2.4	0.5	
C81 Hodgkin lymphoma	6	0.7	8.3	3.1	18.1 #	2.8	16.7
C82-C85 NHL	31	14.7	2.1	1.4	3.0 #	8.5	6.5
C90 Mult. myeloma	7	4.6	1.5	0.6	3.1	1.2	28.6
C91-C96 Leukaemia	9	5.5	1.6	0.7	3.1	1.8	33.3
Others, specified	9	6.1	1.5	0.7	2.8	1.5	11.1
Not observed	0	5.6	0.0	0.0	0.7 #	-3.0	
All further malignancies	850	345.6	2.5	2.3	2.6 #	264.7	13.3
Patients		8550					
Median age at next malignancy (years)		75.1					
Person-years		19056					
Mean observation time (years)		2.2					
Median observation time (years)		0.9					

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 are pooled in category "Others, specified".

Table 7b

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

FEMALES

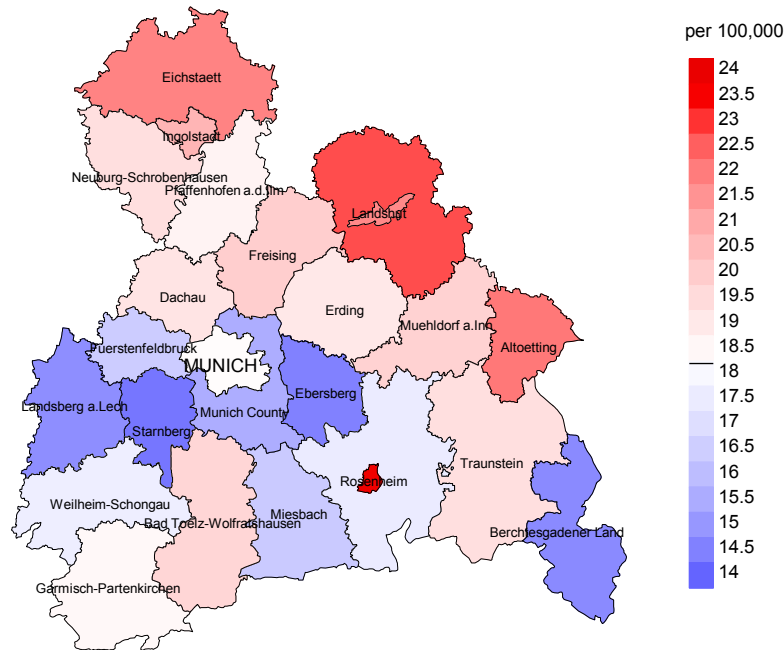
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	2	1.0	2.1	0.2	7.4	0.7	
C09-C10 Oropharynx	2	0.6	3.4	0.4	12.3	1.0	
C15 Oesophagus	2	1.1	1.8	0.2	6.7	0.7	
C16 Stomach	25	7.4	3.4	2.2	5.0 #	12.7	8.0
C17 Small intestine	7	0.9	8.1	3.2	16.7 #	4.4	
C18 Colon	78	20.2	3.9	3.0	4.8 #	41.8	15.4
C19-C20 Rectum	24	7.9	3.0	2.0	4.5 #	11.7	12.5
C21 Anus/canal	2	0.9	2.1	0.3	7.6	0.8	
C22 Liver	10	2.4	4.2	2.0	7.8 #	5.5	20.0
C23-C24 Bile	4	3.0	1.3	0.4	3.4	0.7	25.0
C25 Pancreas	43	9.3	4.6	3.3	6.2 #	24.4	39.5
C26 GI cancer	3	0.4	6.7	1.4	19.7 #	1.8	66.7
C30-C31 Sinuses	2	0.3	7.8	0.9	28.0	1.3	
C33-C34 Lung	43	12.6	3.4	2.5	4.6 #	22.0	7.0
C43 Malign. melanoma	11	6.1	1.8	0.9	3.2	3.5	
C46,C49 Soft tissue	2	1.0	1.9	0.2	7.0	0.7	
C48 Peritoneal	3	0.6	4.7	1.0	13.8	1.7	66.7
C50 Breast	111	49.8	2.2	1.8	2.7 #	44.2	16.2
C51 Vulva	4	2.1	1.9	0.5	4.9	1.4	
C53 Cervix uteri	3	2.1	1.5	0.3	4.2	0.7	33.3
C54 Corpus uteri	12	9.3	1.3	0.7	2.2	1.9	
C56 Ovary	21	7.2	2.9	1.8	4.5 #	10.0	28.6
C64 Kidney	19	4.4	4.3	2.6	6.7 #	10.6	31.6
C65 Renal pelvis	2	0.6	3.3	0.4	12.0	1.0	
C67 Bladder	12	4.2	2.9	1.5	5.0 #	5.7	16.7
C73 Thyroid	9	2.3	3.9	1.8	7.5 #	4.9	
C76-C79 CUP	2	3.9	0.5	0.1	1.8	-1.4	50.0
C82-C85 NHL	19	7.4	2.6	1.5	4.0 #	8.4	10.5
C90 Mult. myeloma	6	2.4	2.5	0.9	5.4	2.6	16.7
C91-C96 Leukaemia	6	2.9	2.1	0.8	4.6	2.3	50.0
Others, specified	10	5.1	1.9	0.9	3.6	3.5	30.0
Not observed	0	1.9	0.0	0.0	2.0	-1.4	
All further malignancies	499	181.4	2.8	2.5	3.0 #	229.7	17.4

Patients	6212
Median age at next malignancy (years)	76.6
Person-years	13828
Mean observation time (years)	2.2
Median observation time (years)	0.8

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 are pooled in category "Others, specified".

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



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

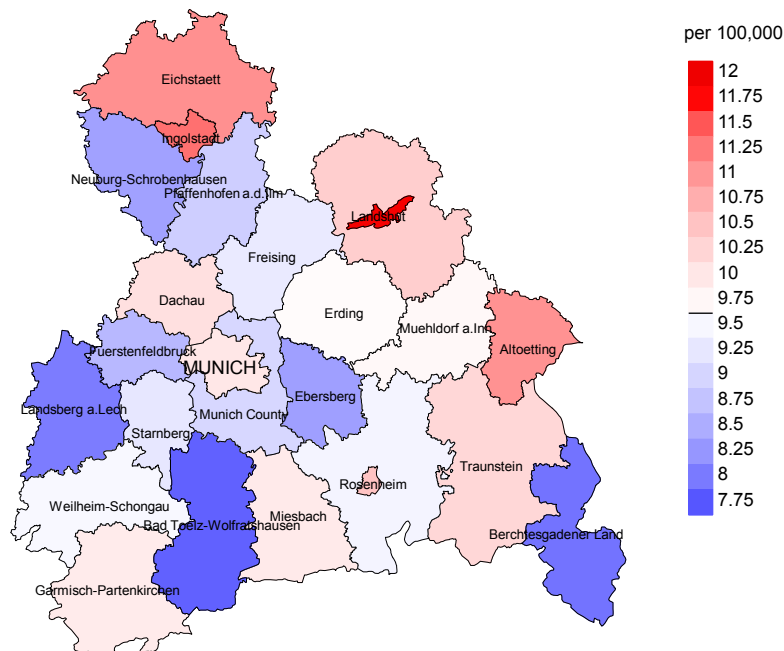
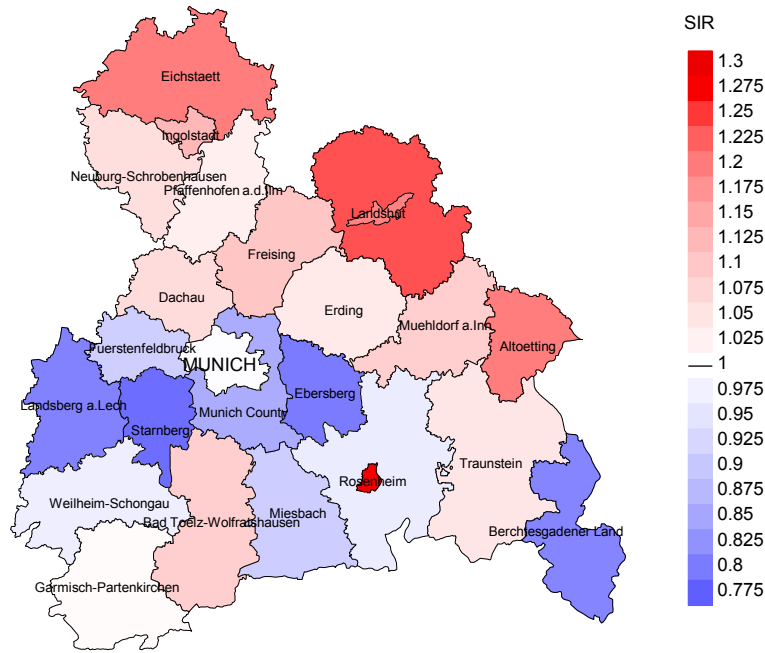


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 18.2/100,000 WS N=5,938, females 9.6/100,000 WS N=4,056).

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 96 women were identified with newly diagnosed stomach cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.3/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 6.3 and 10.9/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

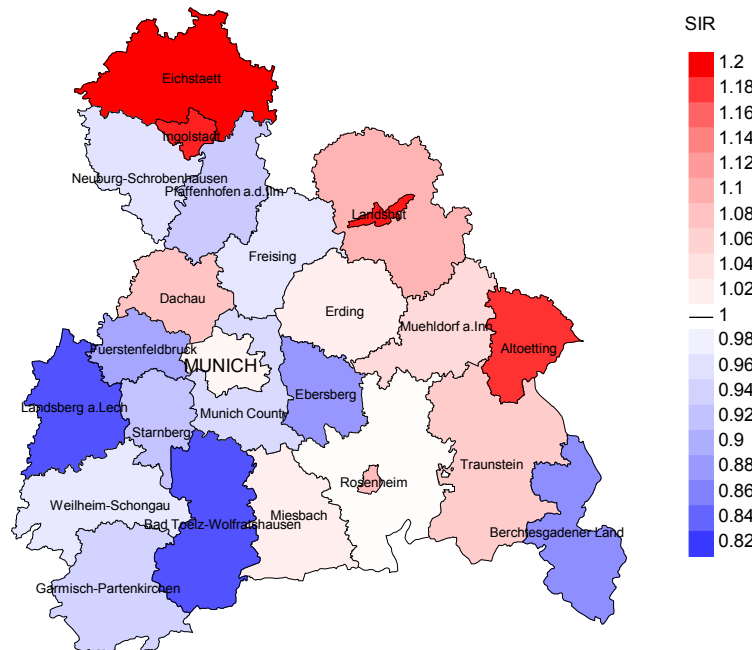


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=5,938, females N=4,056).

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 96 women were identified with newly diagnosed stomach cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.88. Though, the value of this parameter may vary with an underlying probability of 99% between 0.66 and 1.14, 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	568	98.6	12.9	509	89.6	93.3
1999	510	97.8	13.1	456	89.4	93.4
2000	487	98.2	13.1	447	91.8	97.3
2001	518	97.3	13.3	446	86.1	92.6
2002	877	98.7	19.7	799	91.1	96.9
2003	765	98.7	13.7	679	88.8	97.5
2004	842	97.9	11.0	719	85.4	96.9
2005	773	97.4	12.2	666	86.2	96.8
2006	763	96.6	6.3	628	82.3	96.8
2007	881	94.9	9.4	715	81.2	98.5
2008	882	98.9	7.0	712	80.7	96.1
2009	868	98.7	8.2	680	78.3	98.1
2010	798	98.7	7.4	612	76.7	95.4
2011	866	98.3	5.5	654	75.5	96.3
2012	848	98.5	5.8	601	70.9	95.7
2013	792	97.7	6.1	531	67.0	96.4
2014	802	97.9	7.5	530	66.1	94.7
2015	789	94.4	7.0	506	64.1	91.3
2016	764	99.3	6.0	455	59.6	89.5
2017	711	99.2	5.3	357	50.2	72.3
2018	563	99.5	1.1	209	37.1	40.7
2019	469	78.5	0.4	131	27.9	77.9
1998-2019	16136	97.4	8.8	12042	74.6	93.9

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	568	451	92.9	228	40.1
1999	510	425	91.3	201	39.4
2000	487	409	95.8	172	35.3
2001	518	427	94.1	194	37.5
2002	877	611	98.0	350	39.9
2003	765	628	96.5	291	38.0
2004	842	631	97.8	265	31.5
2005	773	640	97.2	265	34.3
2006	763	614	96.7	218	28.6
2007	881	692	98.4	298	33.8
2008	882	712	98.3	279	31.6
2009	868	707	98.9	267	30.8
2010	798	664	98.5	227	28.4
2011	866	646	98.5	231	26.7
2012	848	697	98.6	240	28.3
2013	792	629	97.8	210	26.5
2014	802	649	99.1	213	26.6
2015	789	616	97.9	205	26.0
2016	764	676	99.0	211	27.6
2017	711	609	96.4	177	24.9
2018	563	443	33.4	92	16.3
2019	469	363	49.0	70	14.9
1998–2019	16136	12939	93.8	4904	30.4

Table 9c

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

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

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	451	70.3	29.7	92.8
1999	425	81.2	18.8	93.8
2000	409	82.6	17.4	93.1
2001	427	79.9	20.1	94.3
2002	611	83.0	17.0	92.5
2003	628	83.0	17.0	91.6
2004	631	82.6	17.4	91.6
2005	640	81.3	18.8	91.5
2006	614	82.9	17.1	92.4
2007	692	81.1	18.9	90.3
2008	712	82.3	17.7	89.7
2009	707	81.8	18.2	90.4
2010	664	79.8	20.2	89.6
2011	646	78.9	21.1	88.5
2012	697	80.3	19.7	88.5
2013	629	78.9	21.1	85.7
2014	649	75.5	24.5	86.3
2015	616	75.5	24.5	85.6
2016	676	77.8	22.2	86.4
2017	609	76.2	23.8	85.7
2018	443	54.2	45.8	77.0
2019	363	54.5	45.5	78.7
1998–2019	12939	78.2	21.8	89.4

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	218	75.5	73.2	79.6	75.4
1999	222	74.5	73.4	80.2	74.6
2000	205	74.3	72.1	79.0	73.1
2001	212	74.1	72.8	79.3	73.8
2002	320	75.1	73.8	81.6	74.6
2003	340	75.3	73.7	80.4	74.8
2004	345	76.1	74.1	82.9	75.1
2005	342	75.7	74.2	79.5	75.3
2006	341	76.9	75.5	82.3	76.2
2007	382	75.4	73.2	81.2	75.1
2008	374	76.0	74.5	81.9	75.2
2009	410	74.6	73.3	80.0	73.8
2010	391	74.5	73.1	81.8	73.8
2011	394	75.6	73.6	83.1	74.8
2012	400	75.2	73.6	82.3	73.9
2013	373	76.2	74.8	84.3	75.4
2014	375	76.8	75.5	81.4	76.1
2015	370	76.9	75.1	82.4	75.9
2016	393	76.9	76.0	82.5	76.7
2017	366	77.3	74.9	83.1	76.4
2018	273	77.3	71.2	81.3	75.9
2019	250	77.7	71.9	81.0	71.9
1998-2019	7296	75.8	73.9	81.7	75.1

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	233	79.7	77.2	83.0	80.0
1999	203	80.1	78.3	85.2	80.2
2000	204	80.3	79.1	85.4	79.7
2001	215	79.5	78.2	85.7	79.5
2002	291	81.2	79.4	86.3	80.4
2003	288	79.1	77.7	86.7	78.7
2004	286	79.8	78.3	84.5	79.2
2005	298	79.7	78.3	84.4	78.9
2006	273	80.8	79.4	85.5	80.3
2007	310	81.7	80.9	85.9	81.3
2008	338	81.1	78.3	87.3	79.5
2009	297	81.5	80.4	85.0	80.8
2010	273	81.9	79.9	86.4	81.2
2011	252	81.4	79.4	87.7	80.2
2012	297	78.7	75.5	86.8	77.1
2013	256	82.3	78.4	87.1	79.3
2014	274	81.3	78.9	85.8	79.7
2015	246	81.6	79.5	88.2	80.1
2016	283	81.9	79.0	87.7	80.9
2017	243	80.7	78.6	88.0	78.8
2018	170	79.6	71.5	83.3	79.7
2019	113	81.5	76.0	85.1	78.3
1998-2019	5643	80.8	78.6	85.9	79.8

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	153	13.8	0.52	7.9	0.51	12.6	0.51	17.4	0.52
1999	184	16.4	0.70	9.4	0.70	15.0	0.71	20.5	0.70
2000	165	14.5	0.63	8.2	0.61	13.0	0.62	17.9	0.64
2001	168	14.5	0.64	8.2	0.63	13.1	0.65	17.9	0.67
2002	261	14.0	0.57	7.5	0.57	12.0	0.58	16.5	0.58
2003	282	15.0	0.69	7.8	0.68	12.6	0.69	17.5	0.71
2004	291	15.5	0.62	7.7	0.59	12.5	0.62	17.6	0.64
2005	289	15.3	0.70	7.5	0.68	11.9	0.69	16.8	0.71
2006	274	14.3	0.64	6.9	0.61	11.1	0.64	15.6	0.67
2007	308	13.9	0.62	6.7	0.60	10.6	0.61	14.7	0.63
2008	316	14.2	0.64	6.6	0.59	10.6	0.63	14.7	0.66
2009	339	15.2	0.67	7.2	0.66	11.1	0.67	15.0	0.67
2010	316	14.0	0.67	6.6	0.63	10.0	0.64	13.5	0.66
2011	307	13.7	0.59	6.3	0.58	9.9	0.59	13.2	0.60
2012	319	14.1	0.65	6.3	0.59	9.7	0.61	13.2	0.65
2013	309	13.4	0.65	6.0	0.62	9.3	0.64	12.7	0.67
2014	281	12.1	0.58	5.1	0.53	8.1	0.56	11.0	0.59
2015	287	12.1	0.59	5.3	0.53	8.2	0.56	10.8	0.58
2016	319	13.3	0.72	5.7	0.66	8.9	0.69	11.8	0.71
2017	278	11.5	0.65	4.9	0.61	7.6	0.62	10.1	0.65
2018	161	6.6	0.47	3.0	0.44	4.5	0.45	5.8	0.47
2019	140	5.8	0.47	2.6	0.45	3.9	0.46	5.1	0.47
1998-2019	5747	13.0	0.63	6.1	0.59	9.5	0.61	12.8	0.63

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	164	13.9	0.60	5.2	0.57	8.1	0.58	11.1	0.58
1999	161	13.6	0.65	5.3	0.68	8.1	0.67	11.0	0.66
2000	173	14.4	0.78	4.9	0.72	7.9	0.73	11.0	0.73
2001	173	14.2	0.68	5.1	0.60	8.2	0.63	11.1	0.64
2002	246	12.6	0.58	4.4	0.54	6.9	0.55	9.5	0.56
2003	239	12.1	0.67	4.6	0.69	7.1	0.69	9.6	0.68
2004	230	11.6	0.62	4.1	0.52	6.5	0.55	8.9	0.58
2005	231	11.6	0.64	4.3	0.62	6.6	0.63	8.9	0.63
2006	235	11.7	0.71	3.9	0.63	6.2	0.65	8.7	0.68
2007	253	11.0	0.66	3.8	0.64	5.9	0.64	7.8	0.63
2008	270	11.6	0.70	3.9	0.63	6.2	0.65	8.6	0.68
2009	239	10.3	0.66	3.4	0.57	5.4	0.60	7.4	0.63
2010	214	9.1	0.66	3.0	0.59	4.7	0.61	6.4	0.62
2011	203	8.7	0.59	2.9	0.53	4.6	0.55	6.1	0.56
2012	241	10.2	0.69	3.7	0.64	5.6	0.66	7.5	0.68
2013	187	7.8	0.59	2.5	0.49	4.0	0.52	5.4	0.55
2014	209	8.7	0.66	3.0	0.58	4.5	0.60	5.9	0.62
2015	179	7.4	0.61	2.3	0.53	3.7	0.55	4.9	0.57
2016	208	8.5	0.66	2.7	0.54	4.2	0.57	5.8	0.60
2017	186	7.5	0.67	2.5	0.54	3.8	0.57	5.2	0.62
2018	80	3.2	0.36	1.4	0.38	2.0	0.37	2.4	0.36
2019	58	2.3	0.34	0.9	0.32	1.3	0.33	1.7	0.32
1998-2019	4379	9.6	0.63	3.3	0.57	5.1	0.59	6.9	0.61

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	1	0.0	0.0			0.0	1	0.0	0.0
5-9	0	0.0	0.0			0.0			0.0
10-14	0	0.0	0.0			0.0			0.0
15-19	0	0.0	0.0			0.0			0.0
20-24	3	0.0	0.1	2	0.1	0.1	1	0.0	0.1
25-29	8	0.1	0.2	4	0.1	0.2	4	0.2	0.2
30-34	21	0.3	0.5	4	0.1	0.3	17	0.7	0.9
35-39	38	0.6	1.1	23	0.6	0.9	15	0.6	1.5
40-44	66	1.1	2.2	37	1.0	1.9	29	1.1	2.7
45-49	147	2.4	4.6	89	2.4	4.3	58	2.3	4.9
50-54	251	4.0	8.6	163	4.4	8.8	88	3.5	8.4
55-59	373	6.0	14.6	249	6.8	15.5	124	4.9	13.3
60-64	483	7.8	22.4	343	9.3	24.8	140	5.5	18.9
65-69	672	10.8	33.2	462	12.6	37.4	210	8.3	27.2
70-74	883	14.2	47.5	583	15.8	53.2	300	11.9	39.1
75-79	975	15.7	63.2	600	16.3	69.5	375	14.8	53.9
80-84	1029	16.6	79.7	584	15.9	85.4	445	17.6	71.5
85+	1257	20.3	100.0	537	14.6	100.0	720	28.5	100.0
All ages	6207	100.0		3680	100.0		2527	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		1			0.1	1.00		6.3
5- 9								
10-14								
15-19								
20-24	2	1	0.1	0.67	0.1	1.00	3.0	2.6
25-29	4	4	0.2	0.57	0.2	0.44	4.7	4.3
30-34	4	17	0.2	0.19	0.8	0.49	3.1	10.6
35-39	23	15	1.1	0.43	0.7	0.31	9.5	4.1
40-44	37	29	1.6	0.37	1.3	0.45	6.5	3.6
45-49	89	58	3.5	0.43	2.4	0.45	6.6	3.7
50-54	163	88	7.0	0.47	3.8	0.44	6.5	3.6
55-59	249	124	12.8	0.52	6.2	0.54	6.0	3.5
60-64	343	140	21.0	0.57	8.0	0.52	5.8	3.0
65-69	462	210	30.4	0.56	12.5	0.52	5.4	3.2
70-74	583	300	41.6	0.59	18.7	0.53	5.3	3.7
75-79	600	375	54.2	0.62	27.2	0.58	5.2	4.2
80-84	584	445	89.0	0.78	45.7	0.73	6.2	5.2
85+	537	720	125.9	0.91	74.6	0.86	6.5	6.5
All ages	3680	2527					5.8	4.4
Mortality								
Raw			12.2	0.62	8.1	0.62		
WS			5.5	0.58	2.7	0.55		
ES			8.5	0.60	4.2	0.57		
BRD-S			11.3	0.62	5.7	0.59		
PYLL-70								
per 100,000			52.3		31.2			
ES			44.7		26.5			
AYLL-70			10.1		11.9			

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 ←%
C00 Lip	5	0.3	3	60.0			2	40.0
C03–C06 Oral cavity	21	1.2	19	90.5			2	9.5
C09–C10 Oropharynx	20	1.1	11	55.0	3	15.0	6	30.0
C12–C13 Hypopharynx	6	0.3	5	83.3			1	16.7
C15 Oesophagus	42	2.4	9	21.4	18	42.9	15	35.7
C16 Stomach	17	1.0			5	29.4	12	70.6
C17 Small intestine	9	0.5	1	11.1	5	55.6	3	33.3
C18 Colon	238	13.4	115	48.3	59	24.8	64	26.9
C19–C20 Rectum	99	5.6	57	57.6	17	17.2	25	25.3
C21 Anus/canal	5	0.3	3	60.0			2	40.0
C22 Liver	35	2.0	7	20.0	11	31.4	17	48.6
C23–C24 Bile	20	1.1	3	15.0	4	20.0	13	65.0
C25 Pancreas	77	4.3	14	18.2	21	27.3	42	54.5
C30–C31 Sinuses	6	0.3	4	66.7			2	33.3
C32 Larynx	26	1.5	20	76.9	2	7.7	4	15.4
C33–C34 Lung	202	11.4	56	27.7	40	19.8	106	52.5
C38,C45 Mesothelioma	7	0.4	1	14.3			6	85.7
C43 Malign. melanoma	53	3.0	43	81.1	2	3.8	8	15.1
C44 Skin others	110	6.2	77	70.0	8	7.3	25	22.7
C46,C49 Soft tissue	8	0.4	5	62.5	1	12.5	2	25.0
C50 Breast	9	0.5	7	77.8			2	22.2
C61 Prostate	413	23.2	302	73.1	29	7.0	82	19.9
C62 Testis	17	1.0	14	82.4	1	5.9	2	11.8
C64 Kidney	67	3.8	34	50.7	8	11.9	25	37.3
C65 Renal pelvis	6	0.3	3	50.0			3	50.0
C66 Ureter	4	0.2	4	100.0				
C67 Bladder	91	5.1	63	69.2	5	5.5	23	25.3
C70–C72 CNS cancer	10	0.6	2	20.0			8	80.0
C73 Thyroid	7	0.4	7	100.0				
C76–C79 CUP	18	1.0	11	61.1	2	11.1	5	27.8
C81 Hodgkin lymphoma	10	0.6	8	80.0	1	10.0	1	10.0
C82–C85 NHL	68	3.8	34	50.0	14	20.6	20	29.4
C90 Mult. myeloma	16	0.9	9	56.3	1	6.3	6	37.5
C91–C96 Leukaemia	18	1.0	5	27.8	2	11.1	11	61.1
Others, specified	19	1.1	11	57.9			8	42.1
All further malignancies	1779	100.0	967	54.4	259	14.6	553	31.1

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

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

Table 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	6	0.5	3	50.0	2	33.3	1	16.7
C07-C08 Salivary gland	4	0.3	3	75.0			1	25.0
C09-C10 Oropharynx	6	0.5	4	66.7	2	33.3		
C12-C13 Hypopharynx	3	0.3	2	66.7	1	33.3		
C15 Oesophagus	5	0.4	3	60.0	2	40.0		
C16 Stomach	11	0.9			5	45.5	6	54.5
C17 Small intestine	7	0.6	1	14.3	5	71.4	1	14.3
C18 Colon	162	13.7	73	45.1	35	21.6	54	33.3
C19-C20 Rectum	49	4.1	24	49.0	4	8.2	21	42.9
C21 Anus/canal	10	0.8	7	70.0	1	10.0	2	20.0
C22 Liver	10	0.8	1	10.0	4	40.0	5	50.0
C23-C24 Bile	6	0.5	3	50.0	1	16.7	2	33.3
C25 Pancreas	56	4.7	8	14.3	16	28.6	32	57.1
C32 Larynx	4	0.3	3	75.0			1	25.0
C33-C34 Lung	55	4.7	17	30.9	12	21.8	26	47.3
C40-C41 Bone	3	0.3	3	100.0				
C43 Malign. melanoma	28	2.4	23	82.1			5	17.9
C44 Skin others	56	4.7	41	73.2	2	3.6	13	23.2
C48 Peritoneal	5	0.4	1	20.0	2	40.0	2	40.0
C50 Breast	379	32.1	278	73.4	29	7.7	72	19.0
C51 Vulva	8	0.7	7	87.5			1	12.5
C53 Cervix uteri	19	1.6	17	89.5	1	5.3	1	5.3
C54 Corpus uteri	57	4.8	48	84.2	3	5.3	6	10.5
C55,C57 Fem. genitals un	5	0.4	3	60.0	2	40.0		
C56 Ovary	58	4.9	34	58.6	8	13.8	16	27.6
C64 Kidney	30	2.5	13	43.3	8	26.7	9	30.0
C66 Ureter	3	0.3	2	66.7			1	33.3
C67 Bladder	22	1.9	10	45.5	2	9.1	10	45.5
C73 Thyroid	15	1.3	12	80.0			3	20.0
C76-C79 CUP	12	1.0	5	41.7	4	33.3	3	25.0
C81 Hodgkin lymphoma	3	0.3	3	100.0				
C82-C85 NHL	47	4.0	28	59.6	8	17.0	11	23.4
C90 Mult. myeloma	11	0.9	4	36.4	3	27.3	4	36.4
C91-C96 Leukaemia	7	0.6	1	14.3			6	85.7
Others, specified	20	1.7	7	35.0			13	65.0
All further malignancies	1182	100.0	692	58.5	162	13.7	328	27.7

Further malignancies with number of cases 1 to 2 are pooled in category "Others, specified".

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

Table 15

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

Age at death Years	Males		Males		Females		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4		1			0.1	1.00		6.7
5- 9								
10-14								
15-19								
20-24	1	1	0.1	0.50	0.1	1.00	1.7	2.7
25-29	4	4	0.2	0.57	0.2	0.44	5.2	4.7
30-34	4	16	0.2	0.20	0.8	0.46	3.2	11.5
35-39	23	15	1.1	0.43	0.7	0.31	10.1	4.5
40-44	36	29	1.5	0.38	1.3	0.48	6.8	4.1
45-49	81	52	3.2	0.42	2.1	0.45	6.6	3.8
50-54	152	79	6.5	0.48	3.4	0.46	6.9	3.8
55-59	224	98	11.5	0.52	4.9	0.51	6.2	3.3
60-64	297	117	18.2	0.58	6.7	0.53	6.0	3.1
65-69	367	166	24.1	0.57	9.9	0.53	5.3	3.2
70-74	464	241	33.1	0.63	15.0	0.56	5.5	3.8
75-79	425	284	38.4	0.65	20.6	0.59	5.1	4.1
80-84	433	353	66.0	0.81	36.3	0.72	6.4	5.4
85+	387	573	90.8	0.97	59.4	0.87	6.5	6.6
All ages	2898	2029					5.8	4.5
Mortality								
Raw			9.6	0.63	6.5	0.63		
WS			4.4	0.59	2.2	0.55		
ES			6.8	0.61	3.4	0.57		
BRD-S			8.9	0.63	4.6	0.59		
PYLL-70								
per 100,000			47.2		27.7			
ES			40.4		23.6			
AYLL-70			10.5		12.5			

* 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		1			0.1	1.00		6.7
5- 9								
10-14								
15-19								
20-24	1	1	0.1	0.50	0.1	1.00	1.7	2.8
25-29	4	4	0.2	0.57	0.2	0.44	5.2	4.8
30-34	4	15	0.2	0.20	0.7	0.44	3.3	10.9
35-39	22	15	1.0	0.42	0.7	0.31	9.8	4.6
40-44	36	28	1.5	0.39	1.2	0.48	6.9	4.0
45-49	80	50	3.2	0.43	2.1	0.46	6.6	3.7
50-54	147	78	6.3	0.49	3.4	0.48	6.7	3.8
55-59	215	95	11.1	0.53	4.8	0.51	6.1	3.3
60-64	277	107	17.0	0.58	6.1	0.51	5.6	2.9
65-69	341	152	22.4	0.56	9.0	0.52	5.1	3.0
70-74	426	222	30.4	0.63	13.8	0.55	5.2	3.6
75-79	363	256	32.8	0.60	18.6	0.57	4.5	3.8
80-84	363	321	55.3	0.73	33.0	0.70	5.7	5.1
85+	343	526	80.4	0.88	54.5	0.82	6.3	6.3
All ages	2622	1871					5.5	4.3
Mortality								
Raw			8.7	0.61	6.0	0.61		
WS			4.1	0.58	2.1	0.54		
ES			6.2	0.59	3.2	0.56		
BRD-S			8.0	0.61	4.2	0.58		
PYLL-70								
per 100,000			45.4		26.6			
ES			38.9		22.7			
AYLL-70			10.7		12.8			

* See corresponding tables with multiple malignancies.

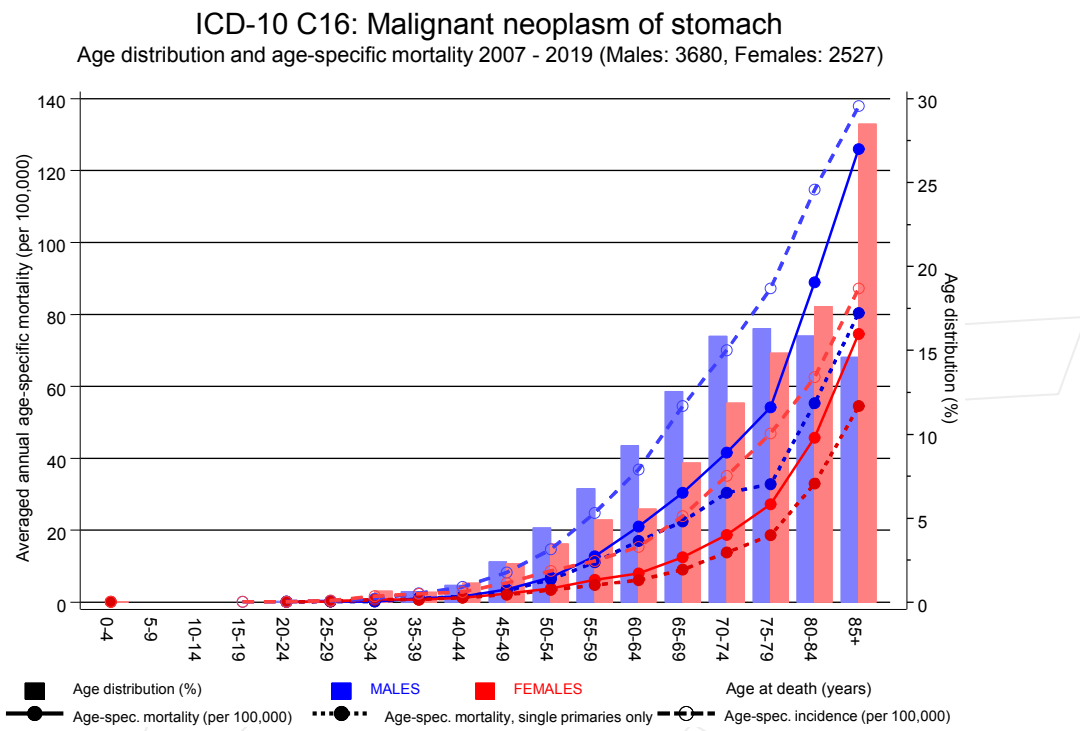
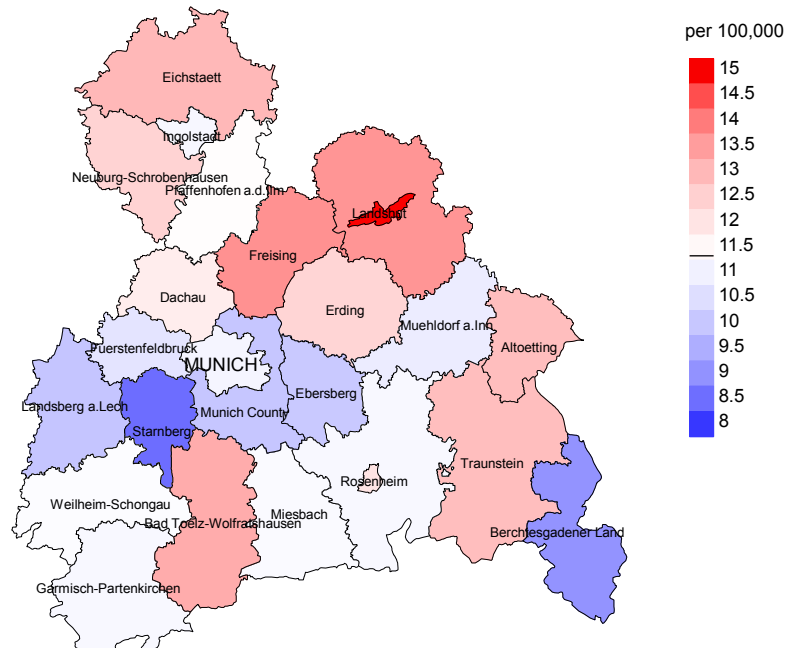


Figure 17. Distribution of age at death (bars; males: mean=70.2 yrs, median=71.8 yrs; females: mean=73.8 yrs, median=76.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at stomach 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

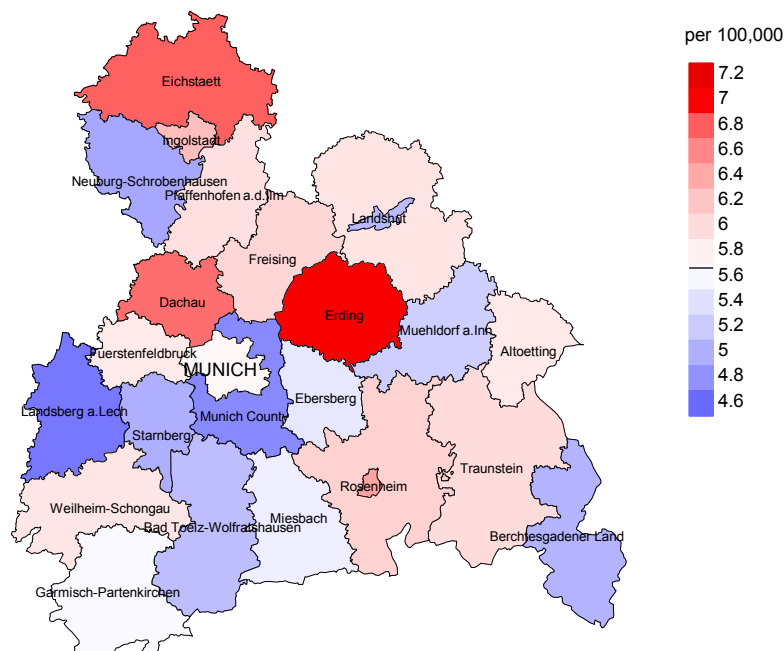
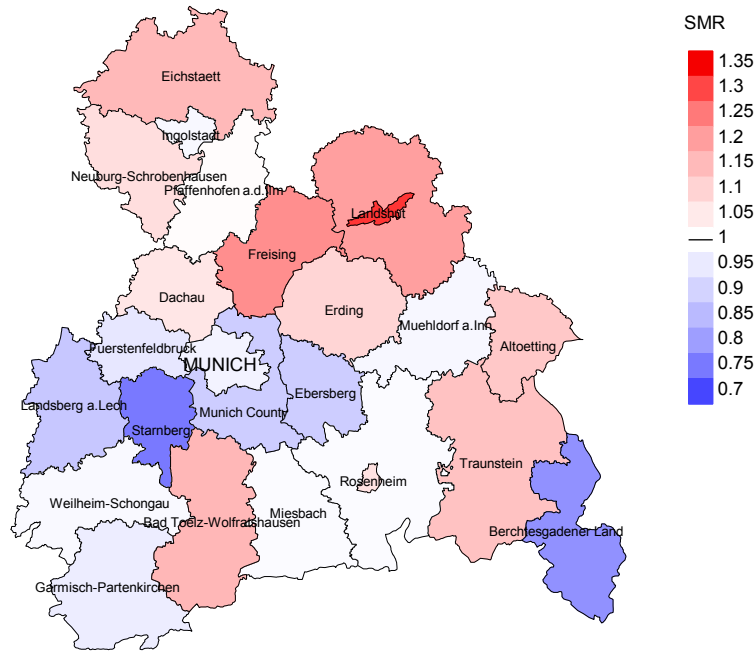


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 11.3/100,000 WS N=3,680, females 5.7/100,000 WS N=2,527).

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 65 women died from stomach cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 5.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.8 and 7.5/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

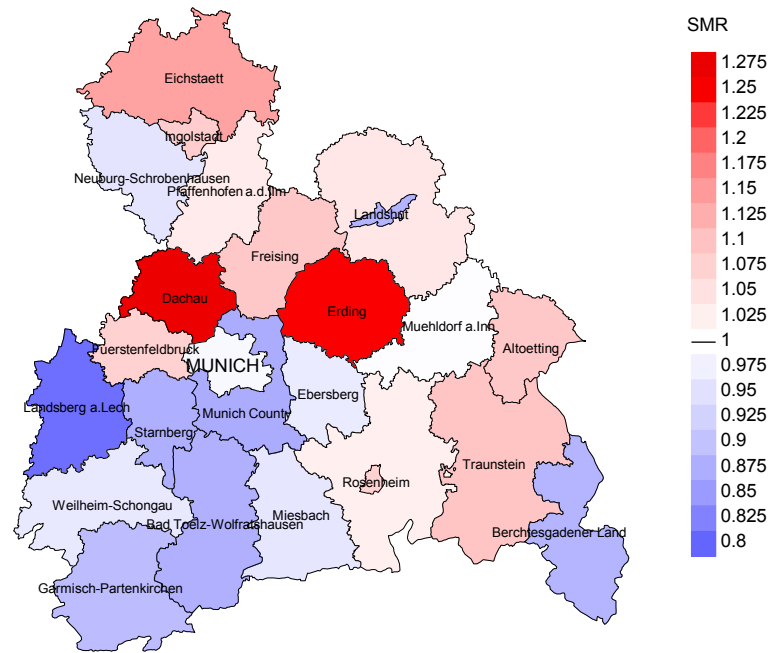


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,680, females N=2,527).

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 65 women died from stomach cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.97. Though, the value of this parameter may vary with an underlying probability of 99% between 0.69 and 1.32, 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

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