

Munich Cancer Registry



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

ICD-10 C16: Stomach cancer

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	14,047
Diseases	14,087
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m




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

https://www.tumorregister-muenchen.de/en/facts/base/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, August 2018

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

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

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

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
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	572	70	12.2	11.4	6.1	88.3	98.6
1999	513	62	12.1	12.0	6.0	88.5	97.9
2000	488	62	12.7	12.8	6.1	88.7	98.2
2001	520	67	12.9	12.5	6.0	85.2	96.9
2002	875	166	19.0	12.1	6.0	89.6	98.4 #
2003	764	102	13.4	12.6	5.9	86.3	98.3
2004	842	89	10.6	12.8	5.8	83.4	97.7
2005	772	92	11.9	13.2	5.7	82.6	96.5
2006	765	47	6.1	13.3	5.5	78.6	95.0
2007	880	79	9.0	13.9	5.2	78.5	87.4 #
2008	881	62	7.0	14.2	5.1	76.4	85.0
2009	867	65	7.5	14.5	4.8	74.7	83.5
2010	793	54	6.8	14.9	4.6	70.6	82.2
2011	865	45	5.2	15.1	4.5	69.2	81.4
2012	838	48	5.7	15.4	4.0	65.5	78.4
2013	779	49	6.3	15.7	3.7	59.8	78.6
2014	767	53	6.9	16.1	3.1	57.5	80.7
2015	702	54	7.7	16.1	2.9	48.6	98.1
2016	604	39	6.5	16.4	2.4	33.1	77.2 ##
1998-2016	14087	1305	9.3	16.4	6.1	73.7	89.4

14,087 cases diagnosed 1998-2016 are related to a total of 14,047 patients. Currently, in 3,259 (23.2 %) of these 14,047 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,632 / 511 / 116 (18.7 % / 3.6 % / 0.8 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2014, a subgroup of 767 cases has been diagnosed, of which 16.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.1 % 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	299	52.3	36	12.0	12.4	6.8	88.0	98.0
1999	265	51.7	26	9.8	12.4	6.7	86.0	97.7
2000	266	54.5	25	9.4	13.3	6.7	88.0	98.1
2001	264	50.8	29	11.0	12.6	6.6	83.0	97.0
2002	455	52.0	68	14.9	12.1	6.5	90.1	98.5 #
2003	406	53.1	44	10.8	12.8	6.5	86.5	98.8
2004	470	55.8	36	7.7	13.2	6.4	84.3	98.3
2005	412	53.4	40	9.7	13.7	6.2	83.5	96.6
2006	430	56.2	17	4.0	14.0	5.9	78.1	95.3
2007	497	56.5	32	6.4	14.6	5.6	77.7	87.9 #
2008	496	56.3	28	5.6	14.9	5.5	78.2	86.7
2009	503	58.0	28	5.6	15.1	5.2	75.5	83.7
2010	473	59.6	20	4.2	15.5	4.8	68.1	80.3
2011	521	60.2	20	3.8	15.9	4.8	69.5	82.0
2012	485	57.9	21	4.3	16.3	4.2	65.4	78.8
2013	472	60.6	21	4.4	16.7	3.8	57.0	76.3
2014	460	60.0	18	3.9	17.1	3.8	55.7	80.4
2015	435	62.0	32	7.4	17.0	3.4	45.7	98.6
2016	354	58.6	20	5.6	17.3	2.6	32.5	76.0 ##
1998-2016	7963	56.5	561	7.0	17.3	6.8	72.5	89.1

7,963 cases diagnosed 1998-2016 are related to a total of 7,939 patients. Currently, in 1,950 (24.6 %) of these 7,939 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,554 / 318 / 78 (19.6 % / 4.0 % / 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 2014, a subgroup of 460 cases has been diagnosed, of which 17.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.8 % 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 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	47.7	34	12.5	10.3	5.3	88.6	99.3
1999	248	48.3	36	14.5	11.5	5.2	91.1	98.0
2000	222	45.5	37	16.7	12.4	5.2	89.6	98.2
2001	256	49.2	38	14.8	12.4	5.2	87.5	96.9
2002	420	48.0	98	23.3	12.1	5.2	89.0	98.3 #
2003	358	46.9	58	16.2	12.3	5.0	86.0	97.8
2004	372	44.2	53	14.2	12.4	5.1	82.3	97.0
2005	360	46.6	52	14.4	12.6	5.0	81.7	96.4
2006	335	43.8	30	9.0	12.6	4.9	79.1	94.6
2007	383	43.5	47	12.3	13.0	4.7	79.6	86.7 #
2008	385	43.7	34	8.8	13.4	4.6	74.0	82.9
2009	364	42.0	37	10.2	13.7	4.3	73.6	83.2
2010	320	40.4	34	10.6	14.1	4.2	74.4	85.0
2011	344	39.8	25	7.3	14.2	4.0	68.9	80.5
2012	353	42.1	27	7.6	14.4	3.8	65.7	77.9
2013	307	39.4	28	9.1	14.5	3.5	64.2	82.1
2014	307	40.0	35	11.4	14.8	2.0	60.3	81.1
2015	267	38.0	22	8.2	15.0	2.2	53.2	97.4
2016	250	41.4	19	7.6	15.2	2.1	34.0	78.8 ##
1998-2016	6124	43.5	744	12.1	15.2	5.3	75.3	89.9

6,124 cases diagnosed 1998-2016 are related to a total of 6,108 patients. Currently, in 1,309 (21.4 %) of these 6,108 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,078 / 193 / 38 (17.6 % / 3.2 % / 0.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2014, a subgroup of 307 cases has been diagnosed, of which 14.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	299	273	27.0	23.2	16.0	9.0	25.0	14.0	34.0	19.2
1999	265	248	23.7	20.9	13.7	7.8	21.6	12.0	29.6	16.7
2000	266	222	23.4	18.5	13.6	6.8	21.1	10.8	28.1	15.1
2001	264	256	22.8	21.0	13.2	8.6	20.2	13.0	26.9	17.1
2002	455	420	24.4	21.5	13.2	8.2	20.7	12.6	28.3	16.9
2003	406	358	21.7	18.2	11.6	6.6	18.1	10.3	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	360	21.8	18.1	10.9	6.8	17.1	10.5	23.6	14.0
2006	430	335	22.5	16.7	11.4	6.3	17.5	9.7	23.5	12.8
2007	497	383	22.4	16.6	11.2	5.8	17.2	9.1	23.4	12.3
2008	496	385	22.3	16.6	11.1	6.3	16.7	9.6	22.3	12.7
2009	503	364	22.5	15.7	10.8	5.8	16.6	8.9	22.2	11.8
2010	473	320	21.0	13.7	10.4	5.0	15.7	7.7	20.2	10.3
2011	521	344	23.3	14.7	10.9	5.5	16.7	8.4	22.1	10.9
2012	485	353	21.4	15.0	10.4	5.8	15.6	8.6	20.0	11.1
2013	472	307	20.5	12.9	9.7	5.0	14.5	7.4	18.9	9.6
2014	460	307	19.7	12.8	9.2	4.9	13.8	7.2	17.9	9.1
2015	435	267	18.3	11.0	8.7	3.9	13.1	6.0	16.5	7.8
2016	354	250	14.7	10.2	6.8	4.0	10.2	5.9	13.2	7.7
1998-2016	7963	6124	21.6	16.0	10.7	6.0	16.4	9.1	21.7	12.1

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

Table 3

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

Year of diagnosis	Cases n	Std.		Min.		Max.		Median		
		Mean	dev.			10%	25%	50%	75%	90%
1998	572	72.1	13.2	25.0	98.1	52.3	64.1	74.3	82.4	87.4
1999	513	73.1	13.2	18.8	99.9	56.2	64.4	74.9	83.1	88.4
2000	488	72.3	13.2	28.8	98.7	53.6	63.8	74.7	81.0	88.4
2001	520	71.2	13.8	14.5	96.8	53.5	62.6	73.0	81.2	88.3
2002	875	72.9	12.8	19.3	102	55.5	65.0	74.7	81.9	88.6
2003	764	73.0	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	772	72.8	12.9	22.1	99.3	55.6	65.2	74.7	82.2	86.8
2006	765	72.0	13.1	21.9	99.1	55.3	63.3	73.7	81.7	86.8
2007	880	72.7	12.8	27.8	101	54.6	65.4	74.6	82.3	87.4
2008	881	71.8	12.9	24.2	101	53.8	64.0	73.1	81.2	86.3
2009	867	72.0	12.8	31.1	102	53.5	64.6	73.7	81.5	87.2
2010	793	71.7	12.7	24.4	103	54.8	63.3	72.6	81.7	87.2
2011	865	71.9	12.9	18.9	98.3	53.7	64.5	73.3	81.3	87.7
2012	838	71.2	13.0	27.0	99.4	53.3	63.0	72.4	81.4	87.0
2013	779	71.2	13.3	16.2	99.5	52.8	63.2	73.3	80.4	87.3
2014	767	71.4	13.9	0.4	100	51.9	62.9	73.6	81.8	87.7
2015	702	71.8	12.9	28.1	100	54.2	63.7	73.5	81.3	87.7
2016	604	70.9	13.1	27.0	96.6	52.6	62.3	73.0	80.6	86.0
1998-2016	14087	71.9	13.0	0.4	103	53.9	63.9	73.6	81.6	87.4

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	299	69.9	13.3	25.0	94.1	50.0	59.3	72.3	79.2	87.1
1999	265	70.7	12.7	29.8	97.4	53.9	63.1	71.6	79.4	86.5
2000	266	69.9	12.8	28.8	97.2	53.3	62.2	71.1	78.3	86.7
2001	264	68.5	13.2	14.5	96.8	52.9	60.4	70.2	78.4	84.6
2002	455	71.2	11.9	32.8	95.8	55.5	63.7	72.7	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	71.4	12.5	29.8	96.5	54.5	64.4	73.2	80.5	85.2
2006	430	70.2	12.2	29.5	99.1	55.0	62.2	71.5	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	496	70.0	11.8	24.2	99.5	54.0	63.5	71.2	78.4	83.7
2009	503	70.9	11.7	31.1	102	54.1	63.7	72.3	79.0	85.0
2010	473	70.0	11.9	24.4	96.4	54.8	61.1	70.0	79.8	84.2
2011	521	70.8	12.5	18.9	94.7	53.2	63.4	72.6	80.1	85.5
2012	485	70.0	12.5	27.0	99.4	53.3	61.8	70.7	79.4	85.0
2013	472	70.3	12.8	20.9	99.1	53.2	63.0	72.8	78.7	85.3
2014	460	70.0	12.8	30.9	97.7	52.2	61.3	72.1	79.0	85.0
2015	435	70.2	12.4	32.1	96.0	52.9	62.1	70.9	79.6	86.0
2016	354	70.5	12.6	27.0	96.6	53.3	62.4	71.8	80.2	85.3
1998-2016	7963	70.3	12.4	14.5	102	53.5	62.6	71.8	79.3	85.2

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min. Max.		10% 25%		Median		
				Min.	Max.	10%	25%	50%	75%	90%
1998	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	420	74.7	13.5	19.3	102	55.4	67.3	77.3	84.5	89.7
2003	358	75.7	12.3	30.3	98.5	59.7	68.5	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	360	74.5	13.1	22.1	99.3	56.7	65.7	77.3	83.8	90.8
2006	335	74.3	13.8	21.9	98.3	56.1	64.7	76.7	84.7	88.5
2007	383	75.4	13.2	27.8	101	57.1	68.3	78.3	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	320	74.3	13.5	26.6	103	54.6	67.1	77.4	83.9	88.9
2011	344	73.4	13.3	28.6	98.3	54.0	66.8	74.6	82.6	89.6
2012	353	72.9	13.6	29.6	99.3	53.0	64.6	74.1	83.5	88.2
2013	307	72.5	14.1	16.2	99.5	52.8	63.4	74.6	82.6	89.6
2014	307	73.5	15.2	0.4	100	51.1	65.1	75.9	85.2	89.9
2015	267	74.4	13.2	28.1	100	56.7	67.4	75.9	84.3	89.4
2016	250	71.5	13.7	30.2	96.6	50.5	61.8	74.8	81.1	86.9
1998-2016	6124	74.0	13.6	0.4	103	54.5	66.1	76.4	84.1	89.1

Table 4

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

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	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	0.1
20-24	3	0.0	0.1	3	0.1	0.1			0.1
25-29	15	0.2	0.3	7	0.1	0.2	8	0.2	0.3
30-34	40	0.5	0.8	16	0.3	0.6	24	0.7	1.0
35-39	79	1.0	1.8	42	0.9	1.5	37	1.1	2.2
40-44	124	1.6	3.3	73	1.6	3.0	51	1.6	3.7
45-49	273	3.4	6.7	165	3.5	6.5	108	3.3	7.0
50-54	409	5.1	11.9	260	5.5	12.1	149	4.5	11.6
55-59	555	7.0	18.8	373	7.9	20.0	182	5.5	17.1
60-64	686	8.6	27.4	479	10.2	30.2	207	6.3	23.4
65-69	972	12.2	39.6	655	13.9	44.2	317	9.7	33.1
70-74	1255	15.7	55.3	787	16.8	60.9	468	14.3	47.3
75-79	1241	15.6	70.9	747	15.9	76.8	494	15.1	62.4
80-84	1117	14.0	84.9	608	12.9	89.8	509	15.5	77.9
85+	1204	15.1	100.0	480	10.2	100.0	724	22.1	100.0
All ages	7976	100.0		4696	100.0		3280	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=239 %	Females DCO rate n=308 %	Males	Females
							Prop.all cancers n=113978 %	Prop.all cancers n=112253 %
0- 4		1		0.1		100.0		0.7
5- 9								
10-14								
15-19	1	1	0.1	0.1			0.4	0.5
20-24	3		0.2		33.3		0.7	
25-29	7	8	0.4	0.5			1.0	1.0
30-34	16	24	1.0	1.5			1.7	1.6
35-39	42	37	2.6	2.3		2.7	3.0	1.5
40-44	73	51	3.9	2.8		2.0	3.4	1.1
45-49	165	108	8.4	5.7			4.2	1.6
50-54	260	149	15.0	8.7	1.2	3.4	4.2	1.7
55-59	372	181	26.3	12.3	0.8	1.1	4.0	1.9
60-64	477	205	38.9	15.4	2.5	2.0	3.6	1.8
65-69	652	316	55.0	24.3	2.6	3.5	3.5	2.3
70-74	786	466	71.0	36.8	3.3	3.9	3.7	3.2
75-79	742	492	93.1	49.1	5.0	6.5	4.5	3.7
80-84	607	508	132.0	71.8	8.7	9.8	5.5	4.6
85+	479	724	156.4	98.6	18.2	25.3	6.0	5.7
All ages	4682	3271			5.1	9.4	4.1	2.9
Incidence								
Raw			20.5	13.8				
WS			9.8	5.2				
ES			14.8	7.8				
BRD-S			19.3	10.2				

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

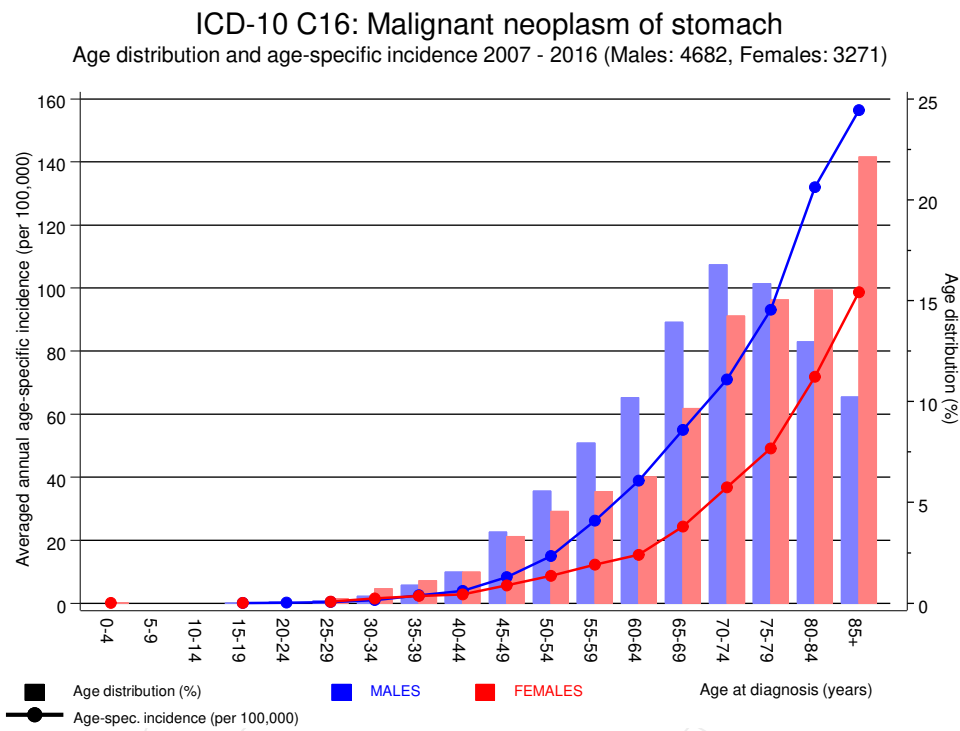


Figure 6. Age distribution (males: mean=70.3 yrs, median=71.8 yrs; females: mean=73.6 yrs, median=76.0 yrs) and age-specific incidence.

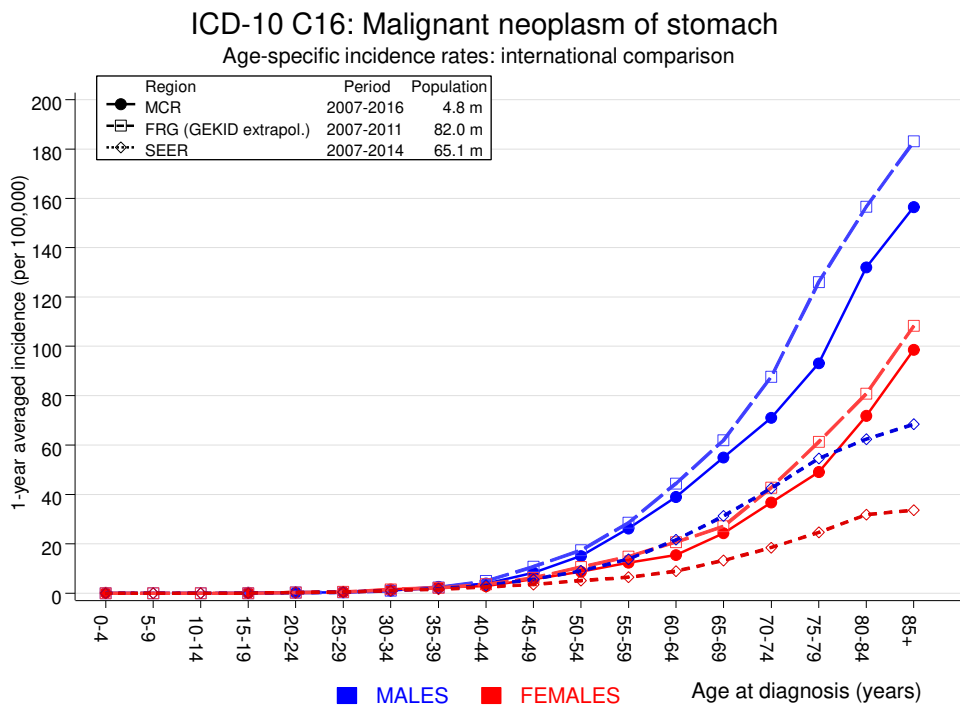


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

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 2014, based on the November 2013 submission. <http://www.seer.cancer.gov>.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2016

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C09–C10 Oropharynx	6	2.5	2.4	0.9	5.3	2.4	
C14 ENT cancer	2	0.1	26.0	3.2	94.1 #	1.3	50.0
C15 Oesophagus	29	4.8	6.0	4.0	8.6 #	16.2	3.4
C16 Stomach	19	12.1	1.6	0.9	2.4	4.6	5.3
C17 Small intestine	21	1.4	14.6	9.0	22.3 #	13.1	
C18 Colon	107	28.3	3.8	3.1	4.6 #	52.6	11.2
C19–C20 Rectum	41	14.6	2.8	2.0	3.8 #	17.6	4.9
C21 Anus/canal	2	0.6	3.5	0.4	12.6	1.0	50.0
C22 Liver	24	7.7	3.1	2.0	4.6 #	10.9	20.8
C23–C24 Bile	9	2.8	3.2	1.5	6.0 #	4.1	22.2
C25 Pancreas	48	10.5	4.6	3.4	6.0 #	25.0	20.8
C26 GI cancer	2	0.4	5.0	0.6	18.2	1.1	50.0
C32 Larynx	6	2.6	2.3	0.8	5.0	2.3	33.3
C33–C34 Lung	89	32.4	2.8	2.2	3.4 #	37.9	18.0
C38,C45 Mesothelioma	5	1.8	2.7	0.9	6.4	2.1	
C43 Malign. melanoma	16	11.3	1.4	0.8	2.3	3.2	
C50 Breast	2	0.7	2.8	0.3	10.2	0.9	50.0
C61 Prostate	114	80.1	1.4	1.2	1.7 #	22.7	21.9
C62 Testis	2	0.6	3.5	0.4	12.6	1.0	
C64 Kidney	34	9.3	3.6	2.5	5.1 #	16.5	20.6
C65 Renal pelvis	5	1.2	4.0	1.3	9.4 #	2.5	
C67 Bladder	27	13.6	2.0	1.3	2.9 #	9.0	14.8
C70–C72 CNS cancer	8	3.5	2.3	1.0	4.6	3.0	37.5
C73 Thyroid	4	1.6	2.5	0.7	6.4	1.6	
C76–C79 CUP	6	4.9	1.2	0.4	2.7	0.7	
C81 Hodgkin lymphoma	4	0.6	7.0	1.9	17.9 #	2.3	25.0
C82–C85 NHL	24	11.5	2.1	1.3	3.1 #	8.3	8.3
C90 Mult. myeloma	5	3.7	1.3	0.4	3.1	0.9	40.0
C91–C96 Leukaemia	7	4.9	1.4	0.6	3.0	1.4	42.9
Others, specified	10	4.9	2.0	1.0	3.7	3.4	10.0
Not observed	0	5.4	0.0	0.0	0.7 #	-3.6	
All further malignancies	678	280.4	2.4	2.2	2.6 #	265.8	15.2

Patients	7192
Median age at next malignancy (years)	75.1
Person-years	14957
Mean observation time (years)	2.1
Median observation time (years)	0.9

The occurrence of further malignancy listed is statistically significant.

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

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2016

FEMALES

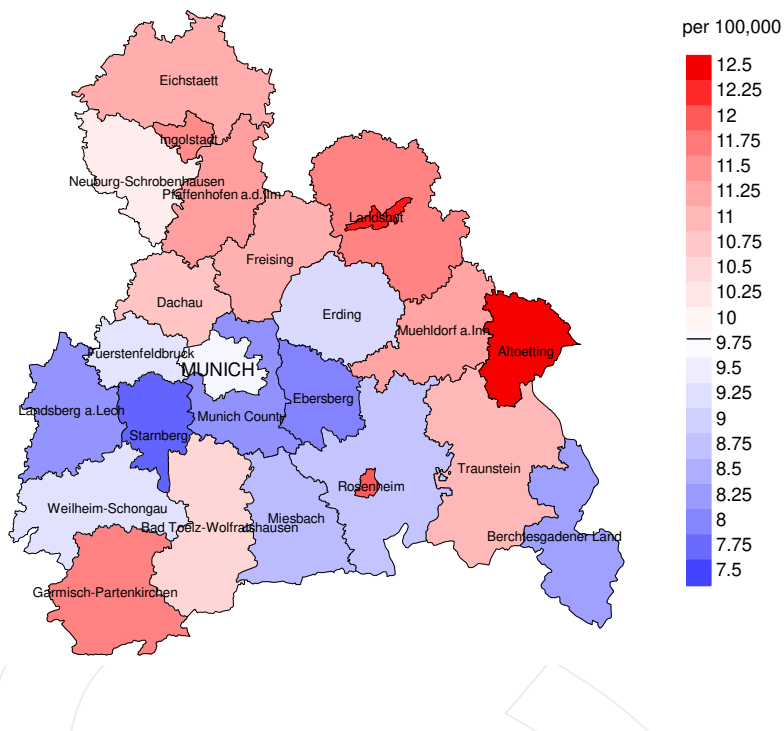
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	2	0.8	2.4	0.3	8.7	1.0	
C09-C10 Oropharynx	2	0.5	4.1	0.5	14.9	1.3	
C15 Oesophagus	2	0.9	2.3	0.3	8.2	1.0	
C16 Stomach	14	6.5	2.2	1.2	3.6 #	6.6	14.3
C17 Small intestine	6	0.7	8.7	3.2	19.0 #	4.6	
C18 Colon	62	17.3	3.6	2.7	4.6 #	39.1	11.3
C19-C20 Rectum	20	6.8	2.9	1.8	4.5 #	11.5	15.0
C22 Liver	9	2.0	4.6	2.1	8.7 #	6.2	22.2
C23-C24 Bile	2	2.5	0.8	0.1	2.8	-0.5	50.0
C25 Pancreas	28	7.7	3.6	2.4	5.2 #	17.7	46.4
C26 GI cancer	3	0.4	7.6	1.6	22.3 #	2.3	66.7
C33-C34 Lung	35	10.4	3.4	2.3	4.7 #	21.5	8.6
C43 Malign. melanoma	7	5.1	1.4	0.6	2.8	1.7	
C46,C49 Soft tissue	2	0.9	2.3	0.3	8.2	1.0	
C48 Peritoneal	3	0.5	5.9	1.2	17.3 #	2.2	66.7
C50 Breast	93	41.1	2.3	1.8	2.8 #	45.4	17.2
C51 Vulva	4	1.7	2.3	0.6	6.0	2.0	
C53 Cervix uteri	2	1.8	1.1	0.1	4.1	0.2	50.0
C54 Corpus uteri	8	7.8	1.0	0.4	2.0	0.2	
C56 Ovary	15	6.1	2.4	1.4	4.0 #	7.8	40.0
C64 Kidney	16	3.8	4.2	2.4	6.8 #	10.7	18.8
C65 Renal pelvis	2	0.5	4.0	0.5	14.3	1.3	
C67 Bladder	10	3.5	2.9	1.4	5.3 #	5.7	20.0
C73 Thyroid	5	2.0	2.5	0.8	5.9	2.7	
C76-C79 CUP	2	3.3	0.6	0.1	2.2	-1.1	50.0
C82-C85 NHL	18	6.2	2.9	1.7	4.6 #	10.3	11.1
C90 Mult. myeloma	6	2.0	2.9	1.1	6.4 #	3.5	16.7
C91-C96 Leukaemia	6	2.7	2.2	0.8	4.9	2.9	50.0
Others, specified	9	4.5	2.0	0.9	3.8	3.9	33.3
Not observed	0	2.5	0.0	0.0	1.5	-2.2	
All further malignancies	393	152.4	2.6	2.3	2.8 #	210.4	18.6

Patients	5333
Median age at next malignancy (years)	76.8
Person-years	11436
Mean observation time (years)	2.1
Median observation time (years)	0.8

The occurrence of further malignancy listed is statistically significant.

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

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



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

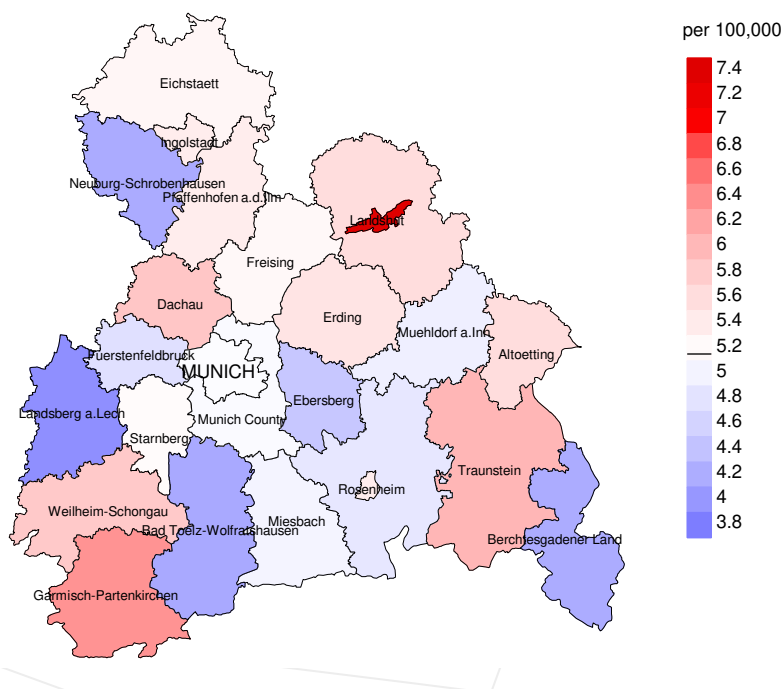
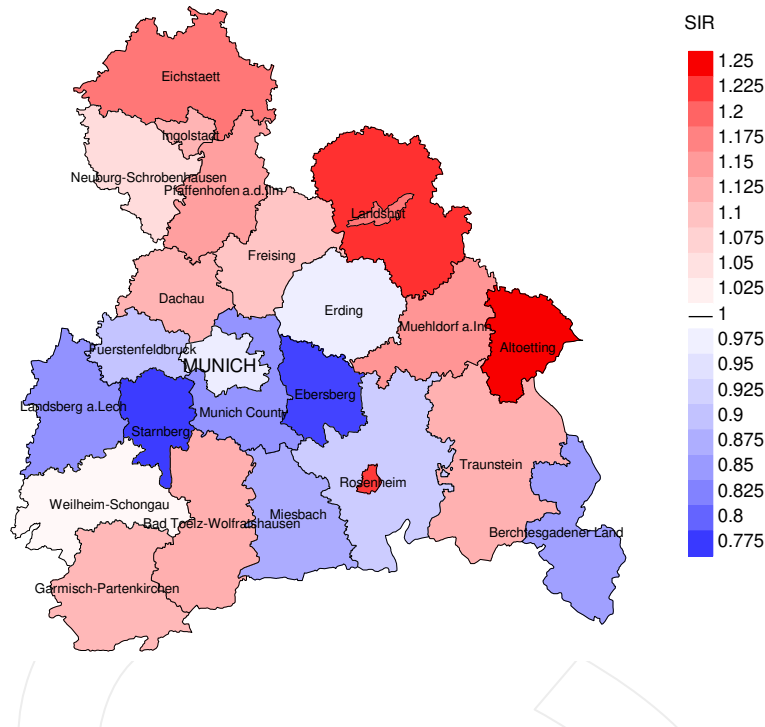


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 9.8/100,000 WS N=4,682, females 5.2/100,000 WS N=3,271).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 77 women were identified with newly diagnosed stomach cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 4.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.1 and 6.3/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

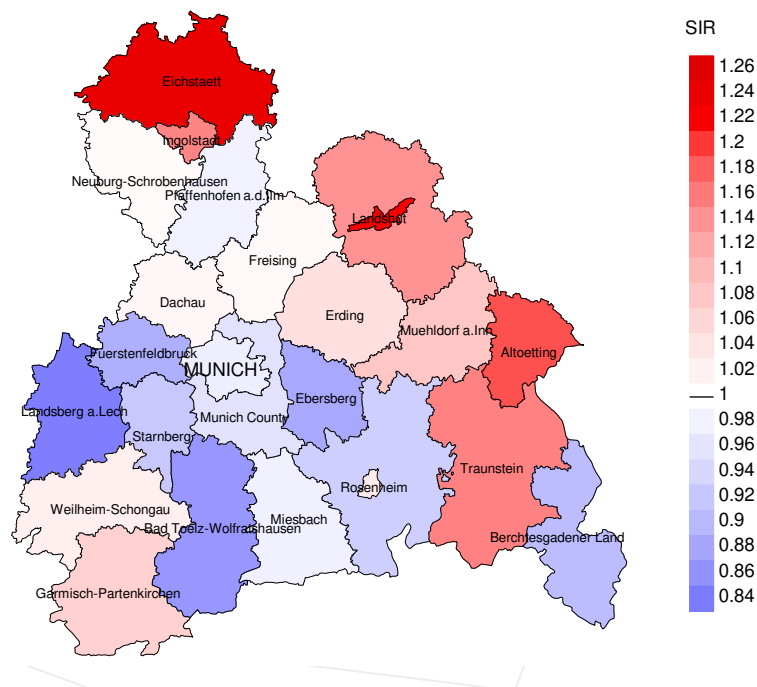


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=4,682, females N=3,271).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 77 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 0.64 and 1.18, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	572	98.6	12.2	505	88.3	93.7
1999	513	97.9	12.1	454	88.5	93.6
2000	488	98.2	12.7	433	88.7	97.9
2001	520	96.9	12.9	443	85.2	93.0
2002	875	98.4	19.0	784	89.6	97.8
2003	764	98.3	13.4	659	86.3	98.6
2004	842	97.7	10.6	702	83.4	97.4
2005	772	96.5	11.9	638	82.6	98.7
2006	765	95.0	6.1	601	78.6	97.8
2007	880	87.4	9.0	691	78.5	99.6
2008	881	85.0	7.0	673	76.4	98.2
2009	867	83.5	7.5	648	74.7	99.4
2010	793	82.2	6.8	560	70.6	98.2
2011	865	81.4	5.2	599	69.2	97.7
2012	838	78.4	5.7	549	65.5	97.1
2013	779	78.6	6.3	466	59.8	97.2
2014	767	80.7	6.9	441	57.5	97.7
2015	702	98.1	7.7	341	48.6	96.8
2016	604	77.2	6.5	200	33.1	83.0
1998-2016	14087	89.4	9.3	10387	73.7	97.2

Table 9b

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

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	572	452	92.9	228	39.9
1999	513	426	91.3	202	39.4
2000	488	410	95.9	172	35.2
2001	520	429	94.2	195	37.5
2002	875	611	98.0	350	40.0
2003	764	628	96.5	291	38.1
2004	842	631	97.8	265	31.5
2005	772	641	97.2	266	34.5
2006	765	615	96.7	219	28.6
2007	880	692	98.4	298	33.9
2008	881	712	98.3	279	31.7
2009	867	708	99.0	268	30.9
2010	793	664	98.5	227	28.6
2011	865	645	98.4	231	26.7
2012	838	695	98.7	240	28.6
2013	779	628	97.8	209	26.8
2014	767	647	98.9	211	27.5
2015	702	608	97.9	203	28.9
2016	604	559	98.2	171	28.3
1998-2016	14087	11401	97.4	4525	32.1

Table 9c

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

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	452	70.4	29.6	92.9
1999	426	81.2	18.8	93.8
2000	410	82.7	17.3	93.1
2001	429	80.0	20.0	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	641	81.3	18.7	91.5
2006	615	82.9	17.1	92.4
2007	692	81.1	18.9	90.3
2008	712	82.3	17.7	89.7
2009	708	81.5	18.5	90.2
2010	664	79.8	20.2	89.6
2011	645	78.9	21.1	88.5
2012	695	80.3	19.7	88.5
2013	628	78.8	21.2	85.7
2014	647	75.4	24.6	86.3
2015	608	74.8	25.2	85.4
2016	559	75.5	24.5	85.6
1998-2016	11401	79.9	20.1	89.9

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	219	75.4	72.9	79.6	75.4
1999	223	74.5	73.4	80.2	74.6
2000	206	74.3	72.0	79.0	73.0
2001	214	73.9	72.4	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	76.0	74.1	82.9	74.8
2005	343	75.7	74.3	79.5	75.4
2006	342	76.8	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	412	74.5	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	398	75.2	73.6	82.3	73.9
2013	373	76.2	74.8	84.3	75.4
2014	373	77.0	75.6	81.4	76.1
2015	362	77.1	75.2	82.4	76.0
2016	315	76.9	76.1	82.2	76.6
1998–2016	6326	75.7	74.0	81.7	75.0

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	296	81.5	80.4	85.0	80.8
2010	273	81.9	79.9	86.4	81.2
2011	251	81.4	79.4	87.7	80.3
2012	297	78.7	75.5	86.8	77.1
2013	255	82.3	78.4	87.1	79.3
2014	274	81.3	78.9	85.8	79.7
2015	246	81.6	79.3	88.0	80.1
2016	244	82.4	79.6	87.7	81.5
1998–2016	5075	80.8	78.8	85.9	79.9

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 years for girls.

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

Table 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	154	13.9	0.52	8.0	0.50	12.7	0.51	17.4	0.51
1999	185	16.5	0.70	9.5	0.69	15.1	0.70	20.6	0.70
2000	166	14.6	0.63	8.3	0.61	13.1	0.62	17.9	0.64
2001	170	14.7	0.64	8.3	0.63	13.2	0.66	18.1	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	290	15.3	0.70	7.5	0.69	11.9	0.69	16.9	0.71
2006	275	14.4	0.64	6.9	0.61	11.2	0.64	15.7	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	0.60	10.6	0.63	14.7	0.66
2009	339	15.2	0.67	7.2	0.67	11.1	0.67	15.0	0.67
2010	316	14.0	0.67	6.6	0.63	10.0	0.64	13.5	0.67
2011	307	13.7	0.59	6.3	0.58	9.9	0.59	13.2	0.60
2012	317	14.0	0.65	6.2	0.60	9.7	0.62	13.1	0.66
2013	309	13.4	0.66	6.0	0.63	9.3	0.65	12.7	0.68
2014	279	12.0	0.61	5.1	0.56	8.0	0.59	10.9	0.61
2015	279	11.7	0.65	5.1	0.59	8.0	0.62	10.5	0.64
2016	250	10.4	0.71	4.5	0.66	7.0	0.69	9.2	0.70
1998-2016	5094	13.8	0.64	6.6	0.61	10.3	0.63	14.1	0.65

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	0.59	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	0.63	6.6	0.63	8.9	0.63
2006	235	11.7	0.70	3.9	0.63	6.2	0.64	8.7	0.68
2007	253	11.0	0.66	3.8	0.65	5.9	0.65	7.8	0.63
2008	270	11.6	0.70	3.9	0.63	6.2	0.65	8.6	0.68
2009	238	10.2	0.65	3.3	0.57	5.3	0.60	7.4	0.63
2010	214	9.1	0.67	3.0	0.60	4.7	0.62	6.4	0.63
2011	202	8.6	0.59	2.9	0.53	4.6	0.54	6.1	0.56
2012	241	10.2	0.69	3.7	0.65	5.6	0.66	7.5	0.68
2013	186	7.8	0.61	2.5	0.50	4.0	0.53	5.4	0.56
2014	209	8.7	0.68	3.0	0.61	4.5	0.62	5.9	0.65
2015	176	7.2	0.66	2.3	0.58	3.6	0.61	4.9	0.62
2016	172	7.0	0.69	2.2	0.56	3.5	0.59	4.7	0.63
1998-2016	4013	10.5	0.66	3.6	0.60	5.6	0.62	7.6	0.63

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	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	0.1	0.1	2	0.1	0.1	1	0.0	0.1
25-29	7	0.1	0.2	3	0.1	0.2	4	0.2	0.3
30-34	11	0.2	0.4	2	0.1	0.2	9	0.4	0.7
35-39	31	0.6	1.0	18	0.6	0.8	13	0.6	1.3
40-44	50	1.0	2.0	28	0.9	1.8	22	1.0	2.3
45-49	127	2.5	4.4	77	2.5	4.3	50	2.3	4.6
50-54	190	3.7	8.1	120	4.0	8.3	70	3.2	7.9
55-59	307	5.9	14.0	202	6.7	15.0	105	4.9	12.7
60-64	404	7.8	21.8	285	9.4	24.4	119	5.5	18.2
65-69	561	10.8	32.7	385	12.7	37.2	176	8.1	26.4
70-74	741	14.3	47.0	480	15.9	53.0	261	12.1	38.5
75-79	796	15.4	62.3	491	16.3	69.3	305	14.1	52.6
80-84	861	16.6	78.9	476	15.8	85.1	385	17.8	70.4
85+	1091	21.1	100.0	451	14.9	100.0	640	29.6	100.0
All ages	5181	100.0		3020	100.0		2161	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4		1			0.1	1.00		6.7
5- 9								
10-14								
15-19								
20-24	2	1	0.1	0.67	0.1	1.00	3.5	3.0
25-29	3	4	0.2	0.43	0.3	0.50	4.1	5.5
30-34	2	9	0.1	0.13	0.6	0.38	1.9	7.5
35-39	18	13	1.1	0.43	0.8	0.35	9.0	4.6
40-44	28	22	1.5	0.38	1.2	0.43	5.7	3.3
45-49	77	50	3.9	0.47	2.6	0.46	6.7	3.8
50-54	120	70	6.9	0.46	4.1	0.47	5.8	3.5
55-59	202	105	14.3	0.54	7.1	0.58	6.0	3.7
60-64	285	119	23.3	0.60	9.0	0.58	5.7	3.2
65-69	385	176	32.5	0.59	13.6	0.56	5.3	3.3
70-74	480	261	43.4	0.61	20.6	0.56	5.2	3.8
75-79	491	305	61.6	0.66	30.5	0.62	5.5	4.4
80-84	476	385	103.5	0.78	54.4	0.76	6.3	5.6
85+	451	640	147.3	0.94	87.2	0.88	6.9	6.9
All ages	3020	2161					5.8	4.7
Mortality								
Raw			13.2	0.65	9.1	0.66		
WS			6.0	0.61	3.0	0.59		
ES			9.3	0.63	4.7	0.61		
BRD-S			12.6	0.65	6.4	0.63		
PYLL-70								
per 100,000			55.1		33.3			
ES			47.4		28.4			
AYLL-70			9.9		11.7			

Table 14a

Further malignancies in deaths in period 1998–2016
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03–C06 Oral cavity	16	1.0	14	87.5			2	12.5
C09–C10 Oropharynx	18	1.2	9	50.0	3	16.7	6	33.3
C15 Oesophagus	17	1.1			3	17.6	14	82.4
C16 Stomach	31	2.0			18	58.1	13	41.9
C18 Colon	205	13.4	95	46.3	51	24.9	59	28.8
C19–C20 Rectum	89	5.8	51	57.3	15	16.9	23	25.8
C22 Liver	31	2.0	7	22.6	10	32.3	14	45.2
C23–C24 Bile	18	1.2	3	16.7	4	22.2	11	61.1
C25 Pancreas	69	4.5	13	18.8	21	30.4	35	50.7
C32 Larynx	24	1.6	18	75.0	2	8.3	4	16.7
C33–C34 Lung	179	11.7	46	25.7	37	20.7	96	53.6
C43 Malign. melanoma	42	2.8	33	78.6	1	2.4	8	19.0
C44 Skin others	82	5.4	57	69.5	5	6.1	20	24.4
C61 Prostate	351	23.0	247	70.4	27	7.7	77	21.9
C62 Testis	13	0.9	11	84.6			2	15.4
C64 Kidney	62	4.1	32	51.6	7	11.3	23	37.1
C67 Bladder	79	5.2	54	68.4	5	6.3	20	25.3
C76–C79 CUP	16	1.0	10	62.5	2	12.5	4	25.0
C82–C85 NHL	59	3.9	28	47.5	12	20.3	19	32.2
C90 Mult. myeloma	13	0.9	7	53.8	1	7.7	5	38.5
C91–C96 Leukaemia	17	1.1	4	23.5	1	5.9	12	70.6
Others, specified	95	6.2	53	55.8	5	5.3	37	38.9
All further malignancies	1526	100.0	792	51.9	230	15.1	504	33.0

Further malignancies with number of cases 1 to 9 are pooled in category "Others, specified".

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

Table 14b

Further malignancies in deaths in period 1998–2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C16 Stomach	12	1.1			5	41.7	7	58.3
C18 Colon	144	13.8	66	45.8	33	22.9	45	31.3
C19–C20 Rectum	46	4.4	22	47.8	4	8.7	20	43.5
C25 Pancreas	48	4.6	6	12.5	14	29.2	28	58.3
C33–C34 Lung	50	4.8	14	28.0	12	24.0	24	48.0
C43 Malign. melanoma	25	2.4	21	84.0			4	16.0
C44 Skin others	39	3.7	27	69.2	2	5.1	10	25.6
C50 Breast	335	32.0	240	71.6	27	8.1	68	20.3
C53 Cervix uteri	17	1.6	15	88.2	1	5.9	1	5.9
C54 Corpus uteri	49	4.7	42	85.7	3	6.1	4	8.2
C56 Ovary	56	5.4	33	58.9	7	12.5	16	28.6
C64 Kidney	27	2.6	11	40.7	8	29.6	8	29.6
C67 Bladder	22	2.1	10	45.5	2	9.1	10	45.5
C73 Thyroid	12	1.1	10	83.3			2	16.7
C76–C79 CUP	11	1.1	5	45.5	3	27.3	3	27.3
C82–C85 NHL	40	3.8	23	57.5	6	15.0	11	27.5
C90 Mult. myeloma	11	1.1	5	45.5	3	27.3	3	27.3
Others, specified	102	9.8	50	49.0	18	17.6	34	33.3
All further malignancies	1046	100.0	600	57.4	148	14.1	298	28.5

Further malignancies with number of cases 1 to 10 are pooled in category “Others, specified”.

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

Table 15

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

Age at death Years	Males		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	2.0	3.2
25-29	3	4	0.2	0.43	0.3	0.50	4.5	6.0
30-34	2	8	0.1	0.13	0.5	0.33	2.0	7.5
35-39	18	13	1.1	0.43	0.8	0.35	9.5	5.1
40-44	28	22	1.5	0.41	1.2	0.47	6.1	3.7
45-49	70	46	3.5	0.45	2.4	0.48	6.7	4.1
50-54	112	62	6.5	0.47	3.6	0.48	6.2	3.7
55-59	180	81	12.7	0.55	5.5	0.53	6.1	3.4
60-64	244	98	19.9	0.61	7.4	0.58	5.8	3.2
65-69	304	140	25.7	0.58	10.8	0.57	5.2	3.3
70-74	393	216	35.5	0.66	17.1	0.60	5.5	4.1
75-79	360	233	45.2	0.69	23.3	0.62	5.4	4.3
80-84	362	314	78.7	0.81	44.4	0.75	6.6	5.9
85+	335	518	109.4	1.01	70.6	0.90	7.0	7.1
All ages	2412	1757					5.9	4.7
Mortality								
Raw			10.6	0.66	7.4	0.67		
WS			4.9	0.61	2.5	0.59		
ES			7.5	0.64	3.9	0.61		
BRD-S			10.0	0.66	5.2	0.63		
PYLL-70								
per 100,000			49.5		29.2			
ES			42.6		25.0			
AYLL-70			10.4		12.2			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males		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	2.0	3.2
25-29	3	4	0.2	0.43	0.3	0.50	4.5	6.2
30-34	2	8	0.1	0.13	0.5	0.33	2.0	7.7
35-39	18	13	1.1	0.43	0.8	0.35	9.6	5.1
40-44	28	21	1.5	0.41	1.2	0.46	6.2	3.6
45-49	69	45	3.5	0.46	2.4	0.49	6.7	4.0
50-54	108	61	6.3	0.47	3.6	0.50	6.1	3.7
55-59	173	78	12.2	0.55	5.3	0.53	6.0	3.3
60-64	227	88	18.5	0.60	6.6	0.55	5.5	2.9
65-69	282	127	23.8	0.57	9.8	0.56	4.9	3.1
70-74	361	199	32.6	0.65	15.7	0.59	5.2	3.9
75-79	307	213	38.5	0.64	21.3	0.60	4.8	4.0
80-84	305	286	66.3	0.72	40.4	0.72	5.9	5.6
85+	296	473	96.7	0.92	64.4	0.85	6.7	6.7
All ages	2180	1618					5.5	4.5
Mortality								
Raw			9.5	0.63	6.8	0.64		
WS			4.5	0.60	2.3	0.58		
ES			6.9	0.61	3.6	0.59		
BRD-S			9.0	0.63	4.8	0.61		
PYLL-70								
per 100,000			47.7		28.1			
ES			41.1		24.1			
AYLL-70			10.6		12.6			

* See corresponding tables with multiple malignancies.

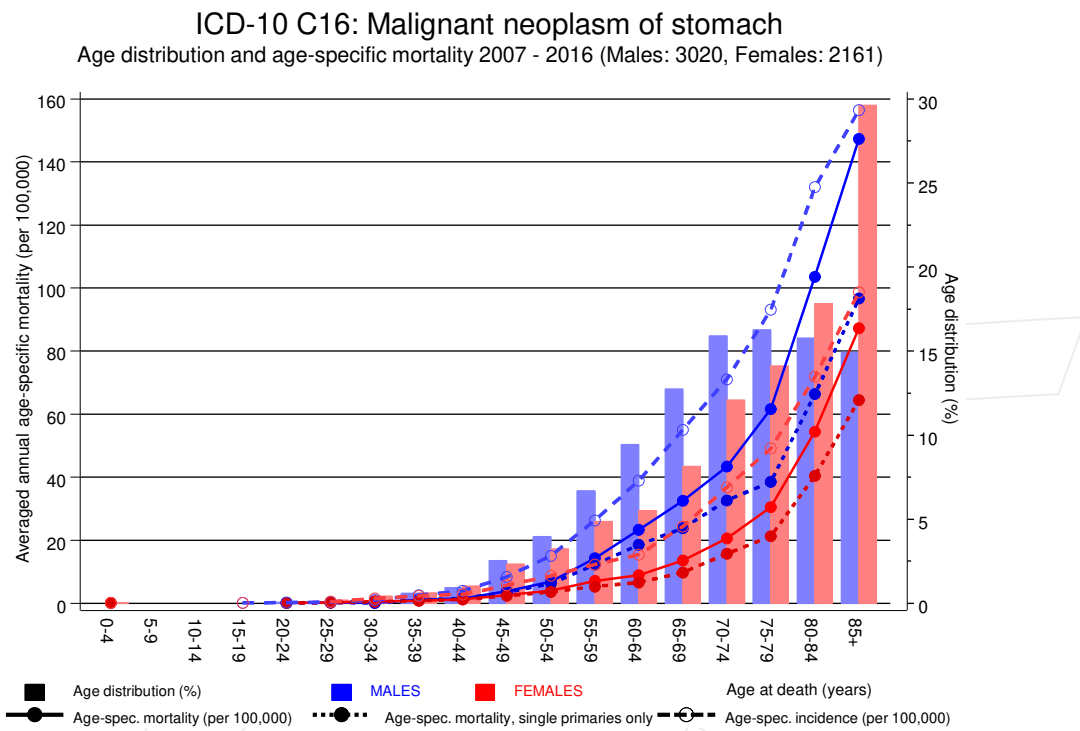
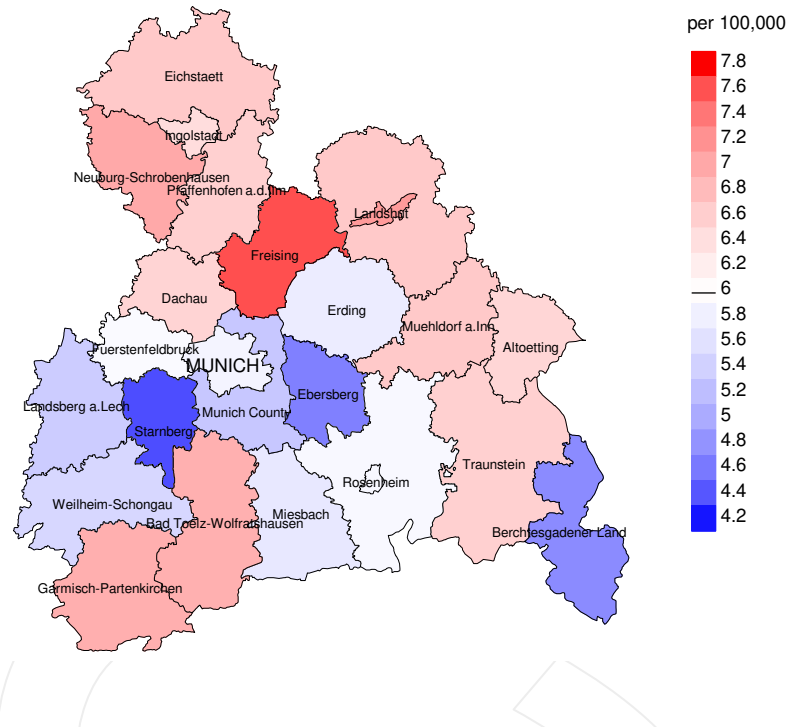


Figure 17. Distribution of age at death (bars; males: mean=70.5 yrs, median=72.0 yrs; females: mean=74.2 yrs, median=76.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

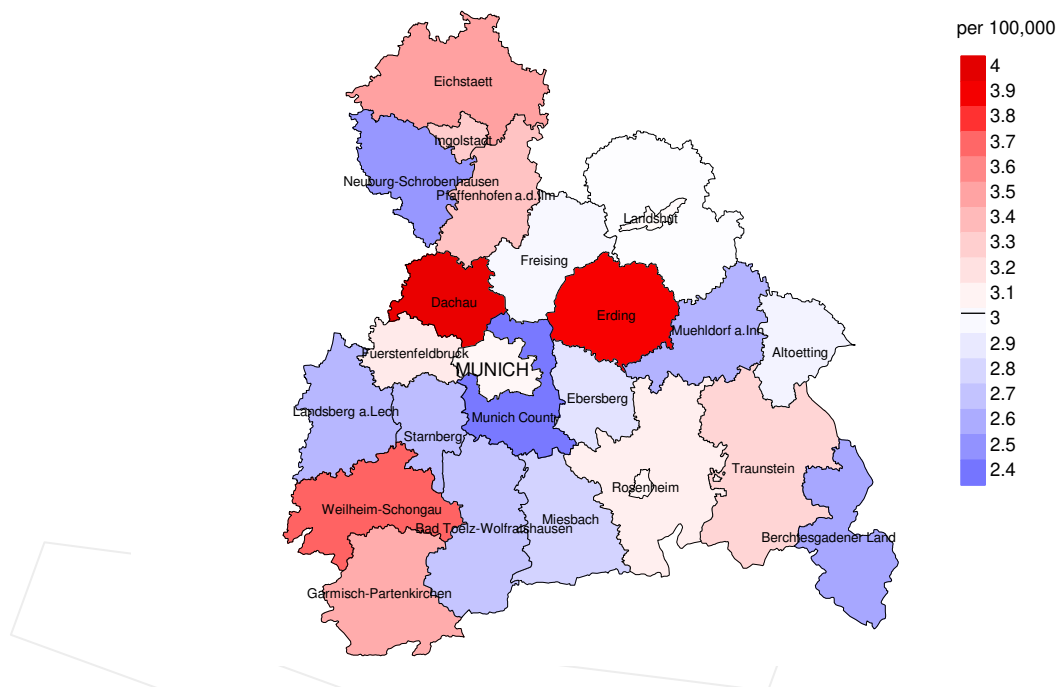
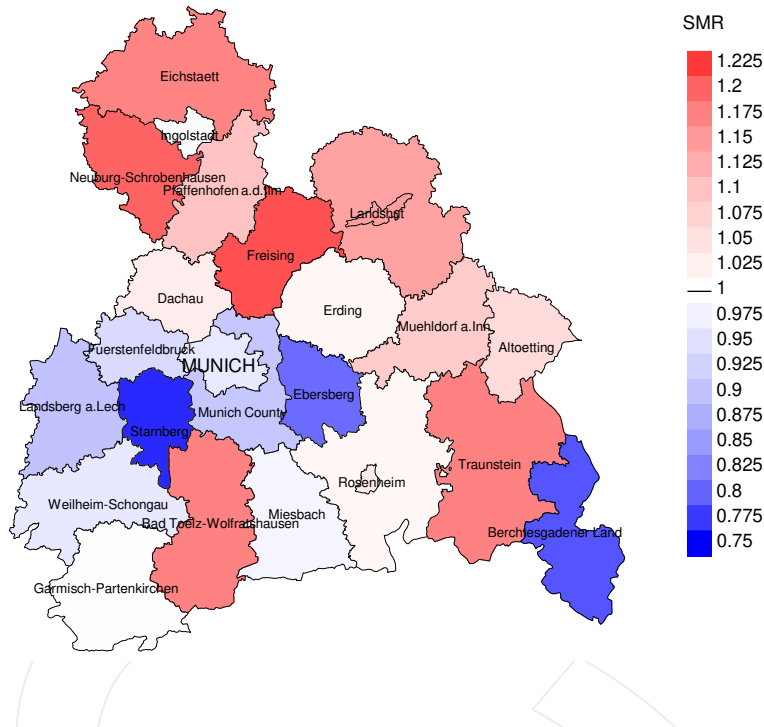


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.0/100,000 WS N=3,020, females 3.0/100,000 WS N=2,161).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 54 women died from stomach cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.9/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.8 and 4.4/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

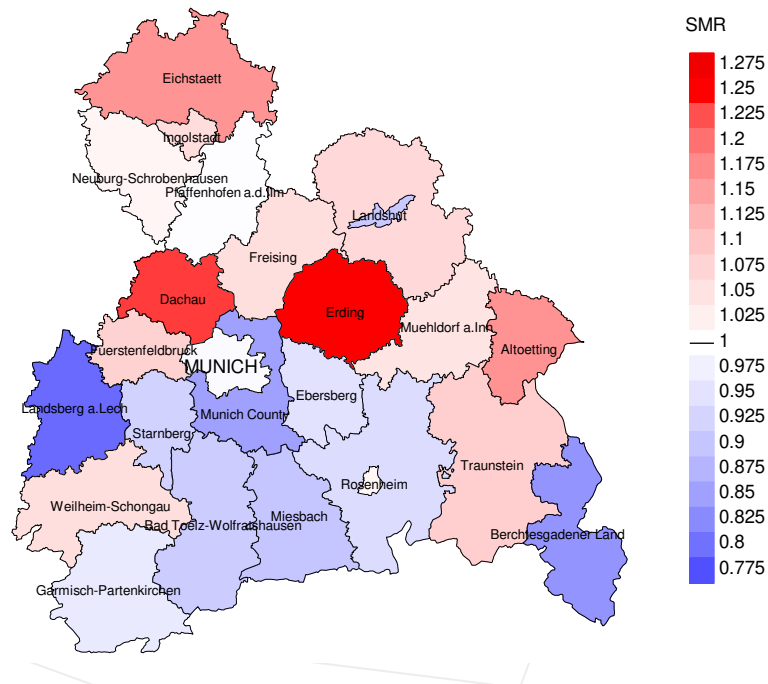


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,020, females N=2,161).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 54 women died from stomach cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.95. Though, the value of this parameter may vary with an underlying probability of 99% between 0.65 and 1.34, and is therefore not statistically striking.

Statistical Notes

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

1. All multiple primaries included

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

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