Munich Cancer Registry

ICD-10 C16: Stomach cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	16,717
Diseases	16,795
Creation date	12/20/2021
Database export	12/20/2021
Population	4.95 m

BERLIN

GERMANY

BAVARIA

MUNICH

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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

Index of figures and tables

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, December 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

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                              Table 1

        Cases with invasive cancer by year of diagnosis, proportions of
       DCO, further malignancies, deaths, and active follow-up (ALL PATIENTS)
                              (incl. DCO)
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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	6.8	91.0	98.8
1999	510	67	13.1	12.0	6.7	90.0	97.8
2000	487	64	13.1	12.8	6.7	92.4	98.2
2001	518	69	13.3	12.5	6.7	86.3	97.1
2002	878	173	19.7	12.1	6.7	91.8	98.6 #
2003	765	105	13.7	12.6	6.6	89.5	98.7
2004	842	93	11.0	12.8	6.6	86.3	98.3
2005	773	94	12.2	13.2	6.5	86.9	97.4
2006	763	48	6.3	13.3	6.3	83.9	96.9
2007	882	83	9.4	13.9	6.1	82.5	95.6 #
2008	884	62	7.0	14.2	6.1	82.0	98.9
2009	869	71	8.2	14.5	5.8	79.7	98.7
2010	799	59	7.4	14.9	5.6	78.2	98.7
2011	866	48	5.5	15.2	5.5	77.5	98.3
2012	849	49	5.8	15.4	5.1	72.9	98.8
2013	793	48	6.1	15.8	4.9	69.7	97.7
2014	820	60	7.3	16.1	4.4	67.9	97.8
2015	799	54	6.8	16.2	4.0	66.6	95.6
2016	799	44	5.5	16.5	3.5	64.2	99.5
2017	778	37	4.8	16.9	2.9	57.3	99.5
2018	614	19	3.1	17.0	2.3	46.6	99.3
2019	543	2	0.4	17.3	2.0	41.1	99.3
2020	396			17.4	1.0	34.1	99.2 ##
1998-2020	16795	1422	8.5	17.4	6.8	75.7	98.2

16,795 cases diagnosed 1998-2020 are related to a total of 16,717 patients. Currently, in 4,123 (24.7 %) of these 16,717 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,290 / 661 / 172 (19.7 % / 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 2018, a subgroup of 614 cases has been diagnosed, of which 17.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	7.4	91.9	98.3
1999	262	51.4	28	10.7	12.4	7.4	88.2	97.7
2000	265	54.4	26	9.8	13.3	7.4	92.8	98.1
2001	262	50.6	29	11.1	12.6	7.3	84.4	97.3
2002	456	51.9	73	16.0	12.1	7.3	91.9	98.5 #
2003	406	53.1	46	11.3	12.8	7.2	89.9	99.0
2004	470	55.8	38	8.1	13.2	7.2	86.8	98.9
2005	412	53.3	41	10.0	13.7	7.0	88.1	97.6
2006	429	56.2	18	4.2	14.0	6.8	83.7	97.0
2007	498	56.5	34	6.8	14.6	6.6	82.3	95.6 #
2008	499	56.4	28	5.6	15.0	6.6	83.6	99.4
2009	504	58.0	31	6.2	15.2	6.3	81.0	98.6
2010	477	59.7	23	4.8	15.5	6.0	76.7	99.0
2011	522	60.3	21	4.0	16.0	5.9	77.6	98.5
2012	494	58.2	21	4.3	16.3	5.4	73.7	98.8
2013	476	60.0	21	4.4	16.8	5.0	68.7	98.7
2014	493	60.1	22	4.5	17.1	4.7	66.9	97.0
2015	499	62.5	31	6.2	17.1	4.3	66.9	97.2
2016	470	58.8	23	4.9	17.4	3.8	65.1	99.4
2017	472	60.7	21	4.4	17.9	2.9	60.2	99.6
2018	373	60.7	7	1.9	18.0	2.4	46.9	98.9
2019	349	64.3	1	0.3	18.3	1.8	41.5	99.1
2020	237	59.8			18.5	1.3	33.8	99.6 ##
1998–2020	9620	57.3	621	6.5	18.5	7.4	75.2	98.3

9,620 cases diagnosed 1998-2020 are related to a total of 9,572 patients. Currently, in 2,501 (26.1 %) of these 9,572 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,977 / 410 / 114 (20.7 % / 4.3 % / 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 2018, a subgroup of 373 cases has been diagnosed, of which 18.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.4 % 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).

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                              Table 1b

           Cases with invasive cancer by year of diagnosis, proportions of
             DCO, further malignancies, deaths, and active follow-up (FEMALES)
                              (incl. DCO)
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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	5.9	90.1	99.3
1999	248	48.6	39	15.7	11.5	5.8	91.9	98.0
2000	222	45.6	38	17.1	12.4	5.9	91.9	98.2
2001	256	49.4	40	15.6	12.4	5.9	88.3	96.9
2002	422	48.1	100	23.7	12.0	5.9	91.7	98.8 #
2003	359	46.9	59	16.4	12.3	5.7	89.1	98.3
2004	372	44.2	55	14.8	12.4	5.7	85.8	97.6
2005	361	46.7	53	14.7	12.6	5.7	85.6	97.2
2006	334	43.8	30	9.0	12.5	5.6	84.1	96.7
2007	384	43.5	49	12.8	12.9	5.4	82.8	95.6 #
2008	385	43.6	34	8.8	13.4	5.3	80.0	98.2
2009	365	42.0	40	11.0	13.6	5.1	78.1	98.9
2010	322	40.3	36	11.2	14.1	5.0	80.4	98.4
2011	344	39.7	27	7.8	14.1	4.9	77.3	98.0
2012	355	41.8	28	7.9	14.4	4.7	71.8	98.9
2013	317	40.0	27	8.5	14.5	4.7	71.3	96.2
2014	327	39.9	38	11.6	14.9	3.8	69.4	99.1
2015	300	37.5	23	7.7	15.1	3.5	66.0	93.0
2016	329	41.2	21	6.4	15.3	3.1	62.9	99.7
2017	306	39.3	16	5.2	15.6	2.9	52.9	99.3
2018	241	39.3	12	5.0	15.6	2.2	46.1	100.0
2019	194	35.7	1	0.5	15.9	2.3	40.2	99.5
2020	159	40.2			16.0	0.6	34.6	98.7 ##
1998–2020	7175	42.7	801	11.2	16.0	5.9	76.3	98.0

7,175 cases diagnosed 1998-2020 are related to a total of 7,145 patients. Currently, in 1,622 (22.7 %) of these 7,145 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,313 / 251 / 58 (18.4 % / 3.5 % / 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 241 cases has been diagnosed, of which 15.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.2 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 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	422	24.5	21.6	13.2	8.2	20.8	12.6	28.3	17.0
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	498	384	22.5	16.6	11.2	5.9	17.2	9.1	23.4	12.4
2008	499	385	22.4	16.6	11.2	6.3	16.8	9.6	22.4	12.7
2009	504	365	22.6	15.7	10.8	5.9	16.7	9.0	22.2	11.8
2010	477	322	21.2	13.8	10.5	5.0	15.8	7.7	20.4	10.3
2011	522	344	23.3	14.7	11.0	5.5	16.8	8.4	22.1	10.9
2012	494	355	21.8	15.0	10.6	5.8	15.9	8.6	20.3	11.2
2013	476	317	20.7	13.3	9.7	5.1	14.6	7.7	19.0	9.9
2014	493	327	21.1	13.6	9.9	5.2	14.8	7.7	19.2	9.8
2015	499	300	21.0	12.3	10.0	4.4	15.0	6.8	19.0	8.8
2016	470	329	19.6	13.4	9.2	5.1	13.7	7.7	17.6	9.9
2017	472	306	19.6	12.4	8.9	5.0	13.4	7.4	17.2	9.2
2018	373	241	15.3	9.7	7.5	3.8	10.9	5.6	13.6	7.2
2019	349	194	14.3	7.8	6.8	3.1	10.0	4.6	12.7	5.9
2020	237	159	9.7	6.4	4.7	2.7	6.8	3.8	8.7	4.8
1998–2020	9620	7175	20.7	14.9	10.1	5.6	15.3	8.5	20.0	11.1

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	Mean	Std. dev.	Min.	Max.	10%	25%	Median 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	878	72.8	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	882	72.7	12.8	27.8	101	54.6	65.4	74.5	82.3	87.4
2008	884	71.8	12.8	24.2	101	53.8	64.1	73.1	81.2	86.3
2009	869	72.0	12.8	31.1	102	53.5	64.6	73.7	81.4	87.2
2010	799	71.7	12.7	24.4	103	54.7	63.2	72.5	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	849	71.1	13.0	27.0	99.4	53.0	63.0	72.4	81.3	87.0
2013	793	71.2	13.4	16.2	99.5	52.8	63.2	73.4	80.5	87.3
2014	820	71.3	13.7	0.4	100	52.2	62.6	73.6	81.5	87.6
2015	799	71.6	13.0	26.0	100	53.8	63.4	73.4	81.2	87.7
2016	799	71.1	12.9	27.0	96.6	53.1	62.9	73.0	80.5	86.5
2017	778	71.2	12.9	22.8	96.1	53.2	62.6	73.6	80.4	86.5
2018	614	70.1	13.2	15.7	98.8	51.9	61.2	71.9	79.2	85.7
2019	543	70.1	12.4	25.5	96.3	52.8	61.7	72.5	79.4	84.4
2020	396	69.4	13.7	24.2	99.7	50.6	60.7	71.6	80.1	84.6
1998–2020	16795	71.7	13.0	0.4	103	53.6	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.	10%	25%	Median 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	498	70.6	12.2	35.3	99.0	52.7	63.4	71.8	80.1	85.2
2008	499	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	477	69.9	11.9	24.4	96.4	54.7	61.1	70.0	79.8	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	493	70.0	12.7	30.9	97.7	52.5	61.1	72.2	78.9	85.0
2015	499	70.1	12.4	32.1	96.0	52.9	61.9	70.9	79.5	86.0
2016	470	70.3	12.4	27.0	96.6	53.3	62.5	71.6	79.3	85.1
2017	472	70.9	12.3	35.2	95.5	53.6	62.2	72.9	79.6	85.9
2018	373	69.0	12.7	15.7	98.8	51.9	60.5	70.2	78.3	83.1
2019	349	69.6	12.0	25.5	96.3	53.3	61.0	71.8	78.3	83.9
2020	237	68.5	13.5	24.2	93.4	49.7	59.9	70.8	78.9	84.4
1998-2020	9620	70.3	12.4	14.5	102	53.3	62.4	71.8	79.2	85.1

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	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	422	74.6	13.4	19.3	102	55.6	67.2	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	365	73.6	14.1	32.6	101	51.6	65.9	77.1	84.5	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	355	72.8	13.7	29.6	99.3	52.6	64.6	74.0	83.5	88.2
2013	317	72.6	14.1	16.2	99.5	52.6	63.9	74.7	82.6	89.3
2014	327	73.3	14.9	0.4	100	51.1	64.9	75.3	84.9	89.5
2015	300	74.1	13.5	26.0	100	55.9	67.2	75.9	84.3	89.2
2016	329	72.3	13.5	30.2	96.6	52.0	64.2	75.2	81.9	88.3
2017	306	71.7	13.8	22.8	96.1	53.0	63.5	73.9	81.6	87.6
2018	241	71.8	13.8	31.7	94.4	52.3	62.8	75.1	81.1	88.2
2019	194	70.9	13.1	32.0	95.9	51.8	62.9	74.7	80.7	85.3
2020	159	70.7	14.0	28.1	99.7	51.9	62.7	72.7	81.4	85.9
1998–2020	7175	73.6	13.6	0.4	103	54.2	65.6	76.1	83.7	88.9

Table 4

Age distribution by 5-year age group and sex for period 2007-2020
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females 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	3	0.0	0.0	2	0.0	0.0	1	0.0	0.0
20-24	5	0.0	0.1	4	0.1	0.1	1	0.0	0.1
25-29	18	0.2	0.3	8	0.1	0.2	10	0.2	0.3
30-34	59	0.6	0.8	23	0.4	0.6	36	0.8	1.1
35-39	111	1.0	1.8	58	0.9	1.5	53	1.2	2.4
40-44	174	1.6	3.5	105	1.7	3.1	69	1.6	4.0
45-49	357	3.3	6.8	223	3.5	6.6	134	3.1	7.0
50-54	588	5.5	12.3	375	5.9	12.5	213	4.9	12.0
55-59	764	7.1	19.5	516	8.1	20.7	248	5.7	17.7
60-64	944	8.8	28.3	648	10.2	30.8	296	6.8	24.5
65-69	1313	12.3	40.6	879	13.8	44.6	434	10.0	34.6
70-74	1641	15.3	55.9	1041	16.4	61.0	600	13.9	48.4
75-79	1734	16.2	72.1	1049	16.5	77.5	685	15.8	64.3
80-84	1463	13.7	85.8	801	12.6	90.1	662	15.3	79.6
85+	1516	14.2	100.0	631	9.9	100.0	885	20.4	100.0
All ages	10691	100.0		6363	100.0		4328	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007–2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=283 %	Females DCO rate n=352 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4		1		0.1		100.0		0.6
5- 9								
10–14								
15–19	2	1	0.1	0.1			0.6	0.4
20–24	4	1	0.2	0.1	25.0		0.6	0.2
25–29	8	10	0.4	0.4			0.8	0.8
30–34	23	36	1.0	1.6			1.8	1.7
35–39	58	53	2.5	2.3		1.9	3.2	1.5
40–44	105	69	4.2	2.9		1.4	3.8	1.1
45–49	223	134	8.3	5.1			4.4	1.4
50–54	375	213	14.7	8.5	1.3	2.8	4.4	1.7
55–59	514	247	24.2	11.3	0.8	1.2	4.0	1.9
60–64	646	294	36.5	15.5	2.2	1.7	3.7	1.9
65–69	874	432	53.5	23.8	2.3	3.0	3.6	2.3
70–74	1036	597	69.1	34.7	2.7	3.4	3.8	3.0
75–79	1040	682	85.9	45.4	4.0	5.1	4.3	3.5
80–84	799	660	110.3	62.0	7.1	8.9	5.2	4.3
85+	629	882	134.7	84.6	17.8	23.6	6.0	5.4
All ages	6336	4312			4.5	8.2	4.1	2.8
Incidence								
Raw			19.5	12.8				
WS			9.3	4.9				
ES			13.9	7.3				
BRD–S			17.9	9.5				

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

ICD-10 C16: Malignant neoplasm of stomach
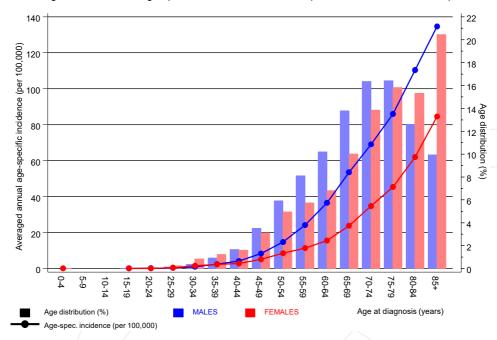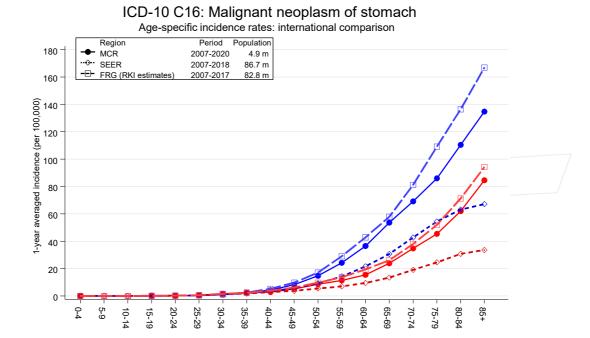Age distribution and age-specific incidence 2007 - 2020 (Males: 6336, Females: 4312)

Figure 6. Age distribution (males: mean=70.2 yrs, median=71.8 yrs; females: mean=73.1 yrs, median=75.6 yrs) and age-specific incidence.

ICD-10 C16: Malignant neoplasm of stomach
Age-specific incidence rates: international comparison

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

Reference:

Estimated age-specific patient population of Germany, latest update: 16 March 2021. German Centre for Cancer Registry Data, Robert Koch Institute (RKI), based on data of the population based cancer registries. http://www.krebsdaten.de. Last access: 08/17/2021
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 21 Regs Research Data, released April 2021, based on the November 2020 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 1998–2020

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06 Oral cavity	2	2.7	0.7	0.1	2.7		−0.3	
C07–C08 Salivary gland	2	0.9	2.2	0.3	7.9		0.5	
C09–C10 Oropharynx	7	3.2	2.2	0.9	4.5		1.8	
C14 ENT cancer	2	0.1	20.7	2.5	74.8	#	0.9	50.0
C15 Oesophagus	42	6.9	6.1	4.4	8.3	#	16.7	2.4
C16 Stomach	41	15.8	2.6	1.9	3.5	#	12.0	4.9
C17 Small intestine	25	2.2	11.5	7.5	17.0	#	10.9	
C18 Colon	132	37.9	3.5	2.9	4.1	#	44.9	9.8
C19–C20 Rectum	52	19.2	2.7	2.0	3.5	#	15.6	5.8
C21 Anus/canal	4	0.8	4.7	1.3	12.1	#	1.5	25.0
C22 Liver	36	10.5	3.4	2.4	4.7	#	12.1	16.7
C23–C24 Bile	12	4.1	3.0	1.5	5.2	#	3.8	16.7
C25 Pancreas	62	14.8	4.2	3.2	5.4	#	22.5	19.4
C26 GI cancer	2	0.5	4.1	0.5	14.7		0.7	50.0
C32 Larynx	7	3.4	2.1	0.8	4.3		1.7	28.6
C33–C34 Lung	123	42.9	2.9	2.4	3.4	#	38.2	15.4
C38,C45 Mesothelioma	7	2.6	2.7	1.1	5.6	#	2.1	
C43 Malign. melanoma	20	16.1	1.2	0.8	1.9		1.9	
C46,C49 Soft tissue	3	2.2	1.4	0.3	4.0		0.4	
C50 Breast	2	1.0	2.0	0.2	7.1		0.5	50.0
C61 Prostate	162	104.4	1.6	1.3	1.8	#	27.4	18.5
C62 Testis	2	0.8	2.5	0.3	9.1		0.6	
C64 Kidney	40	12.3	3.2	2.3	4.4	#	13.2	17.5
C65 Renal pelvis	7	1.7	4.1	1.6	8.4	#	2.5	
C67 Bladder	40	18.9	2.1	1.5	2.9	#	10.0	12.5
C68 Urethra	2	0.4	5.6	0.7	20.1		0.8	
C69 Eye carcinoma	2	0.2	13.2	1.6	47.8	#	0.9	
C70–C72 CNS cancer	8	4.5	1.8	0.8	3.5		1.7	37.5
C73 Thyroid	5	2.1	2.4	0.8	5.5		1.4	
C76–C79 CUP	8	6.5	1.2	0.5	2.4		0.7	
C81 Hodgkin lymphoma	6	0.8	7.6	2.8	16.6	#	2.5	16.7
C82–C85 NHL	33	16.0	2.1	1.4	2.9	#	8.1	6.1
C90 Mult. myeloma	8	5.0	1.6	0.7	3.2		1.4	25.0
C91–C96 Leukaemia	10	6.0	1.7	0.8	3.1		1.9	30.0
Others, specified	8	3.9	2.0	0.9	4.0		1.9	12.5
Not observed	0	4.0	0.0	0.0	0.9	#	−1.9	
All further malignancies	924	375.4	2.5	2.3	2.6	#	261.5	12.8

Patients	9054
Median age at next malignancy (years)	74.8
Person-years	20981
Mean observation time (years)	2.3
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".
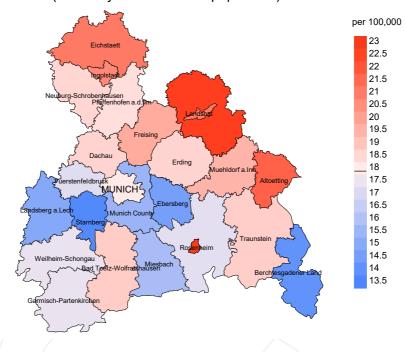
Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03-C06	Oral cavity	2	1.1	1.9	0.2	6.8		0.6	
C09-C10	Oropharynx	2	0.6	3.1	0.4	11.2		0.9	
C15	Oesophagus	3	1.2	2.5	0.5	7.2		1.2	
C16	Stomach	30	8.0	3.8	2.5	5.4	#	14.4	6.7
C17	Small intestine	7	1.0	7.3	2.9	15.0	#	4.0	
C18	Colon	83	21.9	3.8	3.0	4.7	#	40.0	15.7
C19-C20	Rectum	24	8.4	2.8	1.8	4.2	#	10.2	12.5
C21	Anus/canal	2	1.0	1.9	0.2	6.9		0.6	
C22	Liver	10	2.6	3.9	1.9	7.1	#	4.9	20.0
C23-C24	Bile	4	3.2	1.2	0.3	3.2		0.5	25.0
C25	Pancreas	47	10.1	4.6	3.4	6.2	#	24.1	36.2
C26	GI cancer	3	0.5	6.4	1.3	18.7	#	1.7	66.7
C30-C31	Sinuses	2	0.3	7.3	0.9	26.3		1.1	
C33-C34	Lung	46	13.8	3.3	2.4	4.4	#	21.1	6.5
C43	Malign. melanoma	11	6.9	1.6	0.8	2.9		2.7	
C46,C49	Soft tissue	2	1.1	1.8	0.2	6.3		0.6	
C48	Peritoneal	3	0.7	4.2	0.9	12.2		1.5	66.7
C50	Breast	118	54.6	2.2	1.8	2.6	#	41.5	15.3
C51	Vulva	4	2.3	1.7	0.5	4.5		1.1	
C53	Cervix uteri	4	2.2	1.8	0.5	4.6		1.2	25.0
C54	Corpus uteri	12	10.2	1.2	0.6	2.1		1.2	
C56	Ovary	22	7.8	2.8	1.8	4.3	#	9.3	27.3
C64	Kidney	20	4.7	4.2	2.6	6.5	#	10.0	30.0
C65	Renal pelvis	2	0.7	3.0	0.4	11.0		0.9	
C67	Bladder	12	4.6	2.6	1.4	4.6	#	4.9	16.7
C73	Thyroid	9	2.4	3.7	1.7	7.0	#	4.3	
C76-C79	CUP	2	4.2	0.5	0.1	1.7		−1.4	50.0
C82-C85	NHL	19	8.1	2.4	1.4	3.7	#	7.2	10.5
C90	Mult. myeloma	7	2.6	2.7	1.1	5.6	#	2.9	14.3
C91-C96	Leukaemia	6	3.1	1.9	0.7	4.2		1.9	50.0
	Others, specified	10	5.5	1.8	0.9	3.4		3.0	30.0
	Not observed	0	2.1	0.0	0.0	1.8		−1.4	
	All further malignancies	528	197.5	2.7	2.5	2.9	#	216.5	16.7

Patients	6533
Median age at next malignancy (years)	76.8
Person-years	15267
Mean observation time (years)	2.3
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 - 2020: Males

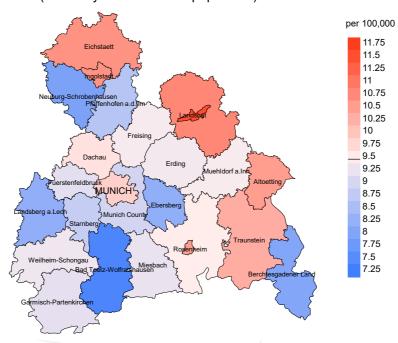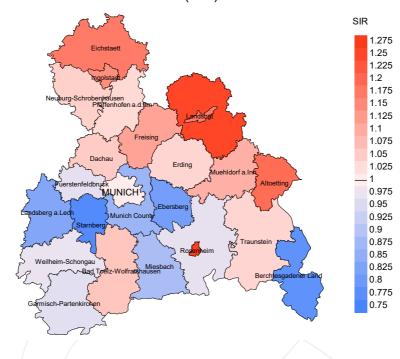Average incidence (Germany 1987 standard population) 2007 - 2020: Females

Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. 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 17.9/100,000 WS N=6,336, females 9.5/100,000 WS N=4,312).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 102 women were identified with newly diagnosed stomach cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 6.2 and 10.6/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males

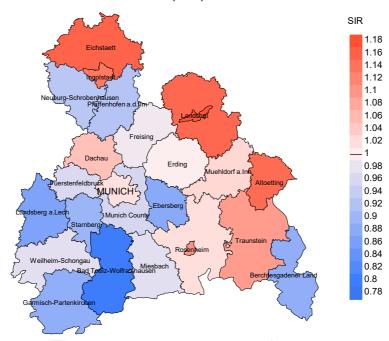Standardized incidence ratio (SIR) 2007 - 2020: Females

Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. 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=6,336, females N=4,312).

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 2020 a total of 102 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 0.67 and 1.13, 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 4.94 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	98.8	12.9	517	91.0	92.6
1999	510	97.8	13.1	459	90.0	93.5
2000	487	98.2	13.1	450	92.4	97.3
2001	518	97.1	13.3	447	86.3	92.4
2002	878	98.6	19.7	806	91.8	96.9
2003	765	98.7	13.7	685	89.5	97.5
2004	842	98.3	11.0	727	86.3	96.4
2005	773	97.4	12.2	672	86.9	97.5
2006	763	96.9	6.3	640	83.9	96.9
2007	882	95.6	9.4	728	82.5	98.4
2008	884	98.9	7.0	725	82.0	96.6
2009	869	98.7	8.2	693	79.7	98.3
2010	799	98.7	7.4	625	78.2	95.8
2011	866	98.3	5.5	671	77.5	96.6
2012	849	98.8	5.8	619	72.9	95.8
2013	793	97.7	6.1	553	69.7	96.9
2014	820	97.8	7.3	557	67.9	95.0
2015	799	95.6	6.8	532	66.6	94.7
2016	799	99.5	5.5	513	64.2	91.2
2017	778	99.5	4.8	446	57.3	82.1
2018	614	99.3	3.1	286	46.6	62.2
2019	543	99.3	0.4	223	41.1	78.5
2020	396	99.2		135	34.1	97.0
1998-2020	16795	98.2	8.5	12709	75.7	94.5

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 4.94 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	878	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	882	692	98.4	298	33.8
2008	884	712	98.3	279	31.6
2009	869	707	98.9	267	30.7
2010	799	665	98.3	227	28.4
2011	866	646	98.5	231	26.7
2012	849	697	98.6	240	28.3
2013	793	629	97.8	210	26.5
2014	820	651	98.8	215	26.2
2015	799	617	97.9	206	25.8
2016	799	677	99.0	209	26.2
2017	778	631	96.2	186	23.9
2018	614	539	70.9	123	20.0
2019	543	441	42.0	90	16.6
2020	396	477	93.9	71	17.9
1998−2020	16795	13617	94.4	5036	30.0

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates
(incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 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	665	79.7	20.3	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	651	75.3	24.7	86.3
2015	617	75.5	24.5	85.6
2016	677	77.8	22.2	86.4
2017	631	76.2	23.8	85.8
2018	539	65.7	34.3	75.1
2019	441	53.7	46.3	79.5
2020	477	61.2	38.8	76.8
1998-2020	13617	77.7	22.3	88.7
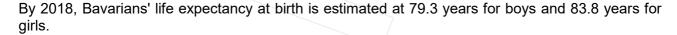
Table 10a

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	392	74.5	73.1	81.7	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	377	76.8	75.5	81.4	76.1
2015	371	77.0	75.2	82.4	76.0
2016	393	76.9	76.0	82.5	76.6
2017	382	77.2	74.6	83.1	75.7
2018	331	77.5	73.6	82.1	77.0
2019	297	78.1	72.1	81.5	71.9
2020	298	77.4	74.8	81.5	75.8
1998–2020	7719	76.0	74.0	81.8	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	284	81.9	79.4	87.7	80.9
2017	249	80.7	78.6	87.9	78.9
2018	208	80.3	75.5	86.4	77.9
2019	144	81.5	76.2	84.1	78.4
2020	179	81.1	77.1	87.6	79.1
1998–2020	5898	80.8	78.6	86.0	79.7

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	0.63	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	0.66	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	0.57	5.1	0.52	8.1	0.55	11.0	0.58
2015	288	12.1	0.58	5.3	0.53	8.3	0.56	10.8	0.57
2016	319	13.3	0.68	5.7	0.62	8.9	0.65	11.8	0.67
2017	291	12.1	0.62	5.2	0.59	8.0	0.60	10.5	0.62
2018	232	9.5	0.63	4.1	0.56	6.3	0.58	8.3	0.61
2019	166	6.8	0.48	3.1	0.46	4.6	0.46	6.0	0.48
2020	188	7.7	0.80	3.3	0.71	5.1	0.75	6.7	0.78
1998-2020	6046	13.0	0.63	6.0	0.60	9.4	0.62	12.7	0.64

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	0.53	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	0.65	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	0.68	3.7	0.64	5.6	0.66	7.5	0.67
2013	187	7.8	0.59	2.5	0.49	4.0	0.52	5.4	0.55
2014	209	8.7	0.64	3.0	0.57	4.5	0.58	5.9	0.61
2015	179	7.4	0.60	2.3	0.52	3.7	0.55	4.9	0.56
2016	209	8.5	0.64	2.7	0.53	4.2	0.56	5.8	0.59
2017	190	7.7	0.63	2.5	0.51	3.9	0.53	5.3	0.58
2018	122	4.9	0.51	1.9	0.49	2.8	0.50	3.5	0.49
2019	71	2.9	0.37	1.1	0.34	1.6	0.35	2.0	0.35
2020	104	4.2	0.66	1.4	0.53	2.2	0.57	2.9	0.61
1998-2020	4543	9.4	0.63	3.2	0.57	5.0	0.59	6.7	0.61

Table 12

Age distribution of age at death (cancer-related) for period 2007–2020
(incl. multiple malignancies)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females 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	0.1	0.2
30–34	24	0.4	0.5	4	0.1	0.3	20	0.7	1.0
35–39	43	0.6	1.2	26	0.7	0.9	17	0.6	1.6
40–44	66	1.0	2.2	37	0.9	1.8	29	1.1	2.7
45–49	159	2.4	4.6	98	2.5	4.3	61	2.3	4.9
50–54	267	4.0	8.6	175	4.4	8.7	92	3.4	8.4
55–59	404	6.1	14.6	270	6.8	15.5	134	5.0	13.3
60–64	519	7.8	22.4	373	9.4	24.9	146	5.4	18.8
65–69	716	10.7	33.1	493	12.4	37.2	223	8.3	27.1
70–74	946	14.2	47.3	624	15.7	52.9	322	12.0	39.0
75–79	1058	15.9	63.2	653	16.4	69.3	405	15.1	54.1
80–84	1114	16.7	79.9	636	16.0	85.3	478	17.8	71.8
85+	1342	20.1	100.0	584	14.7	100.0	758	28.2	100.0
All ages	6670	100.0		3979	100.0		2691	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**incl. multiple malignancies**)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4		1			0.1	1.00		6.3
5- 9								
10-14								
15-19								
20-24	2	1	0.1	0.50	0.1	1.00	2.7	2.3
25-29	4	4	0.2	0.50	0.2	0.40	4.3	4.0
30-34	4	20	0.2	0.17	0.9	0.56	2.8	11.0
35-39	26	17	1.1	0.45	0.7	0.32	9.7	4.2
40-44	37	29	1.5	0.35	1.2	0.42	6.1	3.4
45-49	98	61	3.6	0.44	2.3	0.46	6.9	3.6
50-54	175	92	6.9	0.47	3.7	0.43	6.6	3.5
55-59	270	134	12.7	0.53	6.2	0.54	6.1	3.5
60-64	373	146	21.1	0.58	7.7	0.50	5.8	2.9
65-69	493	223	30.2	0.56	12.3	0.52	5.4	3.2
70-74	624	322	41.6	0.60	18.7	0.54	5.3	3.7
75-79	653	405	54.0	0.63	27.0	0.59	5.2	4.1
80-84	636	478	87.8	0.80	44.9	0.72	6.1	5.1
85+	584	758	125.1	0.93	72.7	0.86	6.4	6.3
All ages	3979	2691					5.7	4.4
Mortality								
Raw			12.2	0.63	8.0	0.62		
WS			5.4	0.59	2.7	0.55		
ES			8.4	0.61	4.2	0.57		
BRD-S			11.3	0.63	5.6	0.59		
PYLL-70								
per 100,000			52.2		30.8			
ES			44.5		26.1			
AYLL-70			10.1		11.9			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	6	0.3	4	66.7			2	33.3
C03–C06	Oral cavity	22	1.2	19	86.4			3	13.6
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	50	2.6	12	24.0	20	40.0	18	36.0
C16	Stomach	18	0.9			6	33.3	12	66.7
C17	Small intestine	10	0.5	1	10.0	6	60.0	3	30.0
C18	Colon	248	13.1	123	49.6	60	24.2	65	26.2
C19–C20	Rectum	109	5.7	61	56.0	20	18.3	28	25.7
C21	Anus/canal	5	0.3	3	60.0			2	40.0
C22	Liver	37	1.9	7	18.9	12	32.4	18	48.6
C23–C24	Bile	21	1.1	3	14.3	4	19.0	14	66.7
C25	Pancreas	81	4.3	14	17.3	25	30.9	42	51.9
C30–C31	Sinuses	6	0.3	4	66.7			2	33.3
C32	Larynx	26	1.4	20	76.9	2	7.7	4	15.4
C33–C34	Lung	214	11.3	58	27.1	42	19.6	114	53.3
C38,C45	Mesothelioma	10	0.5	1	10.0	1	10.0	8	80.0
C43	Malign. melanoma	56	2.9	46	82.1	2	3.6	8	14.3
C44	Skin others	117	6.2	80	68.4	8	6.8	29	24.8
C46,C49	Soft tissue	9	0.5	5	55.6	1	11.1	3	33.3
C50	Breast	9	0.5	7	77.8			2	22.2
C61	Prostate	447	23.5	326	72.9	32	7.2	89	19.9
C62	Testis	19	1.0	16	84.2	1	5.3	2	10.5
C64	Kidney	71	3.7	36	50.7	9	12.7	26	36.6
C65	Renal pelvis	7	0.4	4	57.1			3	42.9
C66	Ureter	4	0.2	4	100.0				
C67	Bladder	100	5.3	68	68.0	6	6.0	26	26.0
C70–C72	CNS cancer	10	0.5	2	20.0			8	80.0
C73	Thyroid	8	0.4	8	100.0				
C76–C79	CUP	19	1.0	11	57.9	3	15.8	5	26.3
C81	Hodgkin lymphoma	10	0.5	8	80.0	1	10.0	1	10.0
C82–C85	NHL	70	3.7	35	50.0	14	20.0	21	30.0
C90	Mult. myeloma	16	0.8	9	56.3	1	6.3	6	37.5
C91–C96	Leukaemia	19	1.0	5	26.3	2	10.5	12	63.2
Others, specified		20	1.1	12	60.0			8	40.0
All further malignancies		1900	100.0	1028	54.1	281	14.8	591	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 1998–2020
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	0.2	2	66.7	1	33.3		
C15 Oesophagus	5	0.4	3	60.0	2	40.0		
C16 Stomach	12	1.0			5	41.7	7	58.3
C17 Small intestine	7	0.6	1	14.3	5	71.4	1	14.3
C18 Colon	167	13.6	76	45.5	36	21.6	55	32.9
C19–C20 Rectum	52	4.2	26	50.0	5	9.6	21	40.4
C21 Anus/canal	10	0.8	7	70.0	1	10.0	2	20.0
C22 Liver	12	1.0	2	16.7	4	33.3	6	50.0
C23–C24 Bile	7	0.6	3	42.9	1	14.3	3	42.9
C25 Pancreas	61	5.0	8	13.1	19	31.1	34	55.7
C32 Larynx	4	0.3	3	75.0			1	25.0
C33–C34 Lung	57	4.6	19	33.3	12	21.1	26	45.6
C40–C41 Bone	3	0.2	3	100.0				
C43 Malign. melanoma	29	2.4	24	82.8			5	17.2
C44 Skin others	59	4.8	44	74.6	2	3.4	13	22.0
C48 Peritoneal	5	0.4	1	20.0	2	40.0	2	40.0
C50 Breast	390	31.8	287	73.6	29	7.4	74	19.0
C51 Vulva	9	0.7	8	88.9			1	11.1
C53 Cervix uteri	20	1.6	18	90.0	1	5.0	1	5.0
C54 Corpus uteri	58	4.7	49	84.5	3	5.2	6	10.3
C55,C57 Fem. genitals un	5	0.4	3	60.0	2	40.0		
C56 Ovary	59	4.8	35	59.3	8	13.6	16	27.1
C64 Kidney	31	2.5	14	45.2	8	25.8	9	29.0
C66 Ureter	3	0.2	2	66.7			1	33.3
C67 Bladder	24	2.0	12	50.0	2	8.3	10	41.7
C73 Thyroid	15	1.2	12	80.0			3	20.0
C76–C79 CUP	12	1.0	5	41.7	4	33.3	3	25.0
C81 Hodgkin lymphoma	4	0.3	4	100.0				
C82–C85 NHL	49	4.0	30	61.2	8	16.3	11	22.4
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	1.6	7	35.0			13	65.0
All further malignancies	1226	100.0	723	59.0	167	13.6	336	27.4

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 2007-2020
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4		1			0.1	1.00		6.7
5- 9								
10-14								
15-19								
20-24	1	1	0.0	0.33	0.1	1.00	1.5	2.4
25-29	4	4	0.2	0.50	0.2	0.40	4.7	4.4
30-34	4	19	0.2	0.18	0.8	0.53	2.9	11.9
35-39	26	17	1.1	0.45	0.7	0.32	10.4	4.6
40-44	36	29	1.4	0.36	1.2	0.46	6.4	3.8
45-49	90	55	3.4	0.43	2.1	0.46	7.0	3.8
50-54	163	83	6.4	0.47	3.3	0.45	7.0	3.7
55-59	242	107	11.4	0.53	4.9	0.51	6.3	3.4
60-64	322	122	18.2	0.59	6.4	0.52	6.0	3.0
65-69	392	177	24.0	0.58	9.8	0.52	5.3	3.2
70-74	492	259	32.8	0.64	15.1	0.57	5.4	3.8
75-79	466	302	38.5	0.66	20.1	0.59	5.1	4.0
80-84	462	378	63.8	0.82	35.5	0.72	6.2	5.2
85+	412	604	88.2	0.97	57.9	0.88	6.3	6.4
All ages	3112	2158					5.8	4.4
Mortality								
Raw			9.6	0.64	6.4	0.63		
WS			4.4	0.59	2.2	0.55		
ES			6.7	0.61	3.4	0.57		
BRD-S			8.8	0.64	4.5	0.59		
PYLL-70								
per 100,000			47.1		27.4			
ES			40.2		23.3			
AYLL-70			10.5		12.6			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**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	0.0	0.33	0.1	1.00	1.5	2.5
25-29	4	4	0.2	0.50	0.2	0.40	4.7	4.5
30-34	4	18	0.2	0.18	0.8	0.51	2.9	11.5
35-39	26	17	1.1	0.45	0.7	0.32	10.5	4.7
40-44	36	28	1.4	0.36	1.2	0.46	6.5	3.8
45-49	89	53	3.3	0.45	2.0	0.47	7.0	3.7
50-54	158	81	6.2	0.49	3.2	0.46	6.8	3.7
55-59	231	104	10.9	0.54	4.8	0.51	6.1	3.3
60-64	300	112	17.0	0.60	5.9	0.50	5.7	2.8
65-69	364	163	22.3	0.57	9.0	0.52	5.1	3.0
70-74	450	240	30.0	0.64	14.0	0.57	5.1	3.7
75-79	397	274	32.8	0.61	18.2	0.58	4.6	3.8
80-84	386	344	53.3	0.73	32.3	0.70	5.5	5.0
85+	365	555	78.2	0.88	53.2	0.83	6.1	6.2
All ages	2811	1995					5.5	4.2

Mortality					
Raw	8.6	0.61	5.9	0.61
WS	4.1	0.58	2.1	0.55
ES	6.1	0.60	3.2	0.56
BRD-S	7.9	0.61	4.2	0.58

PYLL-70		
per 100,000	45.4	26.3
ES	38.8	22.5
AYLL-70	10.7	12.8

* See corresponding tables with multiple malignancies.

ICD-10 C16: Malignant neoplasm of stomach
Age distribution and age-specific mortality 2007 - 2020 (Males: 3979, Females: 2691)
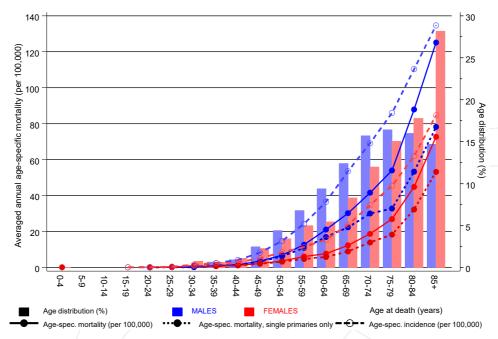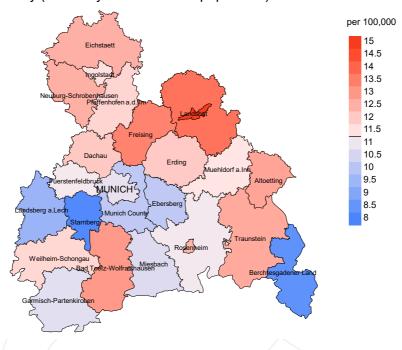
Figure 17. Distribution of age at death (bars; males: mean=70.2 yrs, median=71.8 yrs; females: mean=73.8 yrs, median=76.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed 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 - 2020: Males

Average mortality (Germany 1987 standard population) 2007 - 2020: Females
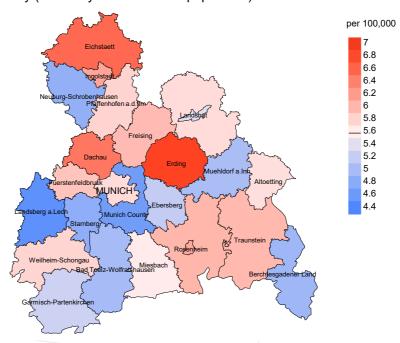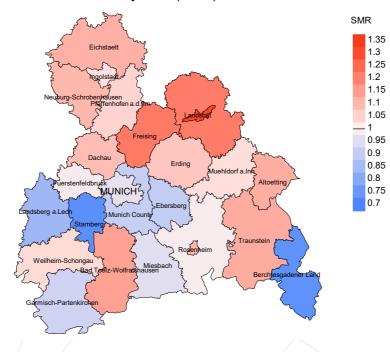
Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 11.3/100,000 WS N=3,979, females 5.6/100,000 WS N=2,691).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 68 women died from stomach cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 5.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.7 and 7.1/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males

Standardized mortality ratio (SMR) 2007 - 2020: Females
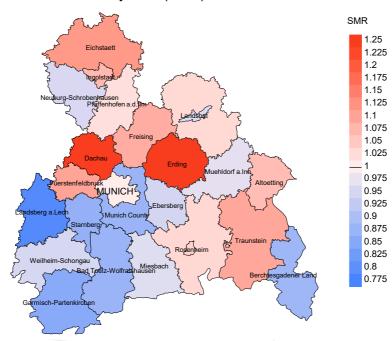
Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,979, females N=2,691).

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 2020 a total of 68 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 0.68 and 1.29, 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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