Munich Cancer Registry

- Survival
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- *Deutsch*

GEP-NET: Gastr.ent.pancr. neuroend. tumor

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	4,208
Diseases	4,251
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
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Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/base/bhDNETE-GEP-NET-Gastr.ent.pancr.-neuroend.-tumor-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.

Topography codes (ICD-O-3 2000) used for specifying cancer site

Code	Description
C15	Esophagus
C16	Stomach
C17	Small intestine
C18	Colon
C19	Rectosigmoid junction
C20	Rectum
C21	Anus and anal canal
C22	Liver and intrahepatic bile ducts
C23	Gallbladder
C24	Other and unspecified parts of biliary tract
C25	Pancreas
C26	Other and ill-defined digestive organs

... if additionally existing any of ...

Morphology codes (ICD-O-3 2011) used for specifying cancer site

Code	Description
8013/3	Large cell neuroendocrine carcinoma
8041/3	Small cell carcinoma, NOS
8150/3	Pancreatic endocrine tumor, malignant
8151/3	Insulinoma, malignant
8152/1	Glucagonoma, NOS
8152/3	Glucagonoma, malignant
8153/3	Gastrinoma, malignant
8155/3	Vipoma, malignant
8156/3	Somatostatinoma, malignant
8240/3	Carcinoid tumor, NOS
8241/3	Enterochromaffin cell carcinoid
8243/3	Goblet cell carcinoid
8244/3	Mixed adenoneuroendocrine carcinoma
8245/1	Tubular carcinoid
8246/3	Neuroendocrine carcinoma, NOS
8249/3	Atypical carcinoid tumor

Reference:

Bosman FT, Carneiro F, Hruban RH, Theise ND, editors. WHO Classification of Tumours of the Digestive System 4th edition, IARC, Lyon (2010).

INCIDENCE

Table 1

Cases with invasive cancer by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (ALL PATIENTS)

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	56	8.9	9.4	71.4	100.0
1999	61	12.8	9.3	63.9	93.4
2000	49	12.7	9.3	59.2	98.0
2001	55	14.5	9.1	63.6	98.2
2002	97	13.5	8.9	61.9	95.9 #
2003	98	13.2	8.8	63.3	93.9
2004	125	14.0	8.6	56.0	93.6
2005	127	15.7	8.4	63.0	93.7
2006	155	15.3	8.1	60.6	94.8
2007	191	16.0	7.6	56.5	91.6 #
2008	189	16.1	7.3	50.8	98.4
2009	190	16.7	6.9	52.1	100.0
2010	216	17.4	6.8	48.6	97.2
2011	238	17.5	6.5	46.2	98.3
2012	261	18.1	5.7	43.3	95.4
2013	286	18.1	5.8	37.8	96.5
2014	286	18.4	5.4	44.8	98.3
2015	258	18.8	4.8	36.0	93.4
2016	305	19.4	4.3	35.7	99.3
2017	317	19.7	3.6	28.7	99.7
2018	244	20.0	3.5	23.0	99.2
2019	256	20.0	2.3	20.7	99.6
2020	191	20.1	2.2	14.1	99.5 ##
1998-2020	4251	20.1	9.4	42.5	97.2

4,251 cases diagnosed 1998-2020 are related to a total of 4,208 patients. Currently, in 1,222 (29.0 %) of these 4,208 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 906 / 249 / 67 (21.5 % / 5.9 % / 1.6 %) 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 244 cases has been diagnosed, of which 20.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.5 % 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 further malignancies, deaths, and active follow-up (MALES)

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	31	55.4	12.9	10.7	80.6	100.0
1999	33	54.1	15.6	10.5	72.7	100.0
2000	23	46.9	16.1	10.5	73.9	100.0
2001	29	52.7	18.1	10.3	79.3	100.0
2002	55	56.7	14.0	10.1	65.5	96.4 #
2003	49	50.0	12.7	10.0	69.4	93.9
2004	72	57.6	13.0	9.7	56.9	94.4
2005	73	57.5	15.6	9.4	72.6	95.9
2006	95	61.3	15.4	9.0	64.2	93.7
2007	122	63.9	16.3	8.4	54.9	94.3 #
2008	97	51.3	16.5	8.0	52.6	99.0
2009	102	53.7	17.7	7.7	56.9	100.0
2010	106	49.1	19.1	7.7	51.9	97.2
2011	133	55.9	19.9	7.6	51.1	98.5
2012	130	49.8	20.5	6.5	49.2	94.6
2013	157	54.9	20.6	6.6	42.7	97.5
2014	144	50.3	20.5	5.7	46.5	99.3
2015	153	59.3	20.5	5.5	41.2	94.8
2016	160	52.5	21.0	5.1	41.9	100.0
2017	169	53.3	21.5	4.7	34.9	100.0
2018	127	52.0	21.9	4.2	22.8	100.0
2019	135	52.7	21.8	3.0	20.7	100.0
2020	106	55.5	21.9	2.9	17.9	99.1 ##
1998-2020	2301	54.1	21.9	10.7	46.8	97.7

2,301 cases diagnosed 1998-2020 are related to a total of 2,273 patients. Currently, in 723 (31.8 %) of these 2,273 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 517 / 163 / 43 (22.7 % / 7.2 % / 1.9 %) 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 127 cases has been diagnosed, of which 21.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.2 % 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 1b

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

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	25	44.6	4.0	7.7	60.0	100.0
1999	28	45.9	9.4	7.8	53.6	85.7
2000	26	53.1	8.9	7.8	46.2	96.2
2001	26	47.3	10.5	7.8	46.2	96.2
2002	42	43.3	12.9	7.5	57.1	95.2 #
2003	49	50.0	13.8	7.4	57.1	93.9
2004	53	42.4	15.3	7.3	54.7	92.5
2005	54	42.5	15.8	7.1	50.0	90.7
2006	60	38.7	15.2	6.9	55.0	96.7
2007	69	36.1	15.5	6.8	59.4	87.0 #
2008	92	48.7	15.6	6.5	48.9	97.8
2009	88	46.3	15.4	6.0	46.6	100.0
2010	110	50.9	15.4	5.7	45.5	97.3
2011	105	44.1	14.6	5.2	40.0	98.1
2012	131	50.2	15.2	4.7	37.4	96.2
2013	129	45.1	15.2	4.8	31.8	95.3
2014	142	49.7	16.0	4.9	43.0	97.2
2015	105	40.7	16.6	4.0	28.6	91.4
2016	145	47.5	17.4	3.4	29.0	98.6
2017	148	46.7	17.5	2.4	21.6	99.3
2018	117	48.0	17.7	2.6	23.1	98.3
2019	121	47.3	17.8	1.5	20.7	99.2
2020	85	44.5	17.9	1.2	9.4	100.0 ##
1998-2020	1950	45.9	17.9	7.7	37.4	96.5

1,950 cases diagnosed 1998-2020 are related to a total of 1,935 patients. Currently, in 499 (25.8 %) of these 1,935 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 389 / 86 / 24 (20.1 % / 4.4 % / 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 117 cases has been diagnosed, of which 17.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.6 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis
(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	31	25	2.8	2.1	1.7	1.3	2.4	1.7	2.9	1.9
1999	33	28	2.9	2.4	2.1	1.5	2.6	1.9	3.0	2.1
2000	23	26	2.0	2.2	1.3	1.2	1.8	1.6	2.2	1.9
2001	29	26	2.5	2.1	1.5	1.4	2.2	1.7	2.6	2.0
2002	55	42	3.0	2.1	1.9	1.3	2.6	1.7	2.9	2.0
2003	49	49	2.6	2.5	1.5	1.5	2.2	2.0	2.6	2.3
2004	72	53	3.8	2.7	2.3	1.6	3.2	2.1	3.9	2.4
2005	73	54	3.9	2.7	2.3	1.5	3.2	2.0	3.8	2.4
2006	95	60	5.0	3.0	2.8	1.7	3.9	2.2	4.8	2.6
2007	122	69	5.5	3.0	3.5	1.8	4.6	2.3	5.3	2.6
2008	97	92	4.4	4.0	2.7	2.2	3.6	2.9	4.3	3.4
2009	102	88	4.6	3.8	2.6	2.3	3.6	2.9	4.4	3.4
2010	106	110	4.7	4.7	2.7	2.8	3.8	3.7	4.5	4.2
2011	133	105	5.9	4.5	3.3	2.8	4.5	3.5	5.5	4.0
2012	130	131	5.7	5.6	3.2	3.6	4.5	4.4	5.3	5.0
2013	157	129	6.8	5.4	3.9	3.2	5.4	4.2	6.3	4.8
2014	144	142	6.2	5.9	3.5	3.1	4.8	4.2	5.7	4.9
2015	153	105	6.4	4.3	3.6	2.5	5.0	3.2	5.9	3.7
2016	160	145	6.7	5.9	3.9	3.5	5.2	4.6	6.2	5.2
2017	169	148	7.0	6.0	3.8	3.9	5.3	4.8	6.3	5.4
2018	127	117	5.2	4.7	2.9	2.7	3.9	3.5	4.7	4.1
2019	135	121	5.5	4.9	3.2	2.8	4.3	3.6	5.0	4.2
2020	106	85	4.4	3.4	2.5	1.9	3.3	2.6	4.0	2.9
1998–2020	2301	1950	4.9	4.0	2.9	2.4	4.0	3.1	4.7	3.6

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)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	56	62.7	14.8	13.2	87.9	46.6	55.9	63.4	71.2	81.7
1999	61	57.7	15.6	24.9	87.9	29.8	52.2	60.3	67.7	73.5
2000	49	60.9	16.5	24.7	92.1	37.6	49.5	60.1	74.4	80.6
2001	55	60.8	13.7	26.6	88.5	38.6	53.9	62.3	69.1	77.8
2002	97	60.7	15.8	17.7	90.9	36.0	50.2	62.4	71.7	80.3
2003	98	62.5	13.0	23.5	87.5	48.1	55.4	63.4	72.3	78.9
2004	125	61.5	14.5	13.8	93.3	40.8	52.8	63.1	72.2	77.8
2005	127	64.0	14.9	16.1	90.8	42.4	56.3	65.8	74.8	81.0
2006	155	64.3	13.1	16.8	91.9	45.6	56.2	66.7	73.8	79.2
2007	191	61.5	15.2	13.4	91.2	41.0	54.0	64.0	71.1	79.3
2008	189	62.1	15.6	18.9	93.9	39.2	52.6	65.7	72.9	80.2
2009	190	63.6	16.4	12.4	92.6	38.7	55.5	65.4	75.3	84.1
2010	216	62.5	14.2	14.9	92.4	44.6	53.9	62.7	72.7	80.1
2011	238	62.1	16.1	15.5	92.9	41.1	51.3	64.7	73.8	81.1
2012	261	61.3	18.2	9.7	101	31.1	52.7	65.0	74.7	80.4
2013	286	61.5	15.5	14.2	96.5	40.7	52.3	63.7	73.6	77.6
2014	286	64.0	16.0	15.8	94.1	42.8	53.6	67.2	75.3	82.2
2015	258	63.1	16.4	11.4	92.0	42.3	53.3	65.6	75.5	80.9
2016	305	62.0	16.0	13.8	98.3	41.4	53.1	63.8	74.2	80.6
2017	317	61.4	16.7	9.4	92.3	36.2	52.5	63.7	74.3	80.1
2018	244	62.4	15.7	14.3	90.4	41.5	52.3	64.7	75.3	79.6
2019	256	62.4	15.1	17.7	96.9	42.2	53.2	63.9	74.6	79.9
2020	191	61.8	16.2	18.5	101	40.7	53.4	61.5	76.5	80.5
1998-2020	4251	62.2	15.7	9.4	101	40.8	53.3	64.2	74.1	80.2

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	31	63.1	10.6	32.1	81.7	55.7	58.6	63.6	69.5	76.6
1999	33	56.6	16.5	24.9	85.3	27.6	52.2	59.7	67.7	73.5
2000	23	61.8	14.2	37.4	92.1	43.9	50.0	60.1	73.9	76.6
2001	29	62.7	11.8	34.3	88.5	50.5	54.9	62.3	69.1	79.8
2002	55	59.7	12.2	27.1	88.3	42.3	51.9	60.6	66.4	74.9
2003	49	64.6	9.9	32.4	85.0	52.9	58.8	64.1	70.9	76.9
2004	72	62.1	11.8	27.8	78.9	47.7	53.9	63.3	71.2	76.4
2005	73	64.0	13.7	19.0	87.6	46.3	57.8	65.4	74.5	77.6
2006	95	64.5	12.3	16.8	85.7	48.1	59.0	67.2	73.5	77.0
2007	122	61.3	14.0	15.8	91.2	42.3	54.8	63.2	69.6	78.1
2008	97	61.4	14.1	19.3	85.6	39.7	53.5	63.0	70.4	79.1
2009	102	65.6	13.2	12.4	89.0	50.6	58.4	67.0	74.6	81.8
2010	106	64.1	12.5	26.3	92.4	49.0	56.4	63.5	72.7	80.1
2011	133	64.5	13.1	15.5	89.3	46.5	55.8	66.6	73.8	80.7
2012	130	63.5	15.1	9.7	89.0	42.7	54.3	65.7	74.8	80.6
2013	157	62.3	13.8	19.4	90.4	45.2	52.7	63.0	73.0	78.3
2014	144	63.6	15.7	20.3	92.6	41.6	54.3	66.9	74.8	82.2
2015	153	63.2	15.2	18.3	87.7	42.5	53.1	65.6	74.8	80.2
2016	160	62.9	15.7	15.8	90.1	42.4	53.9	65.1	74.8	80.9
2017	169	64.1	15.0	12.9	92.3	46.1	55.7	67.0	74.8	80.3
2018	127	63.0	15.5	14.3	90.4	41.8	55.0	65.2	75.5	79.6
2019	135	62.2	14.9	22.6	91.4	42.2	53.3	63.0	74.6	78.9
2020	106	62.5	15.3	18.5	91.7	45.2	55.0	62.6	76.7	80.5
1998-2020	2301	63.0	14.2	9.7	92.6	44.6	54.8	64.6	73.7	79.5

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	25	62.2	19.0	13.2	87.9	32.4	54.3	62.1	77.0	84.2
1999	28	59.0	14.6	26.9	87.9	38.4	51.0	61.6	69.5	75.0
2000	26	60.1	18.6	24.7	92.0	33.1	41.6	62.0	75.5	81.0
2001	26	58.6	15.6	26.6	84.4	35.2	49.1	61.9	68.2	75.7
2002	42	62.1	19.6	17.7	90.9	31.5	49.1	66.2	76.4	84.7
2003	49	60.5	15.3	23.5	87.5	33.3	51.7	61.7	72.5	79.4
2004	53	60.6	17.7	13.8	93.3	35.4	51.7	62.6	74.4	78.9
2005	54	64.0	16.5	16.1	90.8	40.7	55.6	67.5	76.6	82.5
2006	60	64.0	14.4	29.9	91.9	43.8	52.5	64.5	74.0	83.0
2007	69	61.9	17.3	13.4	88.4	37.8	53.1	65.2	74.3	81.7
2008	92	62.8	17.2	18.9	93.9	39.2	49.7	67.1	74.1	82.2
2009	88	61.3	19.2	15.9	92.6	30.7	49.9	62.6	76.5	84.9
2010	110	61.0	15.6	14.9	89.6	39.8	50.9	61.2	72.7	80.0
2011	105	59.2	18.9	16.5	92.9	33.0	46.3	61.7	73.0	81.5
2012	131	59.1	20.6	13.7	101	25.8	45.6	63.4	74.6	80.4
2013	129	60.5	17.3	14.2	96.5	33.6	52.2	64.6	73.8	77.0
2014	142	64.4	16.3	15.8	94.1	43.5	52.8	67.4	76.7	82.2
2015	105	62.9	18.0	11.4	92.0	36.8	54.7	66.4	76.0	81.7
2016	145	61.0	16.2	13.8	98.3	40.6	52.9	62.2	72.0	79.8
2017	148	58.4	18.0	9.4	90.4	29.4	48.2	61.4	71.4	79.1
2018	117	61.8	15.9	19.3	87.1	40.3	52.0	62.8	74.5	79.7
2019	121	62.6	15.3	17.7	96.9	45.8	52.4	64.7	74.6	80.5
2020	85	60.9	17.4	20.7	101	33.9	51.0	60.4	75.8	83.2
1998-2020	1950	61.3	17.3	9.4	101	35.8	50.9	63.7	74.4	81.1

Table 4

Age distribution by 5-year age group and sex for period 2007-2020

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9	2	0.1	0.1	1	0.1	0.1	1	0.1	0.1
10-14	10	0.3	0.4	3	0.2	0.2	7	0.4	0.5
15-19	41	1.2	1.5	10	0.5	0.8	31	2.0	2.5
20-24	57	1.7	3.2	21	1.1	1.9	36	2.3	4.7
25-29	62	1.8	5.0	29	1.6	3.5	33	2.1	6.8
30-34	70	2.0	7.1	25	1.4	4.8	45	2.8	9.6
35-39	87	2.5	9.6	40	2.2	7.0	47	3.0	12.6
40-44	125	3.6	13.2	65	3.5	10.5	60	3.8	16.4
45-49	232	6.8	20.0	116	6.3	16.8	116	7.3	23.7
50-54	304	8.9	28.9	170	9.2	26.1	134	8.4	32.1
55-59	375	10.9	39.8	217	11.8	37.9	158	10.0	42.1
60-64	390	11.4	51.2	226	12.3	50.1	164	10.3	52.4
65-69	441	12.9	64.1	249	13.5	63.7	192	12.1	64.5
70-74	435	12.7	76.8	248	13.5	77.1	187	11.8	76.3
75-79	431	12.6	89.3	232	12.6	89.7	199	12.5	88.8
80-84	222	6.5	95.8	132	7.2	96.9	90	5.7	94.5
85+	144	4.2	100.0	57	3.1	100.0	87	5.5	100.0
All ages	3428	100.0		1841	100.0		1587	100.0	

Table 5

Age-specific incidence 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 Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4						
5- 9	1	1	0.1	0.1	0.9	1.0
10-14	3	7	0.2	0.5	2.2	5.5
15-19	10	31	0.6	1.9	3.1	11.7
20-24	21	36	1.0	1.9	3.3	6.9
25-29	29	33	1.3	1.5	3.0	2.8
30-34	25	45	1.1	2.0	1.9	2.1
35-39	39	47	1.7	2.1	2.1	1.3
40-44	65	60	2.6	2.5	2.3	1.0
45-49	115	114	4.3	4.4	2.3	1.2
50-54	170	134	6.7	5.3	2.0	1.1
55-59	216	158	10.2	7.3	1.7	1.2
60-64	223	164	12.6	8.6	1.3	1.1
65-69	243	190	14.9	10.5	1.0	1.0
70-74	245	187	16.3	10.9	0.9	0.9
75-79	232	194	19.2	12.9	1.0	1.0
80-84	130	89	18.0	8.4	0.8	0.6
85+	56	87	12.0	8.3	0.5	0.5
All ages	1823	1577			1.2	1.0
Incidence						
Raw			5.6	4.7		
WS			3.2	2.8		
ES			4.4	3.6		
BRD-S			5.2	4.1		

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).

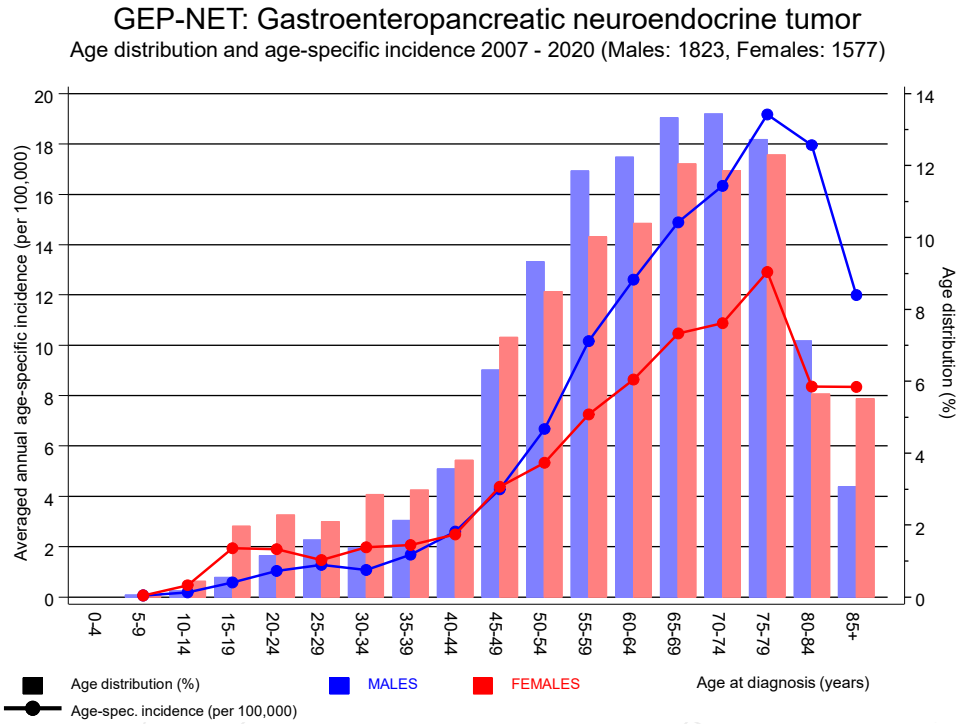


Figure 6. Age distribution (males: mean=63.1 yrs, median=64.9 yrs; females: mean=61.1 yrs, median=63.7 yrs) and age-specific incidence.

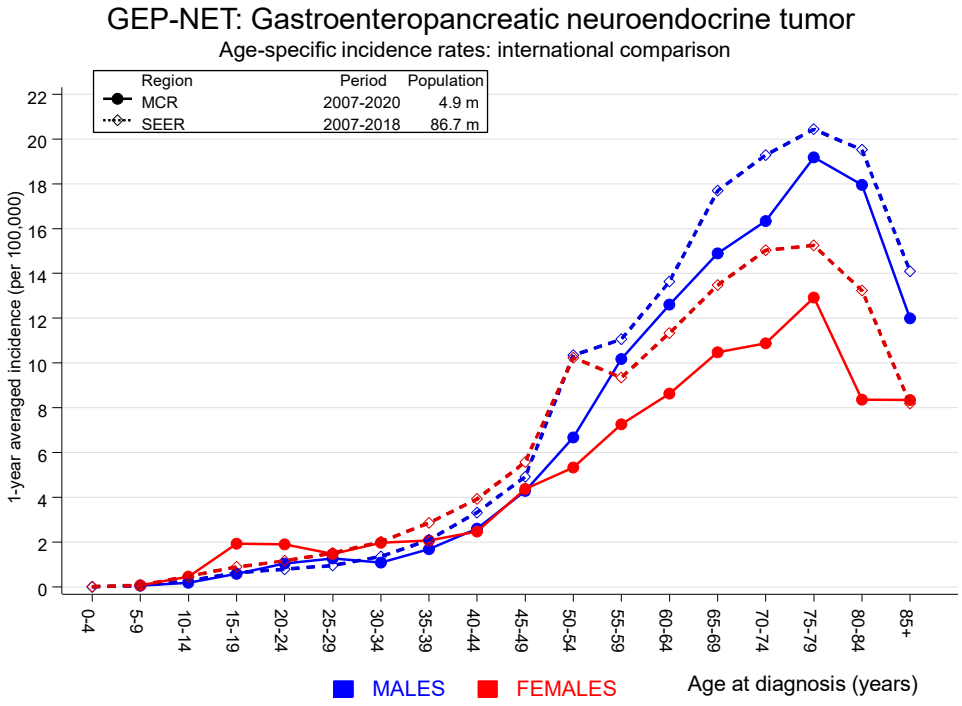


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 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	0.9	2.2	0.3	7.8		1.4	100.0
C09-C10	Oropharynx	2	1.2	1.7	0.2	6.2		1.1	
C12-C13	Hypopharynx	3	0.6	4.9	1.0	14.2	#	3.1	
C15	Oesophagus	15	2.2	6.7	3.8	11.1	#	16.4	
C16	Stomach	14	3.8	3.7	2.0	6.2	#	13.1	
C17	Small intestine	8	0.7	11.8	5.1	23.2	#	9.4	
C18	Colon	58	9.6	6.1	4.6	7.8	#	62.2	1.7
C19-C20	Rectum	21	5.5	3.8	2.4	5.9	#	20.0	
C21	Anus/canal	1	0.3	3.7	0.1	20.7		0.9	
C22	Liver	8	3.1	2.6	1.1	5.1	#	6.3	12.5
C23-C24	Bile	4	1.1	3.6	1.0	9.3		3.7	
C25	Pancreas	17	4.1	4.1	2.4	6.6	#	16.6	11.8
C32	Larynx	1	1.0	1.0	0.0	5.4		-0.1	
C33-C34	Lung	28	12.2	2.3	1.5	3.3	#	20.3	7.1
C38,C45	Mesothelioma	1	0.7	1.4	0.0	7.8		0.4	
C40-C41	Bone	1	0.1	11.0	0.3	61.0		1.2	
C43	Malign. melanoma	16	5.0	3.2	1.8	5.2	#	14.1	
C46,C49	Soft tissue	4	0.6	6.7	1.8	17.1	#	4.4	
C61	Prostate	56	28.4	2.0	1.5	2.6	#	35.4	3.6
C62	Testis	1	0.4	2.5	0.1	13.9		0.8	100.0
C64	Kidney	14	3.6	3.9	2.1	6.5	#	13.3	
C65	Renal pelvis	2	0.5	4.4	0.5	15.7		2.0	
C66	Ureter	3	0.3	10.7	2.2	31.3	#	3.5	
C67	Bladder	4	4.6	0.9	0.2	2.2		-0.8	
C69	Eye melanoma	1	0.1	8.6	0.2	48.0		1.1	
C70-C72	CNS cancer	2	1.3	1.5	0.2	5.4		0.9	
C73	Thyroid	4	0.8	5.3	1.4	13.6	#	4.2	25.0
C74-C80	Cancer others	1	0.2	5.2	0.1	29.0		1.0	
C76-C79	CUP	4	1.7	2.4	0.6	6.1		3.0	
C81	Hodgkin lymphoma	1	0.3	3.8	0.1	20.9		0.9	
C82-C85	NHL	18	4.3	4.2	2.5	6.6	#	17.6	5.6
C90	Mult. myeloma	4	1.3	3.0	0.8	7.8		3.4	
C91-C96	Leukaemia	4	1.5	2.6	0.7	6.7		3.2	50.0
Not observed		0	1.8	0.0	0.0	2.1		-2.3	
All further malignancies		323	103.8	3.1	2.8	3.5	#	281.6	4.6

Patients	2254
Median age at next malignancy (years)	71.0
Person-years	7784
Mean observation time (years)	3.5
Median observation time (years)	1.6

The occurrence of further specified malignancy is statistically significant.

Table 7b

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C09-C10	Oropharynx	1	0.3	3.7	0.1	20.8		1.1	
C15	Oesophagus	3	0.4	7.1	1.5	20.7	#	3.8	
C16	Stomach	13	1.9	7.0	3.7	11.9	#	16.4	15.4
C17	Small intestine	9	0.3	25.9	11.8	49.1	#	12.8	
C18	Colon	31	5.5	5.7	3.9	8.1	#	37.7	
C19-C20	Rectum	11	2.2	4.9	2.4	8.8	#	12.9	9.1
C21	Anus/canal	1	0.4	2.8	0.1	15.8		1.0	
C22	Liver	1	0.7	1.3	0.0	7.5		0.4	
C25	Pancreas	15	2.7	5.5	3.1	9.0	#	18.1	6.7
C33-C34	Lung	16	4.8	3.4	1.9	5.5	#	16.6	25.0
C43	Malign. melanoma	6	2.5	2.4	0.9	5.3		5.2	
C46,C49	Soft tissue	1	0.3	2.9	0.1	16.4		1.0	
C48	Peritoneal	1	0.3	3.7	0.1	20.7		1.1	
C50	Breast	50	19.6	2.5	1.9	3.4	#	44.8	4.0
C51	Vulva	1	0.6	1.6	0.0	8.7		0.5	
C53	Cervix uteri	5	0.9	5.6	1.8	13.0	#	6.1	20.0
C54	Corpus uteri	5	3.4	1.5	0.5	3.4		2.3	
C56	Ovary	13	2.4	5.4	2.9	9.3	#	15.6	7.7
C64	Kidney	9	1.3	6.8	3.1	12.9	#	11.3	11.1
C66	Ureter	2	0.1	20.3	2.5	73.3	#	2.8	
C67	Bladder	2	1.1	1.8	0.2	6.5		1.3	
C69	Eye carcinoma	1	0.0	77.3	2.0	430.7	#	1.5	
C69	Eye melanoma	1	0.1	14.8	0.4	82.5		1.4	
C70-C72	CNS cancer	1	0.8	1.3	0.0	7.4		0.4	
C73	Thyroid	1	1.1	0.9	0.0	5.0		-0.2	
C76-C79	CUP	1	1.0	1.0	0.0	5.5		-0.0	
C81	Hodgkin lymphoma	1	0.1	7.8	0.2	43.3		1.3	
C82-C85	NHL	10	2.3	4.4	2.1	8.1	#	11.4	
C90	Mult. myeloma	2	0.7	2.9	0.4	10.5		1.9	
C91-C96	Leukaemia	3	0.9	3.5	0.7	10.2		3.2	33.3
C96	Systemic	1	0.0	72.7	1.8	404.9	#	1.5	100.0
Not observed		0	2.5	0.0	0.0	1.5		-3.7	
All further malignancies		218	61.2	3.6	3.1	4.1	#	231.1	6.9

Patients	1913
Median age at next malignancy (years)	70.5
Person-years	6784
Mean observation time (years)	3.5
Median observation time (years)	1.8

The occurrence of further specified malignancy is statistically significant.

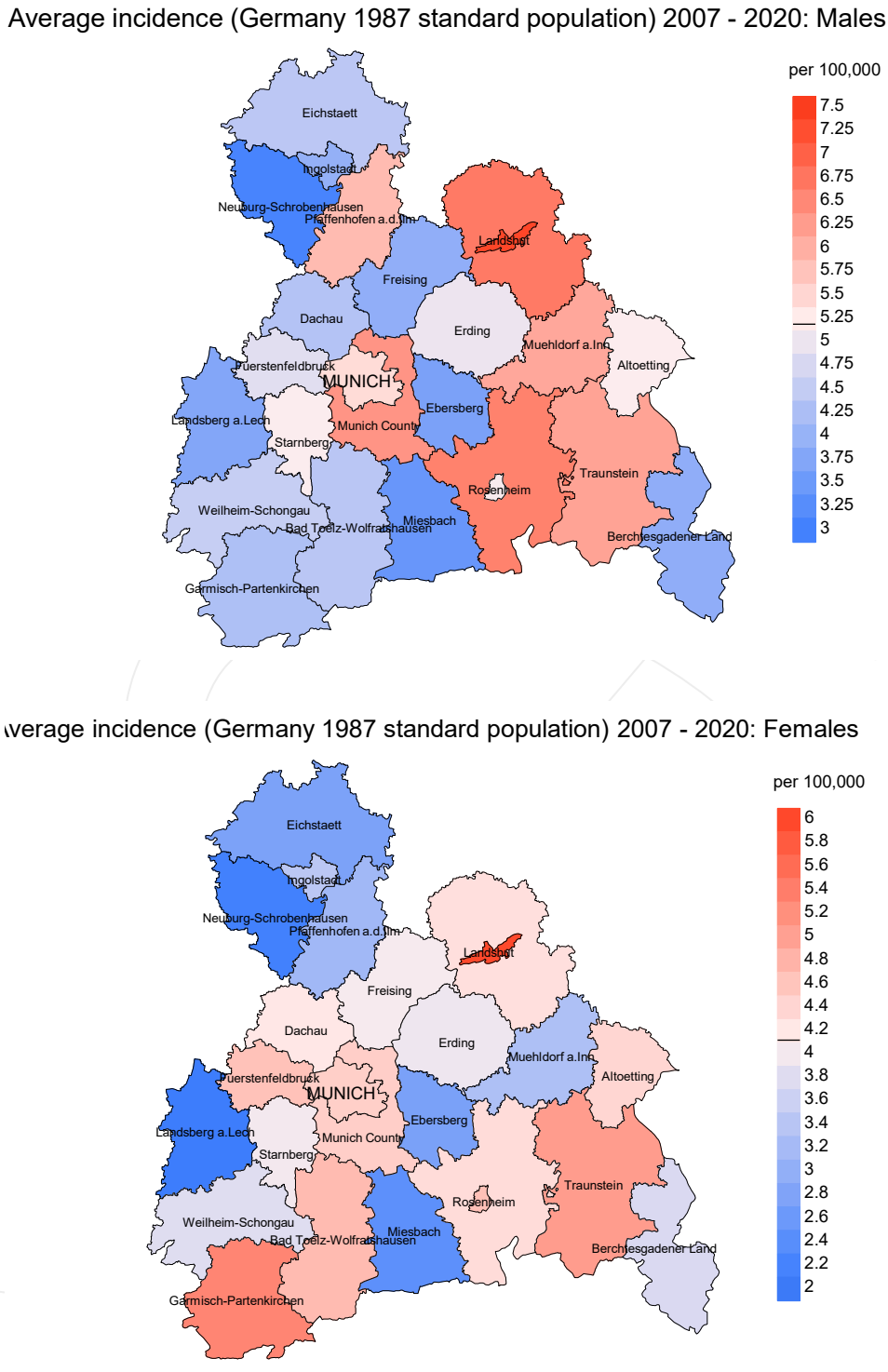
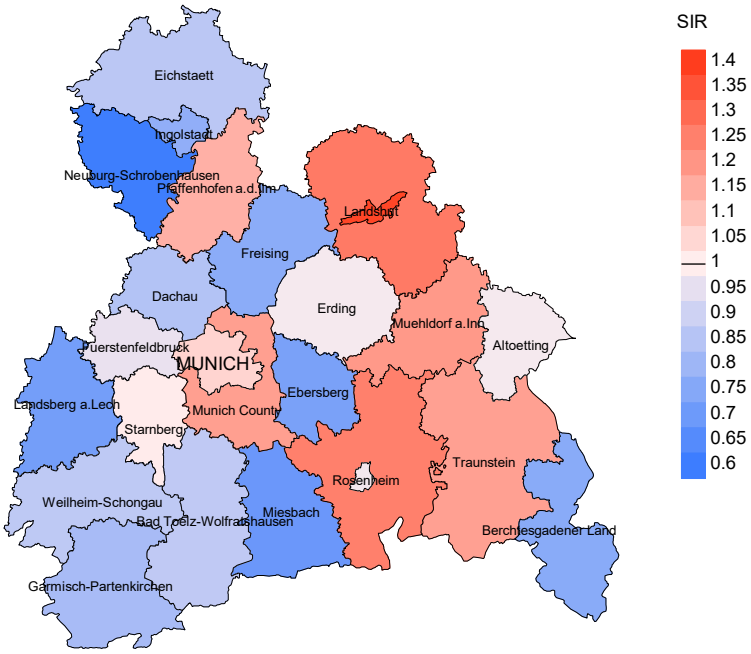


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 5.2/100,000 WS N=1,823, females 4.1/100,000 WS N=1,577).

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 29 women were identified with newly diagnosed gastr.ent.pancr. neuroend. tumor. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.8/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.6 and 4.4/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

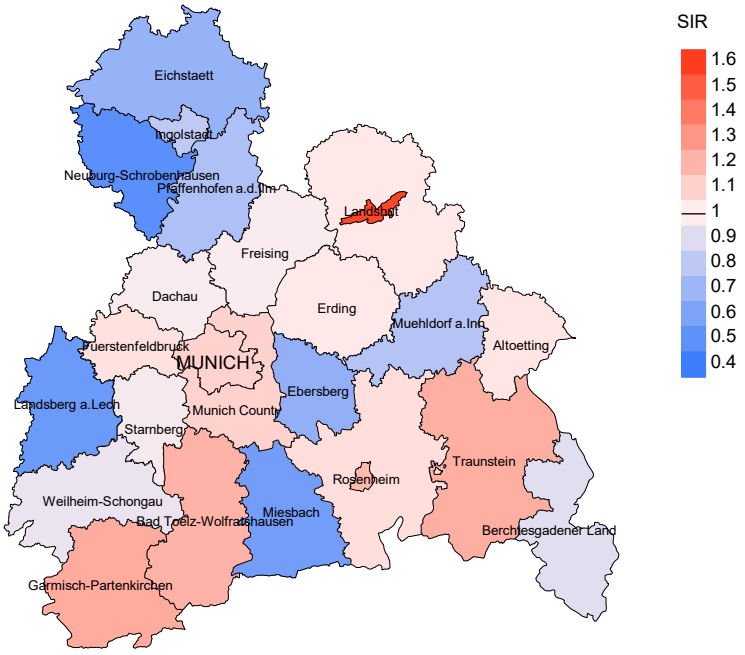


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,823, females N=1,577).

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 29 women were identified with newly diagnosed gastr.ent.pancr. neuroend. tumor. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.66. Though, the value of this parameter may vary with an underlying probability of 99% between 0.39 and 1.05, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,
and deaths among the annual cohorts

(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 %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	56	100.0	40	71.4	87.5
1999	61	93.4	39	63.9	94.9
2000	49	98.0	29	59.2	89.7
2001	55	98.2	35	63.6	94.3
2002	97	95.9	60	61.9	93.3
2003	98	93.9	62	63.3	98.4
2004	125	93.6	70	56.0	95.7
2005	127	93.7	80	63.0	93.8
2006	155	94.8	94	60.6	95.7
2007	191	91.6	108	56.5	95.4
2008	189	98.4	96	50.8	93.8
2009	190	100.0	99	52.1	98.0
2010	216	97.2	105	48.6	93.3
2011	238	98.3	110	46.2	94.5
2012	261	95.4	113	43.3	89.4
2013	286	96.5	108	37.8	88.9
2014	286	98.3	128	44.8	88.3
2015	258	93.4	93	36.0	89.2
2016	305	99.3	109	35.7	88.1
2017	317	99.7	91	28.7	78.0
2018	244	99.2	56	23.0	53.6
2019	256	99.6	53	20.7	83.0
2020	191	99.5	27	14.1	88.9
1998-2020	4251	97.2	1805	42.5	90.3

Table 9b

Annual cohorts of incident cancers and deaths,
and cases deceased within the same year of being diagnosed with cancer

(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	Deaths in same year n	Prop. deaths in same year %
1998	56	11	5	8.9
1999	61	16	7	11.5
2000	49	23	6	12.2
2001	55	15	3	5.5
2002	97	29	11	11.3
2003	98	41	14	14.3
2004	125	44	11	8.8
2005	127	54	20	15.7
2006	155	51	15	9.7
2007	191	72	21	11.0
2008	189	83	23	12.2
2009	190	83	29	15.3
2010	216	85	22	10.2
2011	238	80	23	9.7
2012	261	107	33	12.6
2013	286	123	25	8.7
2014	286	135	38	13.3
2015	258	135	33	12.8
2016	305	118	27	8.9
2017	317	160	34	10.7
2018	244	120	14	5.7
2019	256	131	25	9.8
2020	191	141	17	8.9
1998–2020	4251	1857	456	10.7

Table 9c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(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	11	81.8	18.2	66.7
1999	16	87.5	12.5	93.8
2000	23	69.6	30.4	77.3
2001	15	80.0	20.0	86.7
2002	29	86.2	13.8	89.7
2003	41	70.7	29.3	82.5
2004	44	75.0	25.0	79.5
2005	54	70.4	29.6	80.4
2006	51	86.3	13.7	89.8
2007	72	83.3	16.7	84.3
2008	83	86.7	13.3	93.8
2009	83	71.1	28.9	79.3
2010	85	74.1	25.9	78.0
2011	80	80.0	20.0	88.5
2012	107	77.6	22.4	81.6
2013	123	80.5	19.5	83.5
2014	135	77.0	23.0	81.2
2015	135	75.6	24.4	79.2
2016	118	72.9	27.1	78.3
2017	160	74.4	25.6	79.1
2018	120	63.3	36.7	74.3
2019	131	65.6	34.4	74.6
2020	141	58.9	41.1	71.8
1998-2020	1857	74.1	25.9	80.8

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	5	70.5	70.9	59.3	68.5
1999	12	67.9	66.5	78.7	67.9
2000	16	68.6	67.8	84.5	67.8
2001	12	68.6	64.9	84.8	65.2
2002	21	66.6	66.1	92.4	66.1
2003	20	74.7	68.3	76.3	72.2
2004	19	69.0	63.7	75.1	64.5
2005	33	74.6	74.6	75.4	74.6
2006	29	73.8	73.3	76.8	73.3
2007	37	69.8	71.1	69.7	71.1
2008	56	68.9	68.1	77.2	68.1
2009	51	70.5	68.4	76.6	68.4
2010	52	72.7	69.9	76.5	69.8
2011	46	71.1	70.3	77.5	70.3
2012	54	76.2	72.8	79.8	72.6
2013	73	73.8	73.1	80.2	73.2
2014	82	73.4	70.7	78.2	71.2
2015	73	72.9	69.8	81.3	72.2
2016	72	76.1	75.8	80.9	75.9
2017	106	75.2	74.1	77.0	73.9
2018	71	74.8	73.8	80.1	74.9
2019	71	75.0	69.1	78.5	70.2
2020	81	75.4	73.5	79.1	73.7
1998–2020	1092	73.2	70.8	77.9	71.3

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	6	83.7	83.6	88.1	83.7
1999	4	81.0	81.0		81.0
2000	7	73.7	57.6	77.5	71.6
2001	3	72.0	69.9	92.2	69.9
2002	8	69.4	66.4	72.4	65.6
2003	21	73.2	69.8	75.1	72.4
2004	25	76.1	75.8	79.1	76.9
2005	21	77.9	74.3	86.2	74.9
2006	22	74.8	74.4	75.1	76.1
2007	35	69.4	68.4	83.6	69.4
2008	27	78.9	75.8	90.4	78.9
2009	32	75.8	73.0	85.4	75.0
2010	33	73.2	68.0	81.9	71.2
2011	34	74.4	72.4	81.2	74.2
2012	53	80.1	73.2	89.9	74.8
2013	50	74.7	71.4	88.1	72.4
2014	53	76.1	73.9	85.7	73.9
2015	62	77.5	73.2	82.2	76.9
2016	46	77.5	76.6	79.9	77.4
2017	54	76.8	76.5	80.2	75.8
2018	49	76.0	77.4	74.5	78.3
2019	60	74.6	72.3	81.1	73.6
2020	60	79.6	77.7	84.9	77.6
1998–2020	765	76.2	73.6	81.8	75.0

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	4	0.4	0.13	0.2	0.13	0.3	0.14	0.5	0.16
1999	10	0.9	0.30	0.6	0.28	0.8	0.30	1.0	0.32
2000	13	1.1	0.57	0.7	0.58	1.1	0.59	1.2	0.57
2001	10	0.9	0.34	0.5	0.32	0.7	0.33	1.0	0.38
2002	20	1.1	0.36	0.6	0.33	0.9	0.34	1.1	0.37
2003	13	0.7	0.27	0.4	0.25	0.6	0.27	0.8	0.30
2004	11	0.6	0.15	0.3	0.14	0.5	0.16	0.6	0.16
2005	25	1.3	0.35	0.7	0.29	1.0	0.33	1.4	0.37
2006	25	1.3	0.27	0.6	0.23	1.0	0.25	1.4	0.29
2007	32	1.4	0.27	0.7	0.21	1.1	0.24	1.4	0.27
2008	50	2.2	0.52	1.3	0.47	1.8	0.50	2.2	0.52
2009	35	1.6	0.35	0.8	0.31	1.2	0.33	1.5	0.35
2010	39	1.7	0.38	0.9	0.34	1.3	0.35	1.7	0.39
2011	39	1.7	0.29	0.9	0.27	1.3	0.29	1.6	0.29
2012	41	1.8	0.32	0.8	0.26	1.3	0.29	1.7	0.33
2013	60	2.6	0.39	1.2	0.30	1.8	0.34	2.4	0.39
2014	62	2.7	0.44	1.3	0.37	1.9	0.41	2.4	0.42
2015	56	2.4	0.37	1.2	0.33	1.8	0.36	2.1	0.36
2016	51	2.1	0.32	0.9	0.23	1.3	0.26	1.9	0.31
2017	78	3.2	0.47	1.4	0.38	2.2	0.41	2.8	0.46
2018	50	2.1	0.39	0.9	0.32	1.4	0.35	1.8	0.38
2019	50	2.1	0.37	1.0	0.31	1.4	0.33	1.8	0.36
2020	46	1.9	0.44	0.9	0.35	1.3	0.39	1.6	0.41
1998-2020	820	1.8	0.36	0.9	0.30	1.3	0.33	1.7	0.36

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	5	0.4	0.20	0.1	0.08	0.2	0.12	0.4	0.21
1999	4	0.3	0.14	0.1	0.08	0.2	0.09	0.2	0.10
2000	3	0.2	0.12	0.1	0.10	0.2	0.12	0.2	0.10
2001	2	0.2	0.08	0.1	0.07	0.1	0.07	0.2	0.08
2002	5	0.3	0.12	0.1	0.09	0.2	0.10	0.2	0.10
2003	16	0.8	0.33	0.4	0.27	0.6	0.28	0.7	0.30
2004	22	1.1	0.42	0.5	0.29	0.7	0.34	0.9	0.38
2005	13	0.7	0.24	0.3	0.18	0.4	0.20	0.5	0.23
2006	19	0.9	0.32	0.3	0.21	0.5	0.24	0.7	0.29
2007	28	1.2	0.41	0.6	0.34	0.8	0.37	1.0	0.39
2008	22	0.9	0.24	0.4	0.16	0.5	0.19	0.8	0.22
2009	24	1.0	0.28	0.5	0.20	0.7	0.23	0.8	0.23
2010	24	1.0	0.22	0.5	0.19	0.7	0.19	0.9	0.21
2011	25	1.1	0.24	0.5	0.18	0.7	0.20	0.9	0.22
2012	42	1.8	0.33	0.7	0.20	1.1	0.25	1.3	0.26
2013	39	1.6	0.30	0.7	0.22	1.0	0.24	1.3	0.26
2014	42	1.7	0.30	0.7	0.23	1.0	0.25	1.4	0.28
2015	46	1.9	0.44	0.8	0.30	1.1	0.36	1.4	0.38
2016	35	1.4	0.24	0.5	0.14	0.7	0.16	1.0	0.20
2017	41	1.7	0.28	0.6	0.16	0.9	0.19	1.2	0.22
2018	26	1.0	0.22	0.4	0.16	0.6	0.18	0.8	0.20
2019	36	1.5	0.30	0.6	0.22	0.9	0.25	1.1	0.27
2020	37	1.5	0.44	0.5	0.26	0.8	0.30	1.1	0.37
1998-2020	556	1.2	0.29	0.5	0.20	0.7	0.23	0.9	0.25

Table 12

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

Age at death	Cases			Males			Females		
Years	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19	1	0.1	0.1	1	0.1	0.1			0.0
20-24	0	0.0	0.1			0.1			0.0
25-29	4	0.3	0.4	3	0.4	0.6	1	0.2	0.2
30-34	4	0.3	0.8			0.6	4	0.9	1.1
35-39	9	0.8	1.6	4	0.6	1.2	5	1.1	2.1
40-44	19	1.6	3.2	8	1.2	2.3	11	2.4	4.5
45-49	25	2.2	5.4	11	1.6	3.9	14	3.0	7.5
50-54	62	5.4	10.7	41	6.0	9.9	21	4.5	12.0
55-59	101	8.7	19.5	65	9.4	19.3	36	7.7	19.7
60-64	120	10.4	29.8	76	11.0	30.3	44	9.4	29.1
65-69	166	14.4	44.2	108	15.7	46.0	58	12.4	41.5
70-74	170	14.7	58.9	109	15.8	61.8	61	13.1	54.6
75-79	205	17.7	76.6	129	18.7	80.6	76	16.3	70.9
80-84	161	13.9	90.6	89	12.9	93.5	72	15.4	86.3
85+	109	9.4	100.0	45	6.5	100.0	64	13.7	100.0
All ages	1156	100.0		689	100.0		467	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.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	0.10			2.1	
20-24								
25-29	3	1	0.1	0.10	0.0	0.03	3.2	1.0
30-34		4			0.2	0.09		2.2
35-39	4	5	0.2	0.10	0.2	0.11	1.5	1.2
40-44	8	11	0.3	0.12	0.5	0.18	1.3	1.3
45-49	11	14	0.4	0.10	0.5	0.12	0.8	0.8
50-54	41	21	1.6	0.24	0.8	0.16	1.5	0.8
55-59	65	36	3.1	0.30	1.7	0.23	1.5	0.9
60-64	76	44	4.3	0.34	2.3	0.27	1.2	0.9
65-69	108	58	6.6	0.44	3.2	0.31	1.2	0.8
70-74	109	61	7.3	0.44	3.5	0.33	0.9	0.7
75-79	129	76	10.7	0.56	5.1	0.39	1.0	0.8
80-84	89	72	12.3	0.68	6.8	0.81	0.8	0.8
85+	45	64	9.6	0.80	6.1	0.74	0.5	0.5
All ages	689	467					1.0	0.8
Mortality								
Raw			2.1	0.38	1.4	0.30		
WS			1.0	0.31	0.6	0.20		
ES			1.5	0.34	0.8	0.23		
BRD-S			2.0	0.38	1.1	0.26		
PYLL-70								
per 100,000			11.0		8.0			
ES			9.5		6.7			
AYLL-70			9.9		11.7			

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 ←%
C03–C06	Oral cavity	6	1.5	4	66.7			2	33.3
C07–C08	Salivary gland	1	0.3	1	100.0				
C09–C10	Oropharynx	1	0.3	1	100.0				
C12–C13	Hypopharynx	4	1.0	1	25.0			3	75.0
C15	Oesophagus	15	3.8	4	26.7	1	6.7	10	66.7
C16	Stomach	13	3.3	9	69.2	2	15.4	2	15.4
C17	Small intestine	10	2.5	3	30.0	5	50.0	2	20.0
C18	Colon	57	14.4	19	33.3	31	54.4	7	12.3
C19–C20	Rectum	19	4.8	9	47.4	8	42.1	2	10.5
C22	Liver	7	1.8			2	28.6	5	71.4
C23–C24	Bile	4	1.0	1	25.0	2	50.0	1	25.0
C25	Pancreas	20	5.0	3	15.0	11	55.0	6	30.0
C32	Larynx	3	0.8	3	100.0				
C33–C34	Lung	32	8.1	10	31.3	3	9.4	19	59.4
C38,C45	Mesothelioma	1	0.3					1	100.0
C43	Malign. melanoma	11	2.8	6	54.5	1	9.1	4	36.4
C44	Skin others	29	7.3	22	75.9			7	24.1
C46,C49	Soft tissue	5	1.3	2	40.0			3	60.0
C48	Peritoneal	1	0.3	1	100.0				
C50	Breast	1	0.3	1	100.0				
C61	Prostate	89	22.4	65	73.0	8	9.0	16	18.0
C62	Testis	3	0.8	2	66.7			1	33.3
C64	Kidney	15	3.8	9	60.0	3	20.0	3	20.0
C65	Renal pelvis	2	0.5					2	100.0
C66	Ureter	2	0.5					2	100.0
C67	Bladder	12	3.0	11	91.7			1	8.3
C70–C72	CNS cancer	2	0.5			1	50.0	1	50.0
C73	Thyroid	5	1.3	3	60.0			2	40.0
C76–C79	CUP	8	2.0	5	62.5	1	12.5	2	25.0
C81	Hodgkin lymphoma	1	0.3	1	100.0				
C82–C85	NHL	11	2.8	4	36.4	2	18.2	5	45.5
C90	Mult. myeloma	1	0.3					1	100.0
C91–C96	Leukaemia	6	1.5	2	33.3			4	66.7
All further malignancies		397	100.0	202	50.9	81	20.4	114	28.7

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 ←%
C15	Oesophagus	5	2.2			3	60.0	2	40.0
C16	Stomach	11	4.7	4	36.4	4	36.4	3	27.3
C17	Small intestine	5	2.2	1	20.0	2	40.0	2	40.0
C18	Colon	23	9.9	3	13.0	13	56.5	7	30.4
C19-C20	Rectum	16	6.9	4	25.0	8	50.0	4	25.0
C21	Anus/canal	1	0.4	1	100.0				
C23-C24	Bile	1	0.4			1	100.0		
C25	Pancreas	12	5.2	1	8.3	5	41.7	6	50.0
C33-C34	Lung	16	6.9	5	31.3	1	6.3	10	62.5
C38,C45	Mesothelioma	1	0.4	1	100.0				
C43	Malign. melanoma	5	2.2	5	100.0				
C44	Skin others	6	2.6	3	50.0			3	50.0
C46,C49	Soft tissue	1	0.4	1	100.0				
C48	Peritoneal	2	0.9	1	50.0	1	50.0		
C50	Breast	49	21.1	36	73.5	3	6.1	10	20.4
C51	Vulva	2	0.9	2	100.0				
C52	Vagina	1	0.4	1	100.0				
C53	Cervix uteri	4	1.7	2	50.0	1	25.0	1	25.0
C54	Corpus uteri	12	5.2	7	58.3	3	25.0	2	16.7
C55,C57	Fem. genitals un	1	0.4	1	100.0				
C56	Ovary	18	7.8	10	55.6	5	27.8	3	16.7
C64	Kidney	8	3.4	5	62.5	1	12.5	2	25.0
C65	Renal pelvis	2	0.9	1	50.0			1	50.0
C66	Ureter	2	0.9					2	100.0
C67	Bladder	6	2.6	3	50.0	1	16.7	2	33.3
C69	Eye melanoma	1	0.4					1	100.0
C70-C72	CNS cancer	1	0.4					1	100.0
C73	Thyroid	6	2.6	5	83.3			1	16.7
C76-C79	CUP	3	1.3	2	66.7			1	33.3
C81	Hodgkin lymphoma	2	0.9	2	100.0				
C82-C85	NHL	7	3.0	4	57.1			3	42.9
C91-C96	Leukaemia	1	0.4					1	100.0
C96	Systemic	1	0.4					1	100.0
All further malignancies		232	100.0	111	47.8	52	22.4	69	29.7

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.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	0.10			2.2	
20-24								
25-29	3	1	0.1	0.10	0.0	0.03	3.5	1.1
30-34		2			0.1	0.05		1.3
35-39	4	3	0.2	0.11	0.1	0.07	1.6	0.8
40-44	7	10	0.3	0.11	0.4	0.19	1.3	1.3
45-49	11	11	0.4	0.11	0.4	0.11	0.9	0.8
50-54	37	18	1.5	0.25	0.7	0.15	1.6	0.8
55-59	52	26	2.4	0.30	1.2	0.20	1.3	0.8
60-64	63	35	3.6	0.34	1.8	0.26	1.2	0.9
65-69	84	41	5.1	0.49	2.3	0.31	1.1	0.7
70-74	74	45	4.9	0.46	2.6	0.33	0.8	0.7
75-79	76	53	6.3	0.57	3.5	0.40	0.8	0.7
80-84	43	50	5.9	0.64	4.7	0.77	0.6	0.7
85+	27	47	5.8	1.04	4.5	0.76	0.4	0.5
All ages	482	342					0.9	0.7
Mortality								
Raw			1.5	0.36	1.0	0.27		
WS			0.8	0.30	0.4	0.18		
ES			1.1	0.32	0.6	0.21		
BRD-S			1.4	0.35	0.8	0.24		
PYLL-70								
per 100,000			9.5		6.2			
ES			8.2		5.2			
AYLL-70			10.4		11.9			

* 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.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	0.10			2.2	
20-24								
25-29	3	1	0.1	0.10	0.0	0.03	3.5	1.1
30-34		2			0.1	0.05		1.3
35-39	4	3	0.2	0.11	0.1	0.07	1.6	0.8
40-44	7	9	0.3	0.11	0.4	0.18	1.3	1.2
45-49	11	9	0.4	0.12	0.3	0.09	0.9	0.6
50-54	37	18	1.5	0.27	0.7	0.16	1.6	0.8
55-59	49	23	2.3	0.30	1.1	0.19	1.3	0.7
60-64	59	34	3.3	0.36	1.8	0.28	1.1	0.9
65-69	71	35	4.3	0.46	1.9	0.30	1.0	0.6
70-74	62	42	4.1	0.43	2.4	0.34	0.7	0.6
75-79	61	44	5.0	0.50	2.9	0.36	0.7	0.6
80-84	35	42	4.8	0.56	3.9	0.71	0.5	0.6
85+	22	43	4.7	0.92	4.1	0.72	0.4	0.5
All ages	422	305					0.8	0.6
Mortality								
Raw			1.3	0.34	0.9	0.26		
WS			0.7	0.29	0.4	0.17		
ES			1.0	0.31	0.6	0.20		
BRD-S			1.2	0.33	0.7	0.22		
PYLL-70								
per 100,000			9.2		5.7			
ES			7.9		4.8			
AYLL-70			10.9		12.0			

* See corresponding tables with multiple malignancies.

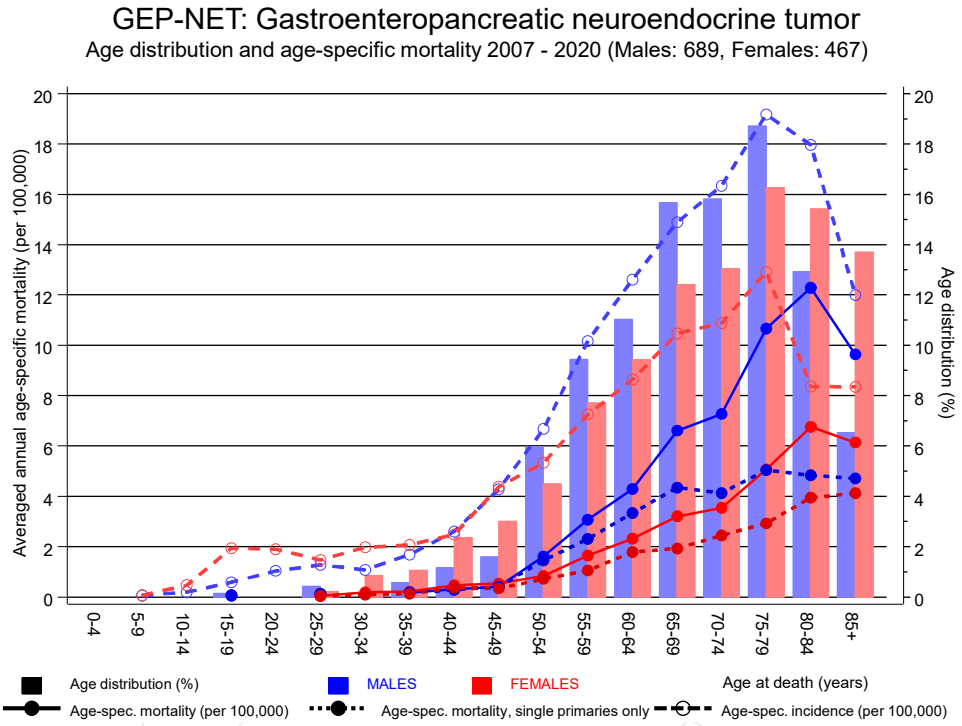
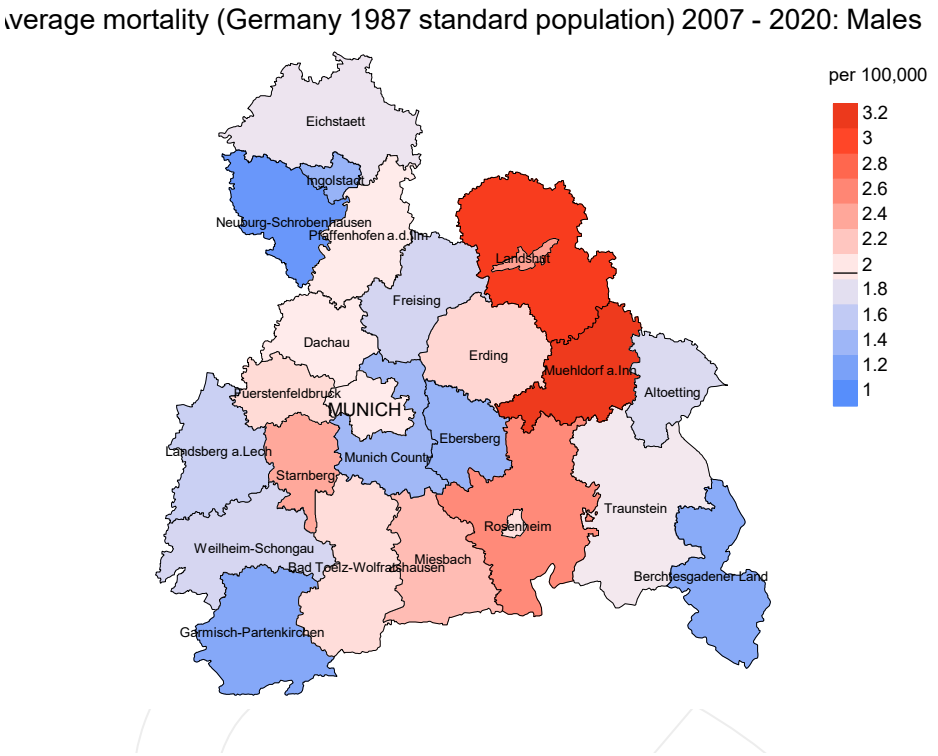


Figure 17. Distribution of age at death (bars; males: mean=67.0 yrs, median=67.9 yrs; females: mean=68.2 yrs, median=70.1 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at gastr.ent.pancr. neuroend. tumor-related death (see Table 10) should be considered.



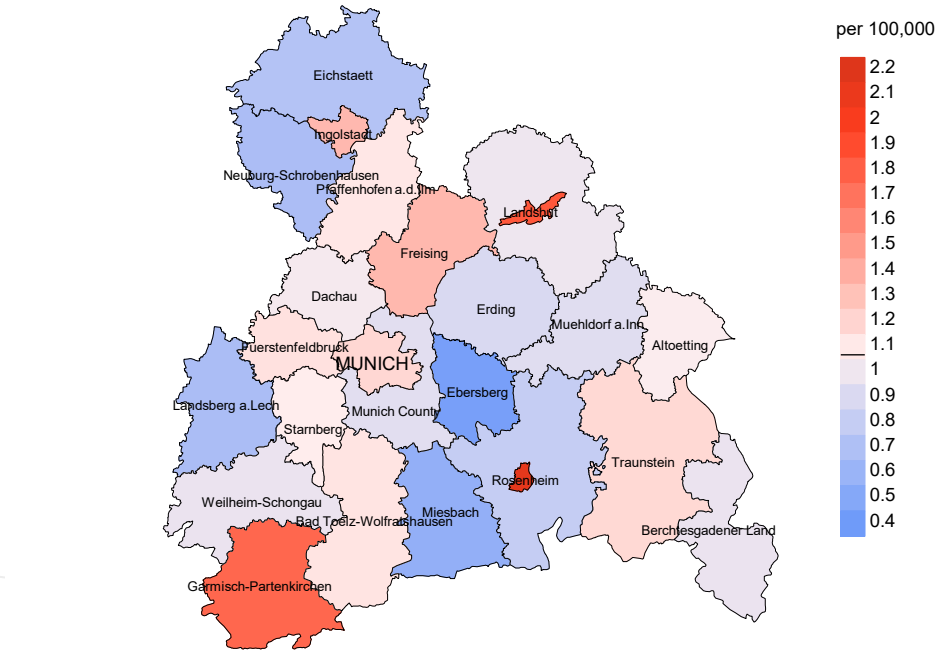


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.0/100,000 WS N=689, females 1.1/100,000 WS N=467).

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 5 women died from gastr.ent.pancr. neuroend. tumor. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 1.3/100,000.

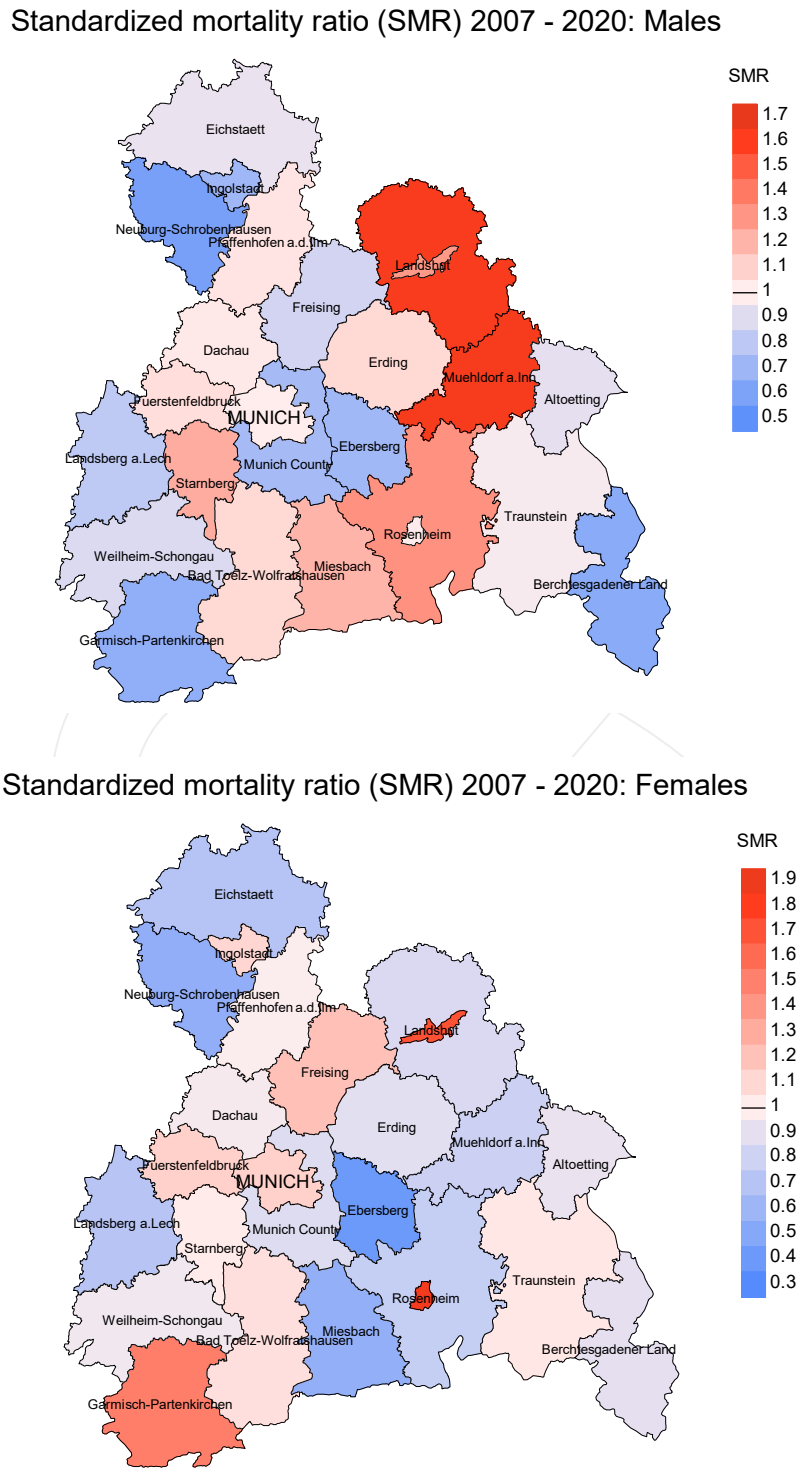


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=689, females N=467).

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 5 women died from gastr.ent.pancr. neuroend. tumor. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.39. Though, the value of this parameter may vary with an underlying probability of 99% between 0.09 and 1.12, and is therefore not statistically striking.

Statistical Notes

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

1. **All multiple primaries included**

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

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