Munich Cancer Registry

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ICD-10 C09-C14: Pharynx cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	5,878
Diseases	6,008
Creation date	12/20/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
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Marchioninistr. 15
Munich, 81377
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC0914E-ICD-10-C09-C14-Pharynx-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.

Some remarks regarding this cancer type

As a general rule, these few results from the TRM form the basis of sophisticated analyses. For head and neck tumors this is not the case. Therefore the results for head and neck tumors should be interpreted with caution. In part this is due to problems of classification because of limited specific details of locality. Additionally, with advanced tumors in a close topographic location it is often not possible to determine the exact ICD localization of a tumor.

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

Code	Description
C09.-	Malignant neoplasm of tonsil
C10.-	Malignant neoplasm of oropharynx
C11.-	Malignant neoplasm of nasopharynx
C12	Malignant neoplasm of piriform sinus
C13.-	Malignant neoplasm of hypopharynx
C14.-	Malignant neoplasm of other and ill-defined sites in the lip, oral cavity and pharynx

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	185	8	4.3	8.1	15.2	91.9	99.5
1999	211	10	4.7	10.9	15.1	88.2	98.1
2000	188	8	4.3	11.1	15.0	89.4	97.3
2001	192	12	6.3	12.1	14.8	83.9	96.9
2002	269	20	7.4	13.1	14.6	85.9	98.5 #
2003	295	6	2.0	14.0	14.2	84.1	98.0
2004	259	10	3.9	13.9	13.8	84.6	99.2
2005	321	15	4.7	14.2	13.7	78.2	98.1
2006	288	6	2.1	14.1	13.0	79.2	96.2
2007	336	26	7.7	13.9	12.8	77.7	97.3 #
2008	355	14	3.9	14.2	12.3	77.2	99.7
2009	344	9	2.6	14.6	11.5	76.7	97.7
2010	347	14	4.0	14.7	10.9	69.7	97.7
2011	320	18	5.6	15.3	10.3	70.3	98.8
2012	318	21	6.6	15.6	10.1	70.4	98.1
2013	319	9	2.8	15.5	9.8	64.3	97.8
2014	291	12	4.1	15.9	8.9	70.8	96.9
2015	306	10	3.3	16.2	8.8	57.2	99.0
2016	288	14	4.9	16.6	8.4	57.6	99.3
2017	211	10	4.7	17.2	8.3	52.1	99.1
2018	158	7	4.4	17.4	6.4	44.3	99.4
2019	113			17.7	5.7	33.6	99.1
2020	94			17.9	4.7	33.0	100.0 ##
1998-2020	6008	259	4.3	17.9	15.2	72.5	98.2

6,008 cases diagnosed 1998-2020 are related to a total of 5,878 patients. Currently, in 1,870 (31.8 %) of these 5,878 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,403 / 338 / 129 (23.9 % / 5.8 % / 2.2 %) 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 158 cases has been diagnosed, of which 17.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.4 % 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).

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	156	84.3	6	3.8	7.7	15.2	92.3	99.4
1999	172	81.5	7	4.1	10.1	15.0	90.1	99.4
2000	152	80.9	5	3.3	10.4	15.0	89.5	98.0
2001	155	80.7	8	5.2	11.3	14.8	83.2	97.4
2002	222	82.5	18	8.1	12.5	14.6	87.8	99.1 #
2003	236	80.0	5	2.1	13.6	14.2	86.4	99.2
2004	219	84.6	8	3.7	13.8	13.9	84.9	99.1
2005	256	79.8	11	4.3	13.7	13.7	79.3	98.4
2006	216	75.0	4	1.9	13.6	13.1	83.8	96.3
2007	270	80.4	18	6.7	13.3	12.9	81.1	98.1 #
2008	275	77.5	11	4.0	13.7	12.4	76.7	99.6
2009	273	79.4	6	2.2	13.9	11.5	77.7	97.4
2010	278	80.1	10	3.6	14.1	10.8	71.2	98.2
2011	247	77.2	11	4.5	14.6	10.1	71.3	98.8
2012	243	76.4	12	4.9	14.7	9.9	72.0	98.8
2013	241	75.5	3	1.2	14.6	9.5	65.1	97.5
2014	242	83.2	10	4.1	15.0	8.3	72.3	96.7
2015	217	70.9	6	2.8	15.4	8.2	60.8	99.5
2016	223	77.4	10	4.5	15.7	8.0	58.7	99.6
2017	158	74.9	8	5.1	16.2	8.3	56.3	98.7
2018	116	73.4	4	3.4	16.5	5.6	46.6	99.1
2019	75	66.4			16.7	5.8	38.7	100.0
2020	72	76.6			16.9	6.2	36.1	100.0 ##
1998-2020	4714	78.5	181	3.8	16.9	15.2	74.6	98.5

4,714 cases diagnosed 1998-2020 are related to a total of 4,618 patients. Currently, in 1,439 (31.2 %) of these 4,618 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,075 / 261 / 103 (23.3 % / 5.7 % / 2.2 %) 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 116 cases has been diagnosed, of which 16.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.6 % 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 1b

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

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	29	15.7	2	6.9	10.3	15.3	89.7	100.0	
1999	39	18.5	3	7.7	14.7	15.1	79.5	92.3	
2000	36	19.1	3	8.3	14.4	15.1	88.9	94.4	
2001	37	19.3	4	10.8	15.6	14.7	86.5	94.6	
2002	47	17.5	2	4.3	16.0	14.7	76.6	95.7	#
2003	59	20.0	1	1.7	15.4	14.0	74.6	93.2	
2004	40	15.4	2	5.0	14.3	13.6	82.5	100.0	
2005	65	20.2	4	6.2	16.2	13.5	73.8	96.9	
2006	72	25.0	2	2.8	16.0	12.6	65.3	95.8	
2007	66	19.6	8	12.1	16.3	12.3	63.6	93.9	#
2008	80	22.5	3	3.8	16.5	12.1	78.8	100.0	
2009	71	20.6	3	4.2	17.5	11.6	73.2	98.6	
2010	69	19.9	4	5.8	17.2	11.3	63.8	95.7	
2011	73	22.8	7	9.6	17.9	10.8	67.1	98.6	
2012	75	23.6	9	12.0	19.0	10.8	65.3	96.0	
2013	78	24.5	6	7.7	19.0	10.7	61.5	98.7	
2014	49	16.8	2	4.1	19.4	10.8	63.3	98.0	
2015	89	29.1	4	4.5	19.2	10.5	48.3	97.8	
2016	65	22.6	4	6.2	19.8	9.6	53.8	98.5	
2017	53	25.1	2	3.8	20.6	8.2	39.6	100.0	
2018	42	26.6	3	7.1	20.9	8.3	38.1	100.0	
2019	38	33.6			21.2	5.4	23.7	97.4	
2020	22	23.4			21.5	0.0	22.7	100.0	##
1998-2020	1294	21.5	78	6.0	21.5	15.3	64.6	97.2	

1,294 cases diagnosed 1998-2020 are related to a total of 1,260 patients. Currently, in 431 (34.2 %) of these 1,260 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 328 / 77 / 26 (26.0 % / 6.1 % / 2.1 %) 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 42 cases has been diagnosed, of which 20.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.3 % 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 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	156	29	14.1	2.5	9.5	1.3	12.7	2.0	13.6	2.2
1999	172	39	15.4	3.3	10.2	1.9	14.0	2.6	15.4	3.0
2000	152	36	13.3	3.0	8.9	1.9	12.3	2.5	13.5	2.7
2001	155	37	13.4	3.0	9.0	1.8	12.1	2.5	13.2	2.7
2002	222	47	11.9	2.4	7.8	1.5	10.7	1.9	11.4	2.2
2003	236	59	12.6	3.0	8.3	1.8	11.5	2.5	12.3	2.7
2004	219	40	11.6	2.0	7.6	1.1	10.3	1.5	11.3	1.8
2005	256	65	13.5	3.3	8.8	2.0	11.8	2.7	12.7	3.1
2006	216	72	11.3	3.6	7.2	2.3	10.0	3.1	11.0	3.3
2007	270	66	12.2	2.9	7.5	1.7	10.3	2.3	11.6	2.5
2008	275	80	12.4	3.4	7.7	1.8	10.6	2.5	11.8	2.9
2009	273	71	12.2	3.1	7.5	1.7	10.3	2.4	11.4	2.7
2010	278	69	12.3	2.9	7.5	1.8	10.2	2.4	11.3	2.6
2011	247	73	11.0	3.1	6.4	1.8	8.9	2.5	10.1	2.7
2012	243	75	10.7	3.2	6.3	1.8	8.7	2.4	9.8	2.8
2013	241	78	10.5	3.3	6.2	1.8	8.6	2.5	9.5	2.7
2014	242	49	10.4	2.0	6.1	1.2	8.4	1.6	9.5	1.7
2015	217	89	9.1	3.7	5.3	2.1	7.3	2.9	8.3	3.2
2016	223	65	9.3	2.6	5.5	1.3	7.5	1.8	8.5	2.2
2017	158	53	6.5	2.2	3.5	1.1	5.0	1.6	5.9	1.8
2018	116	42	4.8	1.7	2.6	0.9	3.7	1.3	4.3	1.4
2019	75	38	3.1	1.5	1.8	0.8	2.4	1.1	2.8	1.3
2020	72	22	3.0	0.9	1.6	0.4	2.3	0.5	2.6	0.7
1998-2020	4714	1294	10.1	2.7	6.2	1.5	8.5	2.1	9.4	2.3

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	185	58.1	10.4	0.9	87.6	47.6	52.0	57.3	63.7	70.8
1999	211	58.8	11.0	32.7	91.7	47.9	51.0	57.1	64.4	75.2
2000	188	58.3	10.5	31.0	89.6	45.8	51.5	57.3	64.1	73.6
2001	192	59.2	10.9	28.7	96.4	47.0	52.1	58.5	65.5	72.9
2002	269	59.2	9.7	36.7	96.8	47.0	53.2	59.1	63.8	72.1
2003	295	59.6	10.2	10.7	87.5	47.1	53.1	58.5	65.9	73.8
2004	259	59.8	10.6	31.7	87.8	47.0	52.8	59.3	66.1	75.7
2005	321	60.0	10.6	12.8	103	47.0	53.3	60.6	65.7	71.8
2006	288	60.0	10.8	17.6	101	47.2	52.6	58.9	66.4	74.7
2007	336	61.6	10.6	30.1	91.6	48.4	53.6	61.7	68.1	76.0
2008	355	62.8	10.3	28.3	97.0	49.3	56.5	62.1	68.7	76.3
2009	344	62.2	10.7	26.7	95.5	49.6	54.8	61.7	69.6	75.4
2010	347	61.1	10.5	21.3	92.3	47.6	54.0	61.2	68.9	73.4
2011	320	63.0	10.7	24.5	92.0	49.8	55.1	62.7	70.5	75.6
2012	318	63.0	10.7	21.5	98.2	49.3	55.0	62.5	70.2	76.5
2013	319	63.3	10.2	33.2	92.9	51.4	55.4	63.0	70.1	77.1
2014	291	63.0	10.9	25.6	92.4	48.8	56.1	62.9	70.2	76.6
2015	306	63.4	10.5	32.7	95.0	50.0	55.9	62.9	69.9	77.7
2016	288	64.8	11.4	15.0	92.1	52.5	58.0	65.3	71.6	77.6
2017	211	65.8	11.0	32.9	92.7	52.3	58.1	66.0	74.6	79.6
2018	158	64.6	10.1	42.2	85.3	52.0	57.7	64.0	72.4	79.1
2019	113	64.9	10.7	32.9	88.3	52.2	58.7	66.3	71.6	79.4
2020	94	67.0	10.9	23.7	92.3	54.7	59.6	66.5	76.8	81.3
1998-2020	6008	61.8	10.8	0.9	103	48.6	54.4	61.4	68.8	76.1

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	156	57.3	10.0	0.9	87.6	46.9	51.6	57.2	63.3	70.2
1999	172	58.2	10.3	37.1	87.0	48.1	50.9	56.6	63.5	72.6
2000	152	58.6	9.8	35.6	89.6	48.0	51.8	57.2	64.1	71.9
2001	155	58.0	10.1	28.7	87.4	46.0	51.7	57.9	64.3	70.6
2002	222	58.9	9.2	36.7	96.8	47.4	53.2	58.8	63.5	70.4
2003	236	59.3	9.4	38.2	87.5	47.3	53.0	58.4	65.9	72.7
2004	219	59.0	10.1	31.7	85.5	46.2	51.9	58.7	64.8	72.7
2005	256	59.6	10.0	12.8	99.0	47.0	53.5	60.5	65.6	70.3
2006	216	59.9	10.1	17.6	86.7	47.6	52.8	58.8	66.4	74.3
2007	270	61.5	10.1	39.1	91.6	48.7	53.0	61.5	68.1	74.7
2008	275	61.8	9.9	28.3	87.0	48.6	55.1	61.3	68.0	74.2
2009	273	61.9	10.0	26.7	90.7	49.6	54.9	61.7	69.0	73.6
2010	278	61.1	10.5	21.3	92.3	47.4	54.1	61.0	69.1	73.6
2011	247	62.7	10.4	32.1	89.2	49.2	54.1	62.6	70.5	75.4
2012	243	62.6	10.1	39.9	91.7	49.3	54.8	62.1	70.2	76.5
2013	241	62.9	9.7	33.2	92.9	51.4	55.8	62.4	69.1	75.0
2014	242	62.8	10.6	25.6	89.6	48.7	55.7	62.6	70.3	76.5
2015	217	63.6	10.5	32.7	94.6	50.0	55.9	63.1	70.4	77.9
2016	223	64.0	10.8	15.0	91.6	52.4	57.5	64.4	71.0	76.4
2017	158	66.4	10.9	32.9	92.7	53.1	58.5	66.6	74.8	80.6
2018	116	65.2	10.3	43.6	85.3	52.2	58.1	64.0	73.4	80.1
2019	75	63.9	11.4	32.9	87.0	51.6	56.5	64.8	70.9	79.4
2020	72	65.6	10.2	23.7	85.2	54.8	59.1	64.3	71.6	78.8
1998–2020	4714	61.4	10.4	0.9	99.0	48.5	54.2	61.1	68.2	75.1

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	29	62.8	11.5	50.7	86.7	51.5	54.5	58.0	69.2	83.1
1999	39	61.2	13.8	32.7	91.7	41.9	51.2	59.5	73.4	79.3
2000	36	56.9	13.0	31.0	81.3	39.8	47.4	57.7	63.2	77.0
2001	37	64.2	12.9	41.3	96.4	49.6	54.8	62.0	72.7	84.8
2002	47	60.9	11.5	37.3	83.6	46.8	53.3	60.4	68.8	78.9
2003	59	60.7	13.2	10.7	85.3	44.7	53.9	58.7	68.0	80.7
2004	40	64.3	12.1	36.3	87.8	49.4	55.9	61.9	75.7	81.4
2005	65	61.6	12.9	22.8	103	46.1	52.6	60.9	67.0	77.5
2006	72	60.4	12.6	34.7	101	46.3	51.7	59.6	66.9	74.8
2007	66	62.1	12.5	30.1	89.4	47.8	53.8	62.1	68.0	82.6
2008	80	66.3	11.1	35.5	97.0	54.3	59.9	65.5	70.6	82.2
2009	71	63.4	12.8	40.9	95.5	49.3	53.9	61.4	71.1	81.4
2010	69	60.9	10.9	33.3	90.0	48.8	53.4	62.0	67.9	70.8
2011	73	64.0	11.8	24.5	92.0	53.4	57.3	63.3	70.3	77.4
2012	75	64.3	12.7	21.5	98.2	49.9	56.3	64.1	71.7	78.7
2013	78	64.8	11.6	43.0	91.4	51.1	54.8	64.8	71.8	79.5
2014	49	63.9	12.5	31.6	92.4	51.5	57.9	64.1	70.1	83.7
2015	89	62.9	10.3	39.9	95.0	49.7	56.0	62.4	67.6	76.7
2016	65	67.8	12.9	22.6	92.1	54.0	60.8	68.9	74.5	83.4
2017	53	63.9	11.2	41.1	85.0	50.1	53.9	64.4	73.7	77.1
2018	42	62.9	9.6	42.2	81.4	50.8	57.5	63.5	69.9	76.6
2019	38	67.0	8.9	47.7	88.3	54.6	59.4	68.1	73.3	79.9
2020	22	71.5	12.2	41.0	92.3	54.7	68.1	71.0	81.3	82.8
1998-2020	1294	63.3	12.1	10.7	103	49.1	55.1	62.8	70.8	79.7

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									
5-9									
10-14	1	0.0	0.0	1	0.0	0.0			0.0
15-19	0	0.0	0.0			0.0			0.0
20-24	8	0.2	0.2	5	0.2	0.2	3	0.3	0.3
25-29	3	0.1	0.3	3	0.1	0.3			0.3
30-34	13	0.3	0.7	9	0.3	0.6	4	0.5	0.8
35-39	18	0.5	1.1	11	0.4	1.0	7	0.8	1.6
40-44	93	2.4	3.6	70	2.4	3.4	23	2.6	4.3
45-49	258	6.8	10.4	210	7.2	10.5	48	5.5	9.8
50-54	472	12.4	22.8	373	12.7	23.3	99	11.4	21.1
55-59	606	15.9	38.7	470	16.0	39.3	136	15.6	36.8
60-64	702	18.5	57.2	554	18.9	58.2	148	17.0	53.8
65-69	657	17.3	74.5	500	17.1	75.3	157	18.0	71.8
70-74	452	11.9	86.4	355	12.1	87.4	97	11.1	83.0
75-79	289	7.6	94.0	227	7.7	95.2	62	7.1	90.1
80-84	142	3.7	97.7	99	3.4	98.5	43	4.9	95.1
85+	86	2.3	100.0	43	1.5	100.0	43	4.9	100.0
All ages	3800	100.0		2930	100.0		870	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=107 %	Females DCO rate n=54 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4								
5- 9								
10-14	1		0.1				0.7	
15-19								
20-24	5	3	0.2	0.2			0.8	0.6
25-29	3		0.1				0.3	
30-34	9	4	0.4	0.2			0.7	0.2
35-39	11	7	0.5	0.3		14.3	0.6	0.2
40-44	68	23	2.7	1.0	2.9	4.3	2.4	0.4
45-49	204	47	7.6	1.8	1.5		4.0	0.5
50-54	371	96	14.6	3.8	2.2	3.1	4.4	0.8
55-59	465	134	21.9	6.2	2.8	3.0	3.7	1.0
60-64	549	146	31.1	7.7	2.2	3.4	3.1	0.9
65-69	493	153	30.2	8.4	2.6	2.0	2.0	0.8
70-74	350	96	23.3	5.6	6.0	6.3	1.3	0.5
75-79	225	61	18.6	4.1	5.3	4.9	0.9	0.3
80-84	99	42	13.7	3.9	8.1	21.4	0.6	0.3
85+	43	43	9.2	4.1	34.9	44.2	0.4	0.3
All ages	2896	855			3.7	6.3	1.9	0.6
Incidence								
Raw			8.9	2.5				
WS			5.2	1.4				
ES			7.2	1.9				
BRD-S			8.1	2.2				

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

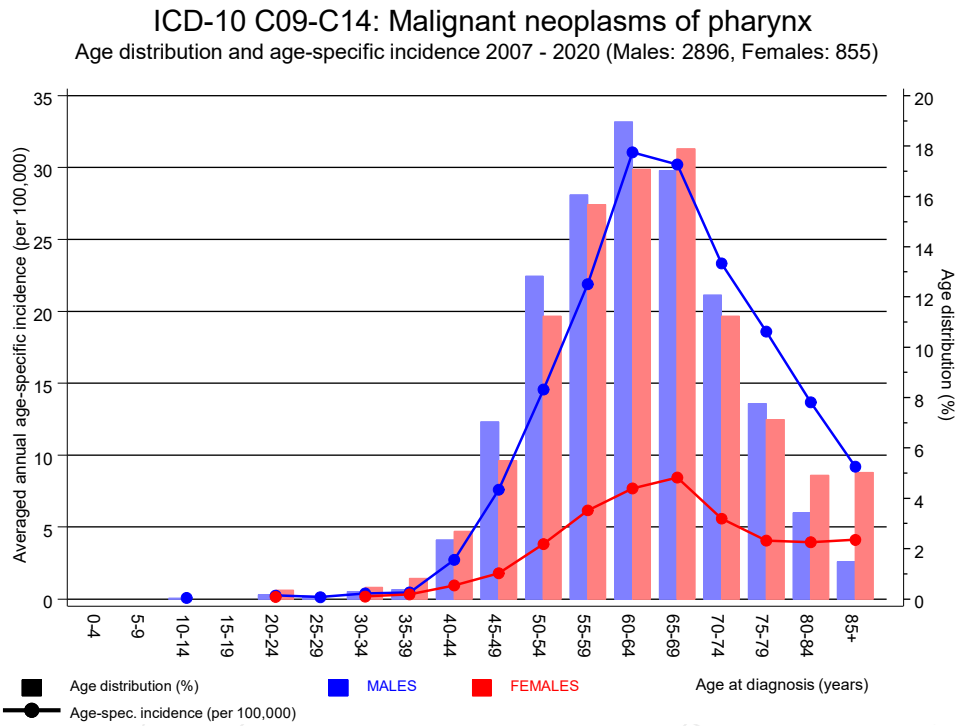


Figure 6. Age distribution (males: mean=62.9 yrs, median=62.7 yrs; females: mean=64.3 yrs, median=64.2 yrs) and age-specific incidence.

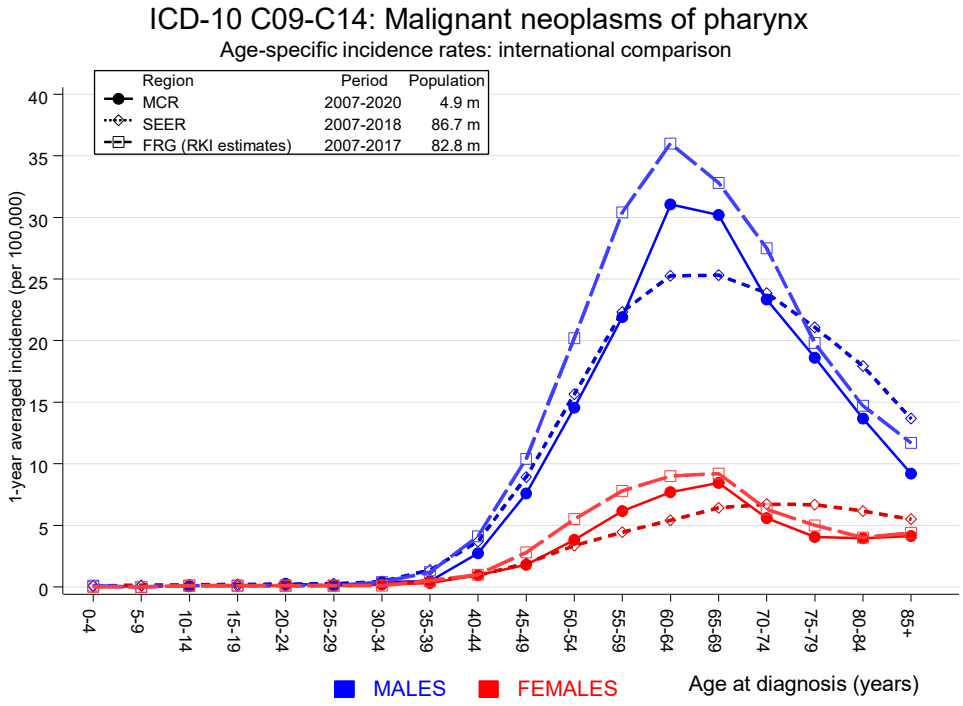


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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	86	2.2	39.8	31.8	49.2	#	55.3	7.0
C07–C08	Salivary gland	2	0.4	5.2	0.6	18.7		1.1	
C09–C10	Oropharynx	62	2.8	22.1	16.9	28.3	#	39.0	
C11	Nasopharynx	4	0.2	21.7	5.9	55.6	#	2.5	
C12–C13	Hypopharynx	42	1.5	28.1	20.3	38.0	#	26.7	11.9
C14	ENT cancer	3	0.0	69.7	14.4	203.7	#	2.0	100.0
C15	Oesophagus	114	4.3	26.5	21.9	31.8	#	72.4	14.0
C16	Stomach	18	6.4	2.8	1.7	4.5	#	7.7	16.7
C18	Colon	44	15.8	2.8	2.0	3.7	#	18.6	6.8
C19–C20	Rectum	22	10.3	2.1	1.3	3.2	#	7.7	
C21	Anus/canal	6	0.5	11.8	4.3	25.7	#	3.6	
C22	Liver	29	5.5	5.3	3.6	7.6	#	15.5	10.3
C23–C24	Bile	2	1.8	1.1	0.1	4.1		0.2	
C25	Pancreas	21	6.7	3.1	1.9	4.8	#	9.4	23.8
C30–C31	Sinuses	2	0.4	5.4	0.7	19.5		1.1	
C32	Larynx	61	2.2	27.4	21.0	35.2	#	38.8	29.5
C33–C34	Lung	218	22.3	9.8	8.5	11.2	#	129.1	9.6
C43	Malign. melanoma	15	8.8	1.7	0.9	2.8		4.1	13.3
C46,C49	Soft tissue	2	1.0	1.9	0.2	7.0		0.6	
C60	Penis	2	0.5	4.4	0.5	16.0		1.0	
C61	Prostate	53	51.6	1.0	0.8	1.3		0.9	1.9
C64	Kidney	19	6.8	2.8	1.7	4.4	#	8.1	10.5
C65	Renal pelvis	2	0.7	2.8	0.3	10.1		0.8	
C67	Bladder	18	7.1	2.5	1.5	4.0	#	7.2	11.1
C70–C72	CNS cancer	2	2.6	0.8	0.1	2.8		−0.4	
C73	Thyroid	6	1.6	3.7	1.4	8.0	#	2.9	16.7
C76–C79	CUP	11	2.9	3.8	1.9	6.8	#	5.4	
C81	Hodgkin lymphoma	2	0.5	4.1	0.5	14.8		1.0	
C82–C85	NHL	12	7.3	1.6	0.8	2.9		3.1	
C90	Mult. myeloma	3	2.2	1.4	0.3	4.0		0.5	
C91–C96	Leukaemia	3	2.4	1.3	0.3	3.7		0.4	33.3
Others, specified		8	3.4	2.4	1.0	4.6	#	3.0	12.5
Not observed		0	2.4	0.0	0.0	1.6		−1.6	
All further malignancies		894	185.0	4.8	4.5	5.2	#	467.7	10.4

Patients	4501
Median age at next malignancy (years)	64.5
Person-years	15159
Mean observation time (years)	3.4
Median observation time (years)	1.7

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	17	0.3	60.1	35.0	96.3	#	36.9	
C09-C10	Oropharynx	25	0.2	102.6	66.4	151.5	#	54.6	
C11	Nasopharynx	1	0.0	63.5	1.6	353.8	#	2.2	
C12-C13	Hypopharynx	10	0.1	160.6	77.0	295.4	#	21.9	
C14	ENT cancer	2	0.0	428.9	51.9	1549	#	4.4	50.0
C15	Oesophagus	30	0.3	96.0	64.8	137.1	#	65.4	6.7
C16	Stomach	3	1.2	2.5	0.5	7.4		4.0	
C18	Colon	11	3.5	3.2	1.6	5.7	#	16.6	
C19-C20	Rectum	2	1.6	1.3	0.2	4.6		1.0	
C22	Liver	6	0.5	12.4	4.5	26.9	#	12.2	16.7
C25	Pancreas	3	1.7	1.8	0.4	5.2		2.9	
C30	Middle/inner ear	1	0.0	600.7	15.2	3347	#	2.2	
C30-C31	Sinuses	2	0.1	34.5	4.2	124.7	#	4.3	
C32	Larynx	13	0.1	139.4	74.2	238.4	#	28.5	7.7
C33-C34	Lung	41	3.6	11.5	8.2	15.5	#	82.5	12.2
C43	Malign. melanoma	4	1.8	2.3	0.6	5.8		4.9	25.0
C50	Breast	23	14.7	1.6	1.0	2.3		18.3	
C51	Vulva	4	0.4	10.1	2.7	25.8	#	7.9	
C52	Vagina	2	0.1	28.1	3.4	101.4	#	4.3	
C53	Cervix uteri	5	0.6	7.7	2.5	18.0	#	9.6	20.0
C54	Corpus uteri	3	2.5	1.2	0.2	3.5		1.0	
C56	Ovary	5	1.7	2.9	0.9	6.8		7.2	20.0
C64	Kidney	3	0.9	3.3	0.7	9.5		4.6	
C70-C72	CNS cancer	2	0.6	3.6	0.4	13.1		3.2	50.0
C73	Thyroid	2	0.9	2.3	0.3	8.2		2.5	
C76-C79	CUP	1	0.6	1.6	0.0	8.7		0.8	
C82-C85	NHL	2	1.5	1.3	0.2	4.7		1.0	
C90	Mult. myeloma	1	0.5	2.2	0.1	12.1		1.2	100.0
C91-C96	Leukaemia	4	0.5	7.3	2.0	18.7	#	7.6	25.0
Not observed		0	2.9	0.0	0.0	1.3		-6.4	
All further malignancies		228	43.3	5.3	4.6	6.0	#	407.2	7.0

Patients	1208
Median age at next malignancy (years)	64.5
Person-years	4536
Mean observation time (years)	3.8
Median observation time (years)	2.3

The occurrence of further specified malignancy is statistically significant.

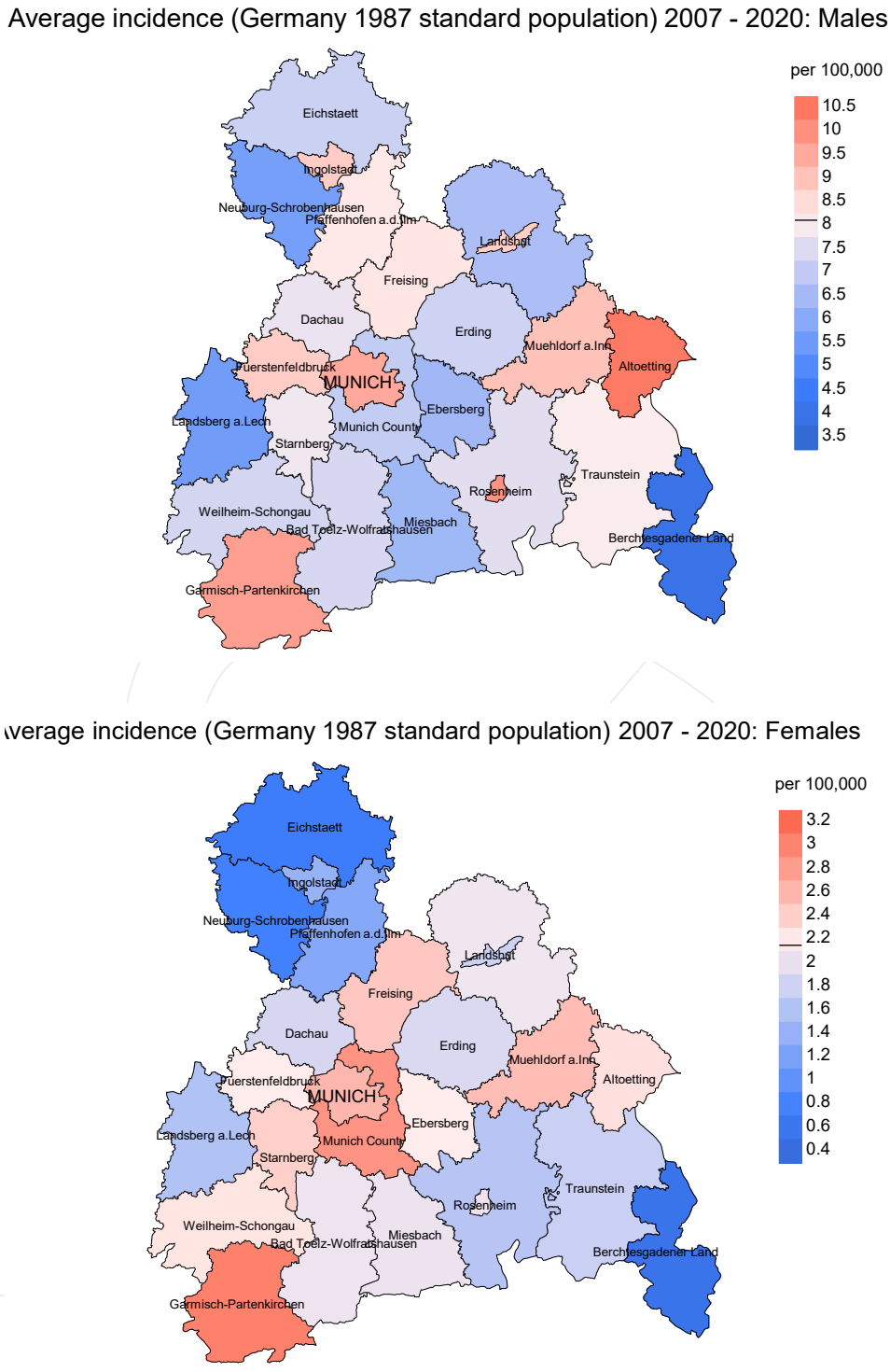
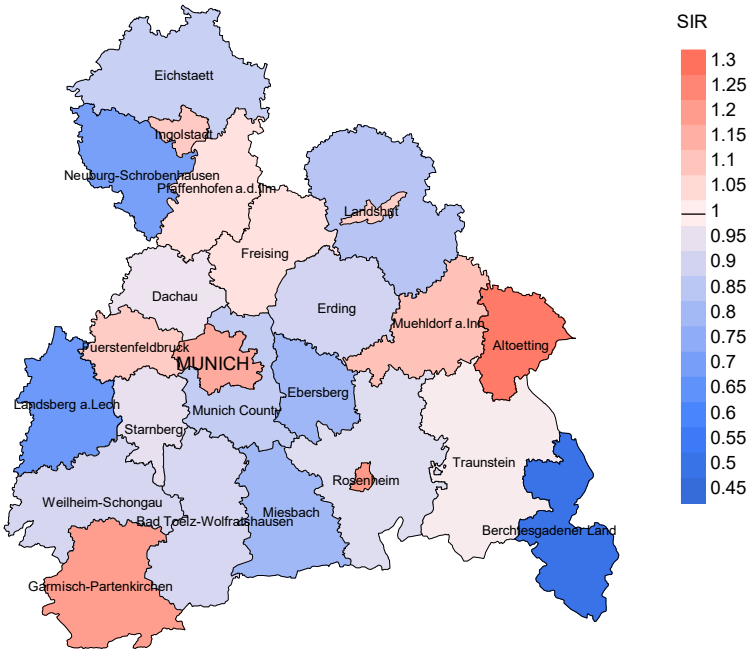


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 8.1/100,000 WS N=2,896, females 2.2/100,000 WS N=855).

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 24 women were identified with newly diagnosed pharynx cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.2 and 3.6/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

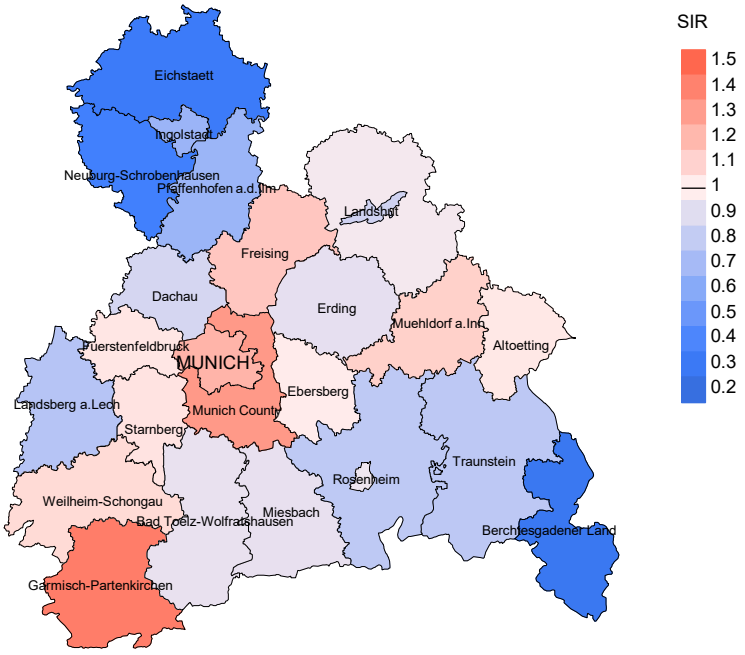


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,896, females N=855).

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 24 women were identified with newly diagnosed pharynx cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.01. Though, the value of this parameter may vary with an underlying probability of 99% between 0.56 and 1.67, 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	185	99.5	4.3	170	91.9	96.5
1999	211	98.1	4.7	186	88.2	90.3
2000	188	97.3	4.3	168	89.4	94.0
2001	192	96.9	6.3	161	83.9	95.7
2002	269	98.5	7.4	231	85.9	97.0
2003	295	98.0	2.0	248	84.1	96.8
2004	259	99.2	3.9	219	84.6	94.5
2005	321	98.1	4.7	251	78.2	97.2
2006	288	96.2	2.1	228	79.2	95.2
2007	336	97.3	7.7	261	77.7	95.0
2008	355	99.7	3.9	274	77.2	94.9
2009	344	97.7	2.6	264	76.7	95.8
2010	347	97.7	4.0	242	69.7	94.6
2011	320	98.8	5.6	225	70.3	93.8
2012	318	98.1	6.6	224	70.4	92.4
2013	319	97.8	2.8	205	64.3	94.6
2014	291	96.9	4.1	206	70.8	94.7
2015	306	99.0	3.3	175	57.2	90.9
2016	288	99.3	4.9	166	57.6	81.9
2017	211	99.1	4.7	110	52.1	72.7
2018	158	99.4	4.4	70	44.3	65.7
2019	113	99.1		38	33.6	89.5
2020	94	100.0		31	33.0	100.0
1998-2020	6008	98.2	4.3	4353	72.5	93.2

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 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	185	142	90.8	32	17.3
1999	211	154	87.7	43	20.4
2000	188	151	93.4	29	15.4
2001	192	150	91.3	34	17.7
2002	269	202	98.0	48	17.8
2003	295	215	96.3	46	15.6
2004	259	215	97.2	40	15.4
2005	321	207	96.1	54	16.8
2006	288	223	97.8	46	16.0
2007	336	283	97.5	66	19.6
2008	355	246	99.2	57	16.1
2009	344	233	98.7	50	14.5
2010	347	252	99.2	51	14.7
2011	320	242	97.9	61	19.1
2012	318	263	97.7	58	18.2
2013	319	266	98.1	48	15.0
2014	291	248	98.0	59	20.3
2015	306	269	98.9	53	17.3
2016	288	238	97.9	61	21.2
2017	211	211	95.3	33	15.6
2018	158	179	62.6	23	14.6
2019	113	184	45.7	19	16.8
2020	94	156	95.5	11	11.7
1998–2020	6008	4929	93.6	1022	17.0

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	142	77.5	22.5	92.2
1999	154	69.5	30.5	91.1
2000	151	82.8	17.2	92.9
2001	150	76.0	24.0	90.5
2002	202	79.7	20.3	91.4
2003	215	82.8	17.2	92.8
2004	215	83.3	16.7	92.3
2005	207	85.5	14.5	93.5
2006	223	85.2	14.8	92.2
2007	283	82.3	17.7	91.3
2008	246	82.9	17.1	89.3
2009	233	83.7	16.3	97.0
2010	252	83.7	16.3	93.6
2011	242	76.9	23.1	87.3
2012	263	81.0	19.0	89.9
2013	266	78.6	21.4	89.3
2014	248	79.0	21.0	90.9
2015	269	82.2	17.8	92.5
2016	238	77.7	22.3	88.8
2017	211	74.9	25.1	87.1
2018	179	53.6	46.4	75.9
2019	184	34.8	65.2	85.7
2020	156	49.4	50.6	75.2
1998-2020	4929	76.9	23.1	90.3

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	112	59.2	57.5	63.7	59.0
1999	126	58.7	57.6	62.8	57.7
2000	120	59.4	58.8	66.1	59.7
2001	124	59.1	59.1	61.6	59.8
2002	169	60.3	59.7	62.7	60.0
2003	173	62.1	61.5	67.6	61.5
2004	177	60.6	60.1	63.5	60.2
2005	171	62.8	62.1	65.0	62.7
2006	187	63.1	62.7	65.0	62.8
2007	235	63.5	61.9	68.7	62.8
2008	194	65.8	64.8	67.7	65.7
2009	182	64.3	64.1	67.2	64.3
2010	212	63.8	63.1	70.5	63.5
2011	200	66.6	64.4	70.4	65.6
2012	208	66.2	67.3	65.6	66.1
2013	202	66.0	64.5	69.7	64.9
2014	202	67.9	67.1	73.4	67.6
2015	204	66.0	66.0	65.5	66.0
2016	185	68.1	66.8	73.0	67.6
2017	170	70.3	68.9	74.5	69.5
2018	142	72.0	67.6	73.5	71.8
2019	139	69.5	65.5	70.1	68.9
2020	129	70.8	68.8	73.7	69.7
1998–2020	3963	64.5	63.3	69.2	64.0

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	30	69.6	67.9	72.7	71.3
1999	28	60.8	62.2	58.1	58.9
2000	31	56.9	56.8	67.1	56.8
2001	26	64.3	63.4	66.2	63.4
2002	33	63.0	62.8	73.7	63.9
2003	42	64.3	64.1	73.3	64.8
2004	38	66.7	65.2	67.7	65.8
2005	36	63.8	61.3	67.5	62.3
2006	36	67.3	66.8	78.5	67.7
2007	48	67.1	65.9	74.3	66.9
2008	52	66.7	66.9	64.7	65.8
2009	51	68.5	68.2	72.3	68.5
2010	40	64.3	64.1	71.1	64.1
2011	42	66.8	65.1	69.8	65.5
2012	55	71.5	69.7	77.6	69.7
2013	64	69.2	68.1	75.8	68.2
2014	46	72.0	71.4	83.2	71.7
2015	65	69.2	68.4	72.0	67.8
2016	53	70.5	70.5	69.3	70.5
2017	41	71.0	67.6	76.2	69.2
2018	37	72.3	71.0	73.3	72.1
2019	45	69.9	67.3	71.9	69.7
2020	27	72.2	72.5	71.6	72.5
1998–2020	966	68.1	67.3	72.6	67.6

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	87	7.9	0.56	5.3	0.56	7.1	0.56	7.8	0.57
1999	92	8.2	0.54	5.3	0.52	7.4	0.53	8.2	0.53
2000	98	8.6	0.64	5.4	0.61	7.7	0.63	8.9	0.66
2001	95	8.2	0.63	5.4	0.61	7.5	0.64	8.3	0.65
2002	140	7.5	0.63	4.8	0.62	6.7	0.63	7.4	0.65
2003	145	7.7	0.63	4.9	0.60	6.8	0.61	7.6	0.63
2004	148	7.9	0.69	5.0	0.67	6.9	0.69	7.6	0.68
2005	148	7.8	0.58	4.7	0.54	6.6	0.56	7.5	0.59
2006	160	8.4	0.74	5.1	0.71	7.2	0.72	8.0	0.74
2007	192	8.7	0.72	5.2	0.71	7.4	0.72	8.3	0.73
2008	162	7.3	0.59	4.2	0.55	6.0	0.57	6.9	0.59
2009	155	6.9	0.57	4.1	0.55	5.7	0.56	6.6	0.58
2010	180	8.0	0.66	4.7	0.64	6.6	0.66	7.5	0.67
2011	156	7.0	0.64	3.9	0.62	5.5	0.63	6.4	0.65
2012	163	7.2	0.68	3.8	0.61	5.5	0.64	6.6	0.68
2013	161	7.0	0.68	3.8	0.62	5.4	0.64	6.3	0.67
2014	167	7.2	0.70	3.9	0.64	5.5	0.67	6.5	0.69
2015	167	7.0	0.78	3.7	0.72	5.4	0.74	6.4	0.77
2016	141	5.9	0.64	3.2	0.59	4.5	0.61	5.4	0.64
2017	127	5.3	0.81	2.7	0.77	3.8	0.78	4.7	0.81
2018	79	3.2	0.68	1.6	0.60	2.3	0.63	2.9	0.67
2019	47	1.9	0.63	1.0	0.55	1.4	0.57	1.7	0.63
2020	62	2.5	0.87	1.4	0.84	1.9	0.86	2.3	0.88
1998-2020	3072	6.6	0.66	3.8	0.62	5.4	0.64	6.2	0.66

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	23	2.0	0.79	0.9	0.70	1.4	0.70	1.7	0.80
1999	15	1.3	0.38	0.7	0.36	1.0	0.37	1.1	0.38
2000	27	2.2	0.77	1.4	0.76	1.9	0.77	2.1	0.78
2001	19	1.6	0.51	0.8	0.45	1.1	0.46	1.3	0.48
2002	22	1.1	0.47	0.6	0.44	0.9	0.46	1.0	0.46
2003	34	1.7	0.59	0.9	0.50	1.3	0.53	1.5	0.57
2004	31	1.6	0.78	0.8	0.70	1.1	0.69	1.3	0.73
2005	29	1.5	0.46	0.8	0.45	1.2	0.46	1.3	0.45
2006	30	1.5	0.42	0.7	0.32	1.0	0.34	1.2	0.38
2007	41	1.8	0.65	0.9	0.57	1.3	0.59	1.5	0.62
2008	42	1.8	0.53	1.0	0.53	1.4	0.54	1.5	0.54
2009	41	1.8	0.59	0.9	0.55	1.3	0.56	1.5	0.55
2010	31	1.3	0.46	0.8	0.43	1.0	0.44	1.2	0.47
2011	31	1.3	0.43	0.7	0.39	1.0	0.40	1.1	0.41
2012	50	2.1	0.68	1.0	0.54	1.4	0.57	1.6	0.60
2013	48	2.0	0.62	1.0	0.59	1.4	0.59	1.7	0.62
2014	30	1.2	0.61	0.6	0.51	0.8	0.52	1.0	0.56
2015	54	2.2	0.62	1.0	0.51	1.5	0.53	1.8	0.57
2016	44	1.8	0.68	0.8	0.58	1.1	0.61	1.4	0.65
2017	31	1.3	0.61	0.6	0.53	0.8	0.55	1.0	0.58
2018	17	0.7	0.40	0.3	0.32	0.4	0.34	0.5	0.39
2019	17	0.7	0.46	0.3	0.45	0.5	0.46	0.5	0.44
2020	15	0.6	0.68	0.2	0.64	0.3	0.66	0.5	0.67
1998-2020	722	1.5	0.57	0.7	0.50	1.1	0.52	1.2	0.54

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									
5-9									
10-14									
15-19									
20-24	2	0.1	0.1	1	0.1	0.1	1	0.2	0.2
25-29	0	0.0	0.1			0.1			0.2
30-34	1	0.0	0.1			0.1	1	0.2	0.4
35-39	6	0.2	0.4	2	0.1	0.2	4	0.8	1.2
40-44	20	0.8	1.2	18	0.9	1.1	2	0.4	1.6
45-49	99	4.0	5.2	85	4.3	5.4	14	2.8	4.5
50-54	232	9.5	14.7	197	10.1	15.5	35	7.1	11.6
55-59	383	15.6	30.3	319	16.3	31.8	64	13.0	24.6
60-64	402	16.4	46.7	328	16.7	48.5	74	15.0	39.6
65-69	434	17.7	64.4	341	17.4	65.9	93	18.9	58.5
70-74	382	15.6	80.0	307	15.7	81.6	75	15.2	73.8
75-79	254	10.4	90.4	207	10.6	92.1	47	9.6	83.3
80-84	146	6.0	96.3	111	5.7	97.8	35	7.1	90.4
85+	90	3.7	100.0	43	2.2	100.0	47	9.6	100.0
All ages	2451	100.0		1959	100.0		492	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								
20-24	1	1	0.0	0.20	0.1	0.33	1.4	2.3
25-29								
30-34		1			0.0	0.25		0.6
35-39	2	4	0.1	0.18	0.2	0.57	0.7	1.0
40-44	18	2	0.7	0.26	0.1	0.09	3.0	0.2
45-49	85	14	3.2	0.42	0.5	0.30	6.0	0.8
50-54	197	35	7.7	0.53	1.4	0.36	7.4	1.3
55-59	319	64	15.0	0.69	2.9	0.48	7.2	1.7
60-64	328	74	18.6	0.60	3.9	0.51	5.1	1.5
65-69	341	93	20.9	0.69	5.1	0.61	3.7	1.3
70-74	307	75	20.5	0.88	4.4	0.78	2.6	0.9
75-79	207	47	17.1	0.92	3.1	0.77	1.7	0.5
80-84	111	35	15.3	1.12	3.3	0.83	1.1	0.4
85+	43	47	9.2	1.00	4.5	1.09	0.5	0.4
All ages	1959	492					2.8	0.8
Mortality								
Raw			6.0	0.68	1.5	0.58		
WS			3.3	0.63	0.7	0.51		
ES			4.7	0.65	1.0	0.52		
BRD-S			5.5	0.68	1.2	0.55		
PYLL-70								
per 100,000			46.3		9.9			
ES			39.3		8.2			
AYLL-70			10.3		9.7			

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 ←%
C00	Lip	3	0.2			1	33.3	2	66.7
C03-C06	Oral cavity	171	12.0	72	42.1	23	13.5	76	44.4
C07-C08	Salivary gland	5	0.4			1	20.0	4	80.0
C09-C10	Oropharynx	84	5.9	24	28.6	31	36.9	29	34.5
C11	Nasopharynx	3	0.2	3	100.0				
C12-C13	Hypopharynx	32	2.2	20	62.5	9	28.1	3	9.4
C15	Oesophagus	152	10.7	29	19.1	27	17.8	96	63.2
C16	Stomach	23	1.6	7	30.4	3	13.0	13	56.5
C17	Small intestine	3	0.2	3	100.0				
C18	Colon	47	3.3	20	42.6	2	4.3	25	53.2
C19-C20	Rectum	35	2.5	13	37.1	4	11.4	18	51.4
C21	Anus/canal	5	0.4	3	60.0	1	20.0	1	20.0
C22	Liver	37	2.6	3	8.1	3	8.1	31	83.8
C23-C24	Bile	2	0.1	2	100.0				
C25	Pancreas	29	2.0	3	10.3	1	3.4	25	86.2
C30-C31	Sinuses	8	0.6	2	25.0	2	25.0	4	50.0
C32	Larynx	112	7.9	52	46.4	25	22.3	35	31.3
C33-C34	Lung	289	20.3	47	16.3	38	13.1	204	70.6
C38,C45	Mesothelioma	2	0.1					2	100.0
C43	Malign. melanoma	17	1.2	7	41.2	1	5.9	9	52.9
C44	Skin others	94	6.6	24	25.5	17	18.1	53	56.4
C46,C49	Soft tissue	4	0.3	2	50.0			2	50.0
C50	Breast	3	0.2	2	66.7			1	33.3
C61	Prostate	93	6.5	57	61.3	3	3.2	33	35.5
C62	Testis	4	0.3	3	75.0			1	25.0
C64	Kidney	34	2.4	18	52.9	3	8.8	13	38.2
C65	Renal pelvis	7	0.5	2	28.6			5	71.4
C66	Ureter	3	0.2	1	33.3			2	66.7
C67	Bladder	31	2.2	11	35.5			20	64.5
C68	Urinary org.	2	0.1					2	100.0
C69	Eye melanoma	2	0.1	2	100.0				
C70-C72	CNS cancer	2	0.1					2	100.0
C73	Thyroid	9	0.6	4	44.4	2	22.2	3	33.3
C76-C79	CUP	35	2.5	22	62.9	3	8.6	10	28.6
C81	Hodgkin lymphoma	7	0.5	4	57.1			3	42.9
C82-C85	NHL	19	1.3	9	47.4	5	26.3	5	26.3
C90	Mult. myeloma	2	0.1	1	50.0			1	50.0
C91-C96	Leukaemia	9	0.6	6	66.7			3	33.3
Others, specified		5	0.4	3	60.0	1	20.0	1	20.0

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 ←%
All further malignancies	1424	100.0	481	33.8	206	14.5	737	51.8

Further malignancies with number of cases 1 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	50	12.8	36	72.0	6	12.0	8	16.0
C07–C08	Salivary gland	1	0.3	1	100.0				
C09–C10	Oropharynx	24	6.2	7	29.2	11	45.8	6	25.0
C11	Nasopharynx	1	0.3	1	100.0				
C12–C13	Hypopharynx	3	0.8	1	33.3	1	33.3	1	33.3
C15	Oesophagus	30	7.7	2	6.7	7	23.3	21	70.0
C16	Stomach	6	1.5	1	16.7	2	33.3	3	50.0
C18	Colon	17	4.4	7	41.2	2	11.8	8	47.1
C19–C20	Rectum	4	1.0	2	50.0			2	50.0
C21	Anus/canal	3	0.8	2	66.7			1	33.3
C22	Liver	4	1.0			2	50.0	2	50.0
C25	Pancreas	3	0.8					3	100.0
C26	GI cancer	2	0.5					2	100.0
C30	Middle/inner ear	1	0.3					1	100.0
C30–C31	Sinuses	6	1.5	2	33.3			4	66.7
C32	Larynx	24	6.2	9	37.5	5	20.8	10	41.7
C33–C34	Lung	55	14.1	8	14.5	3	5.5	44	80.0
C43	Malign. melanoma	3	0.8	2	66.7			1	33.3
C44	Skin others	15	3.8	3	20.0			12	80.0
C50	Breast	66	16.9	48	72.7	4	6.1	14	21.2
C51	Vulva	3	0.8					3	100.0
C52	Vagina	1	0.3					1	100.0
C53	Cervix uteri	13	3.3	7	53.8			6	46.2
C54	Corpus uteri	9	2.3	7	77.8			2	22.2
C56	Ovary	4	1.0	2	50.0			2	50.0
C64	Kidney	3	0.8	2	66.7	1	33.3		
C65	Renal pelvis	1	0.3					1	100.0
C67	Bladder	4	1.0	3	75.0			1	25.0
C68	Urethra	1	0.3	1	100.0				
C70–C72	CNS cancer	2	0.5			1	50.0	1	50.0
C73	Thyroid	7	1.8	5	71.4	1	14.3	1	14.3
C76–C79	CUP	10	2.6	6	60.0			4	40.0
C82–C85	NHL	7	1.8	4	57.1			3	42.9
C90	Mult. myeloma	3	0.8	2	66.7			1	33.3
C91–C96	Leukaemia	4	1.0	1	25.0			3	75.0
All further malignancies		390	100.0	172	44.1	46	11.8	172	44.1

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								
20-24	1	1	0.0	0.20	0.1	0.33	1.5	2.4
25-29								
30-34		1			0.0	0.25		0.6
35-39	1	2	0.0	0.10	0.1	0.50	0.4	0.5
40-44	16	2	0.6	0.25	0.1	0.09	2.9	0.3
45-49	69	12	2.6	0.40	0.5	0.32	5.3	0.8
50-54	168	28	6.6	0.51	1.1	0.35	7.2	1.2
55-59	264	50	12.4	0.69	2.3	0.48	6.8	1.6
60-64	257	50	14.5	0.59	2.6	0.46	4.8	1.2
65-69	262	78	16.1	0.70	4.3	0.67	3.6	1.4
70-74	238	50	15.9	0.96	2.9	0.86	2.6	0.7
75-79	146	27	12.1	0.99	1.8	0.79	1.6	0.4
80-84	73	25	10.1	1.28	2.3	0.78	1.0	0.3
85+	31	31	6.6	1.24	3.0	1.00	0.5	0.3
All ages	1526	357					2.9	0.7
Mortality								
Raw			4.7	0.68	1.1	0.56		
WS			2.6	0.63	0.5	0.49		
ES			3.7	0.65	0.7	0.51		
BRD-S			4.3	0.67	0.9	0.53		
PYLL-70								
per 100,000			38.0		7.6			
ES			32.3		6.3			
AYLL-70			10.5		9.6			

* 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								
5- 9								
10-14								
15-19								
20-24	1	1	0.0	0.20	0.1	0.33	1.5	2.5
25-29								
30-34		1			0.0	0.25		0.6
35-39	1	2	0.0	0.11	0.1	0.50	0.4	0.5
40-44	15	2	0.6	0.27	0.1	0.11	2.7	0.3
45-49	61	11	2.3	0.38	0.4	0.31	4.8	0.8
50-54	140	26	5.5	0.48	1.0	0.37	6.1	1.2
55-59	221	43	10.4	0.66	2.0	0.52	5.8	1.4
60-64	209	34	11.8	0.56	1.8	0.37	4.0	0.9
65-69	203	60	12.4	0.64	3.3	0.58	2.8	1.1
70-74	156	33	10.4	0.76	1.9	0.66	1.8	0.5
75-79	101	20	8.3	0.80	1.3	0.63	1.2	0.3
80-84	54	20	7.5	1.04	1.9	0.67	0.8	0.3
85+	24	24	5.1	1.09	2.3	0.80	0.4	0.3
All ages	1186	277					2.3	0.6
Mortality								
Raw			3.6	0.60	0.8	0.50		
WS			2.1	0.57	0.4	0.45		
ES			2.9	0.58	0.6	0.46		
BRD-S			3.3	0.60	0.7	0.48		
PYLL-70								
per 100,000			31.9		6.5			
ES			27.1		5.4			
AYLL-70			10.8		10.3			

* See corresponding tables with multiple malignancies.

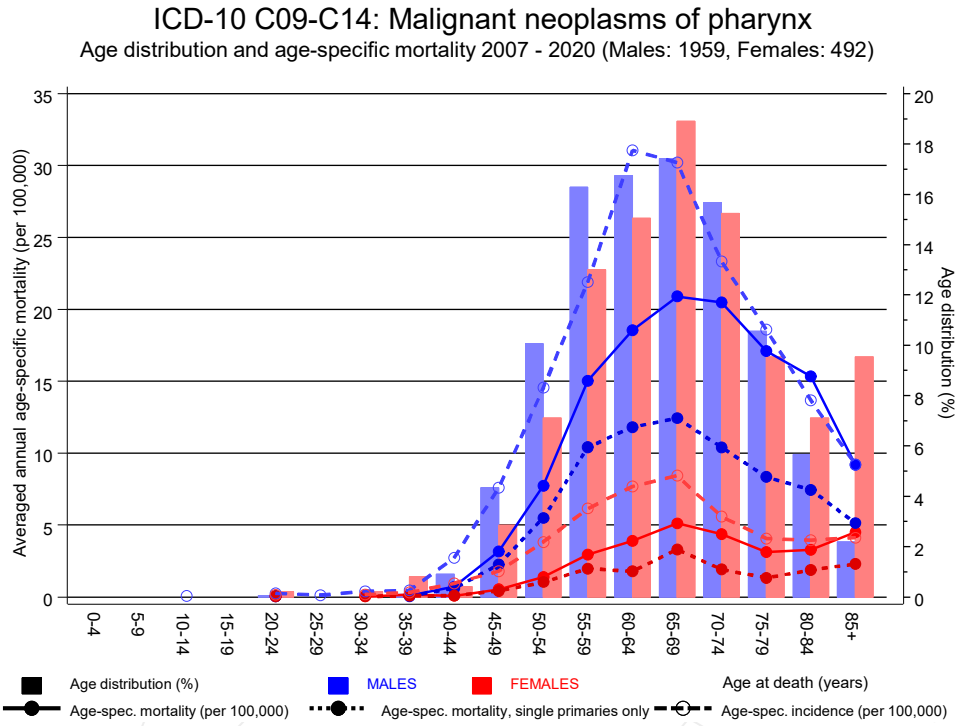


Figure 17. Distribution of age at death (bars; males: mean=62.0 yrs, median=61.7 yrs; females: mean=64.2 yrs, median=64.3 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

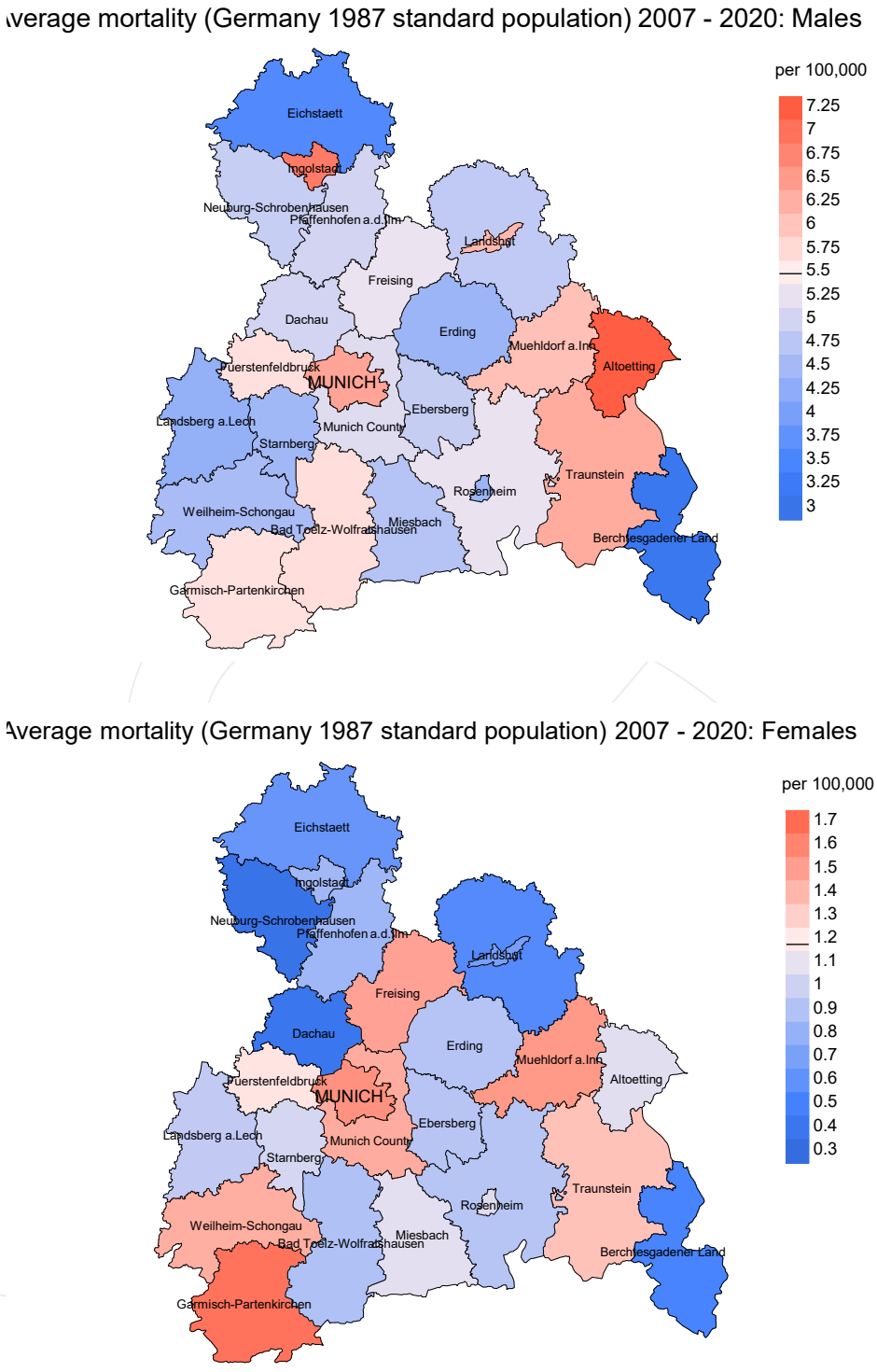
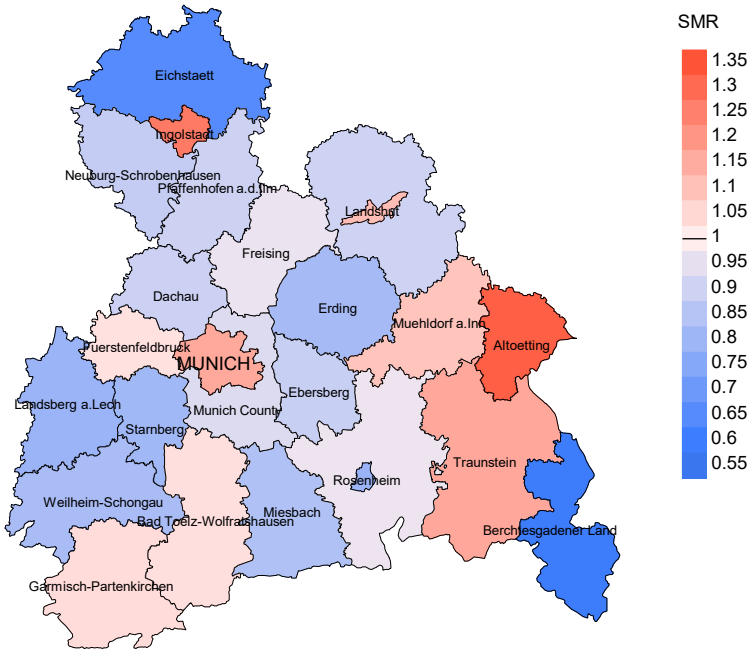


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 5.5/100,000 WS N=1,959, females 1.2/100,000 WS N=492).

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 11 women died from pharynx cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.9/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.3 and 2.0/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

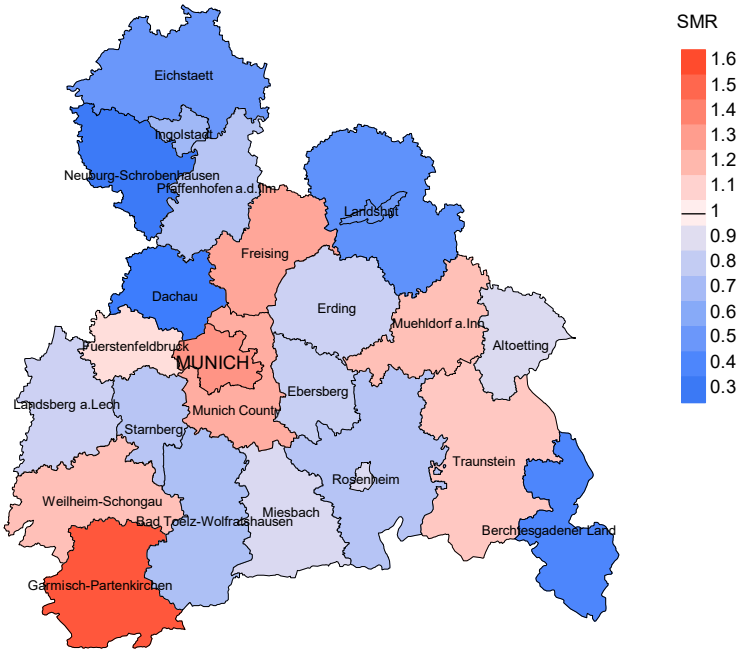


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,959, females N=492).

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 11 women died from pharynx cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.82. Though, the value of this parameter may vary with an underlying probability of 99% between 0.32 and 1.69, 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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