Munich Cancer Registry

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- *Deutsch*

ICD-10 C09, C10: Oropharynx cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	2,391
Diseases	2,418
Creation date	12/20/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC0910E-ICD-10-C09-C10-Oropharynx-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

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	65	3	4.6	9.2	16.0	92.3	100.0
1999	67	1	1.5	9.1	15.7	85.1	100.0
2000	59	1	1.7	11.0	15.6	86.4	100.0
2001	68	3	4.4	11.2	15.4	80.9	94.1
2002	108	9	8.3	14.7	15.0	78.7	98.1 #
2003	126	4	3.2	14.2	14.3	81.0	97.6
2004	112	4	3.6	14.2	14.0	80.4	99.1
2005	126	6	4.8	14.8	13.8	71.4	96.8
2006	111	1	0.9	14.8	13.5	70.3	92.8
2007	127	12	9.4	13.9	13.2	66.9	96.9 #
2008	136	1	0.7	14.4	12.6	68.4	99.3
2009	144	2	1.4	15.6	11.8	69.4	97.9
2010	134	3	2.2	15.6	10.9	61.9	97.8
2011	139	6	4.3	16.2	10.0	62.6	99.3
2012	145	7	4.8	16.4	9.8	65.5	97.9
2013	137	4	2.9	16.4	9.2	57.7	97.8
2014	130	6	4.6	16.6	8.5	70.8	98.5
2015	131	3	2.3	16.9	8.8	50.4	99.2
2016	105	6	5.7	17.5	8.5	44.8	100.0
2017	94	6	6.4	18.1	9.2	42.6	100.0
2018	60	5	8.3	18.2	6.8	41.7	100.0
2019	50			18.4	5.6	34.0	98.0
2020	44			18.7	7.5	27.3	100.0 ##
1998-2020	2418	93	3.8	18.7	16.0	65.7	98.2

2,418 cases diagnosed 1998-2020 are related to a total of 2,391 patients. Currently, in 820 (34.3 %) of these 2,391 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 604 / 157 / 59 (25.3 % / 6.6 % / 2.5 %) 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 60 cases has been diagnosed, of which 18.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	52	80.0	2	3.8	9.6	15.9	96.2	100.0	
1999	51	76.1	1	2.0	8.7	15.5	86.3	100.0	
2000	43	72.9	1	2.3	10.3	15.4	83.7	100.0	
2001	53	77.9	2	3.8	10.1	15.2	83.0	94.3	
2002	87	80.6	9	10.3	15.0	14.7	85.1	100.0	#
2003	92	73.0	3	3.3	14.0	14.0	81.5	97.8	
2004	94	83.9	3	3.2	14.2	13.7	80.9	98.9	
2005	90	71.4	5	5.6	14.4	13.5	75.6	97.8	
2006	78	70.3	1	1.3	14.5	13.4	73.1	92.3	
2007	98	77.2	8	8.2	13.7	13.2	70.4	96.9	#
2008	93	68.4			14.2	12.3	64.5	98.9	
2009	108	75.0	2	1.9	15.2	11.4	72.2	97.2	
2010	104	77.6	3	2.9	15.4	10.6	64.4	98.1	
2011	102	73.4	4	3.9	15.9	9.7	62.7	100.0	
2012	110	75.9	4	3.6	15.9	9.4	67.3	99.1	
2013	99	72.3	3	3.0	16.0	9.1	61.6	98.0	
2014	107	82.3	5	4.7	16.1	7.5	72.0	99.1	
2015	86	65.6	2	2.3	16.4	8.3	61.6	100.0	
2016	81	77.1	4	4.9	16.8	8.1	44.4	100.0	
2017	70	74.5	5	7.1	17.4	9.0	50.0	100.0	
2018	42	70.0	3	7.1	17.4	7.0	40.5	100.0	
2019	33	66.0			17.7	6.8	45.5	100.0	
2020	31	70.5			17.9	11.1	35.5	100.0	##
1998-2020	1804	74.6	70	3.9	17.9	15.9	68.8	98.5	

1,804 cases diagnosed 1998-2020 are related to a total of 1,785 patients. Currently, in 607 (34.0 %) of these 1,785 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 448 / 113 / 46 (25.1 % / 6.3 % / 2.6 %) 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 42 cases has been diagnosed, of which 17.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	13	20.0	1	7.7	7.7	16.4	76.9	100.0	
1999	16	23.9			10.3	16.4	81.3	100.0	
2000	16	27.1			13.3	16.3	93.8	100.0	
2001	15	22.1	1	6.7	15.0	15.7	73.3	93.3	
2002	21	19.4			13.6	15.8	52.4	90.5	#
2003	34	27.0	1	2.9	14.8	15.1	79.4	97.1	
2004	18	16.1	1	5.6	14.3	14.7	77.8	100.0	
2005	36	28.6	1	2.8	16.0	14.8	61.1	94.4	
2006	33	29.7			15.8	13.9	63.6	93.9	
2007	29	22.8	4	13.8	14.7	13.3	55.2	96.6	#
2008	43	31.6	1	2.3	15.0	13.1	76.7	100.0	
2009	36	25.0			16.8	13.0	61.1	100.0	
2010	30	22.4			16.2	11.8	53.3	96.7	
2011	37	26.6	2	5.4	17.2	10.7	62.2	97.3	
2012	35	24.1	3	8.6	18.2	11.1	60.0	94.3	
2013	38	27.7	1	2.6	17.8	9.5	47.4	97.4	
2014	23	17.7	1	4.3	18.4	11.2	65.2	95.7	
2015	45	34.4	1	2.2	18.3	10.1	28.9	97.8	
2016	24	22.9	2	8.3	19.4	9.6	45.8	100.0	
2017	24	25.5	1	4.2	20.1	9.9	20.8	100.0	
2018	18	30.0	2	11.1	20.7	6.4	44.4	100.0	
2019	17	34.0			20.8	3.3	11.8	94.1	
2020	13	29.5			21.2	0.0	7.7	100.0	##
1998-2020	614	25.4	23	3.7	21.2	16.4	56.7	97.2	

614 cases diagnosed 1998-2020 are related to a total of 606 patients. Currently, in 213 (35.1 %) of these 606 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 156 / 44 / 13 (25.7 % / 7.3 % / 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 18 cases has been diagnosed, of which 20.7 % 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 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	52	13	4.7	1.1	3.3	0.7	4.3	1.0	4.4	1.0
1999	51	16	4.6	1.3	3.0	0.7	4.1	1.0	4.4	1.2
2000	43	16	3.8	1.3	2.4	0.8	3.4	1.2	3.8	1.2
2001	53	15	4.6	1.2	3.1	0.8	4.2	1.0	4.5	1.2
2002	87	21	4.7	1.1	3.1	0.7	4.2	0.9	4.4	1.1
2003	92	34	4.9	1.7	3.2	1.0	4.5	1.3	4.8	1.5
2004	94	18	5.0	0.9	3.3	0.5	4.4	0.7	4.8	0.8
2005	90	36	4.8	1.8	3.1	1.1	4.2	1.5	4.4	1.7
2006	78	33	4.1	1.6	2.6	1.1	3.6	1.5	3.9	1.6
2007	98	29	4.4	1.3	2.7	0.7	3.7	1.0	4.2	1.1
2008	93	43	4.2	1.9	2.6	1.0	3.6	1.4	4.0	1.6
2009	108	36	4.8	1.5	3.0	0.9	4.1	1.3	4.7	1.4
2010	104	30	4.6	1.3	2.8	0.8	3.8	1.1	4.2	1.2
2011	102	37	4.6	1.6	2.7	0.9	3.7	1.3	4.1	1.4
2012	110	35	4.8	1.5	2.9	0.8	4.0	1.1	4.5	1.3
2013	99	38	4.3	1.6	2.6	0.9	3.6	1.2	3.9	1.3
2014	107	23	4.6	1.0	2.7	0.5	3.7	0.7	4.1	0.8
2015	86	45	3.6	1.8	2.1	1.1	2.9	1.5	3.3	1.6
2016	81	24	3.4	1.0	1.9	0.5	2.7	0.7	3.0	0.8
2017	70	24	2.9	1.0	1.6	0.6	2.2	0.8	2.6	0.8
2018	42	18	1.7	0.7	1.0	0.3	1.3	0.5	1.6	0.6
2019	33	17	1.4	0.7	0.8	0.4	1.1	0.5	1.2	0.6
2020	31	13	1.3	0.5	0.7	0.2	1.0	0.3	1.1	0.4
1998–2020	1804	614	3.9	1.3	2.4	0.7	3.2	1.0	3.6	1.1

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	65	55.3	11.4	0.9	83.1	41.9	50.6	55.3	60.4	67.3
1999	67	60.1	10.9	37.1	91.7	47.1	52.4	58.8	65.9	75.2
2000	59	61.1	9.2	45.0	89.6	50.0	54.1	59.4	66.4	74.9
2001	68	58.8	9.8	41.3	88.3	46.7	52.0	57.8	64.7	74.5
2002	108	59.1	9.4	37.3	96.8	47.6	53.1	59.2	62.8	72.1
2003	126	61.2	9.8	41.4	87.5	49.7	53.9	59.7	67.2	75.0
2004	112	60.1	10.3	38.3	85.5	47.6	53.3	59.0	66.2	75.7
2005	126	60.3	9.5	39.7	103	48.0	53.7	60.6	65.3	70.7
2006	111	59.6	10.5	41.2	90.3	47.2	51.8	58.8	65.5	72.5
2007	127	61.8	11.5	39.1	91.6	47.2	52.4	61.8	70.1	76.8
2008	136	63.4	10.0	45.2	91.8	49.3	57.5	62.3	69.2	77.0
2009	144	62.7	11.1	40.8	95.5	50.2	54.9	61.4	68.8	79.5
2010	134	62.2	9.2	37.1	85.1	49.5	55.2	62.7	68.5	73.1
2011	139	62.8	10.0	41.0	91.7	49.9	54.8	62.3	69.6	75.4
2012	145	62.0	9.5	42.3	91.1	49.4	54.9	61.5	68.0	75.8
2013	137	62.7	10.3	33.2	92.9	50.5	54.9	62.1	69.5	77.0
2014	130	63.1	10.2	40.2	89.6	50.6	55.9	62.0	70.5	76.3
2015	131	63.1	9.8	43.2	87.2	50.0	55.9	62.8	69.5	77.0
2016	105	65.9	9.5	43.2	91.5	53.3	58.6	65.7	72.4	77.2
2017	94	65.7	10.7	39.2	92.7	52.6	58.1	64.4	74.2	79.6
2018	60	66.1	9.8	43.6	85.3	54.1	59.7	64.4	74.8	80.3
2019	50	64.0	11.0	34.8	88.3	52.2	57.8	66.2	70.1	75.8
2020	44	67.8	10.0	49.4	92.3	54.8	60.1	67.0	77.0	81.3
1998–2020	2418	62.1	10.4	0.9	103	49.4	54.7	61.4	68.6	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	52	54.5	11.8	0.9	81.1	41.3	49.3	55.3	60.6	66.2
1999	51	58.2	9.4	37.1	80.9	47.1	51.4	57.8	64.0	68.2
2000	43	61.8	9.6	45.0	89.6	50.0	55.3	61.3	68.4	74.1
2001	53	57.9	8.6	41.8	81.2	46.7	52.0	57.6	63.6	67.1
2002	87	59.3	8.8	41.7	96.8	47.7	54.1	59.7	62.9	70.0
2003	92	59.9	9.1	41.4	87.5	49.3	53.6	59.2	65.2	73.2
2004	94	59.3	10.0	38.3	85.5	47.0	51.9	58.3	64.6	73.8
2005	90	60.0	8.0	39.7	80.0	50.3	54.7	60.6	64.8	69.8
2006	78	59.9	10.0	42.5	86.7	47.2	52.2	58.9	66.0	72.7
2007	98	61.7	11.0	39.1	91.6	47.2	52.5	61.9	70.1	75.7
2008	93	62.5	10.1	45.2	87.0	49.3	55.7	61.1	68.5	76.3
2009	108	62.8	10.1	40.8	90.7	50.2	56.2	62.2	68.8	75.7
2010	104	62.7	9.2	43.5	83.1	48.8	56.6	63.2	69.0	73.6
2011	102	62.8	10.1	44.9	89.2	49.8	54.1	62.3	69.9	74.6
2012	110	61.2	9.0	42.3	81.5	49.3	54.8	61.1	66.0	74.7
2013	99	62.9	9.8	33.2	92.9	52.3	56.8	62.2	69.1	74.8
2014	107	62.6	10.2	40.2	89.6	48.8	55.3	62.0	70.6	76.2
2015	86	63.6	10.1	43.2	84.4	50.1	55.9	63.2	70.2	79.0
2016	81	64.6	8.8	43.2	79.3	52.5	57.4	65.1	71.6	76.3
2017	70	66.7	11.2	39.2	92.7	53.4	58.1	65.9	74.9	81.0
2018	42	65.0	10.3	43.6	85.3	53.4	59.7	63.0	74.1	80.4
2019	33	62.8	11.3	34.8	87.0	51.6	57.8	64.3	69.4	73.5
2020	31	66.0	9.2	50.8	83.6	54.8	58.7	64.8	76.9	78.8
1998–2020	1804	61.7	10.0	0.9	96.8	49.3	54.7	61.3	68.0	75.4

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	13	58.6	9.2	50.7	83.1	50.8	52.7	55.8	58.8	69.2
1999	16	66.1	13.2	41.9	91.7	47.8	57.4	67.8	74.9	82.4
2000	16	59.0	8.0	47.0	77.0	51.1	53.7	58.4	60.8	74.9
2001	15	62.1	13.0	41.3	88.3	49.3	50.5	59.3	74.5	77.5
2002	21	58.3	11.8	37.3	80.8	47.6	48.7	55.9	61.1	78.4
2003	34	64.5	11.0	43.7	84.2	52.6	57.1	62.3	73.7	81.3
2004	18	64.3	11.2	44.7	82.5	50.9	55.9	64.3	75.7	80.5
2005	36	60.9	12.7	44.7	103	46.1	52.1	59.3	66.6	77.5
2006	33	58.9	11.7	41.2	90.3	46.3	50.3	57.0	62.6	72.5
2007	29	62.4	13.1	44.2	89.4	46.5	51.4	58.8	71.3	83.5
2008	43	65.6	9.6	45.9	91.8	54.4	60.7	65.7	69.7	80.7
2009	36	62.4	14.0	41.0	95.5	49.6	53.0	57.7	69.6	85.9
2010	30	60.5	9.2	37.1	85.1	49.5	54.1	60.7	67.1	69.6
2011	37	62.6	10.0	41.0	91.7	51.9	54.9	60.3	68.9	75.4
2012	35	64.5	10.9	44.0	91.1	51.5	56.3	64.7	72.3	76.4
2013	38	62.2	11.7	43.0	90.5	47.8	53.5	60.5	71.6	78.4
2014	23	65.5	10.0	52.4	87.4	55.6	58.6	64.0	70.2	83.7
2015	45	61.9	9.4	45.1	87.2	49.7	55.9	62.3	66.8	75.1
2016	24	70.1	10.6	54.2	91.5	58.4	62.4	69.4	74.2	87.0
2017	24	62.8	8.7	46.3	76.6	52.0	55.1	64.2	69.4	74.6
2018	18	68.5	8.2	57.7	81.4	58.6	59.4	67.7	76.6	79.4
2019	17	66.4	10.1	49.8	88.3	53.5	59.1	68.0	72.0	80.5
2020	13	72.2	10.9	49.4	92.3	59.6	69.0	70.9	81.3	82.8
1998–2020	614	63.2	11.2	37.1	103	49.9	54.9	61.9	70.3	78.5

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									
15-19									
20-24									
25-29									
30-34	2	0.1	0.1	2	0.2	0.2			0.0
35-39	4	0.3	0.4	3	0.3	0.4	1	0.2	0.2
40-44	30	1.9	2.3	20	1.7	2.1	10	2.4	2.7
45-49	113	7.2	9.5	90	7.7	9.9	23	5.6	8.3
50-54	207	13.1	22.6	151	13.0	22.9	56	13.6	21.8
55-59	258	16.4	39.0	187	16.1	38.9	71	17.2	39.1
60-64	310	19.7	58.6	238	20.4	59.4	72	17.5	56.6
65-69	256	16.2	74.9	188	16.2	75.5	68	16.5	73.1
70-74	180	11.4	86.3	132	11.3	86.9	48	11.7	84.7
75-79	119	7.6	93.8	93	8.0	94.8	26	6.3	91.0
80-84	59	3.7	97.6	42	3.6	98.5	17	4.1	95.1
85+	38	2.4	100.0	18	1.5	100.0	20	4.9	100.0
All ages	1576	100.0		1164	100.0		412	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=43 %	Females DCO rate n=18 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0– 4								
5– 9								
10–14								
15–19								
20–24								
25–29								
30–34	2		0.1				0.2	
35–39	3	1	0.1	0.0			0.2	0.0
40–44	20	10	0.8	0.4	5.0	10.0	0.7	0.2
45–49	90	22	3.4	0.8	1.1		1.8	0.2
50–54	151	54	5.9	2.1	1.3	3.7	1.8	0.4
55–59	185	71	8.7	3.3	3.8	1.4	1.5	0.5
60–64	236	71	13.3	3.7	2.5	1.4	1.3	0.5
65–69	186	67	11.4	3.7	3.2		0.8	0.4
70–74	131	48	8.7	2.8	4.6	8.3	0.5	0.2
75–79	92	26	7.6	1.7	6.5	3.8	0.4	0.1
80–84	42	17	5.8	1.6	7.1	17.6	0.3	0.1
85+	18	20	3.9	1.9	27.8	25.0	0.2	0.1
All ages	1156	407			3.7	4.4	0.8	0.3
Incidence								
Raw			3.5	1.2				
WS			2.1	0.7				
ES			2.9	0.9				
BRD-S			3.3	1.0				

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).

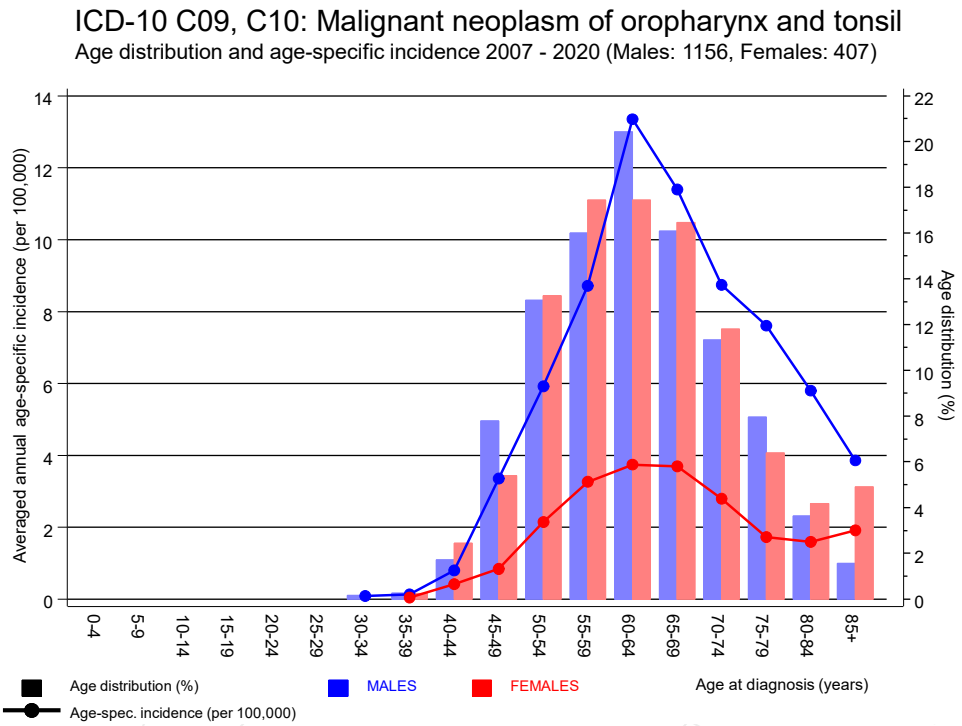

Figure 6. Age distribution (males: mean=63.1 yrs, median=62.4 yrs; females: mean=64.2 yrs, median=63.8 yrs) and age-specific incidence.

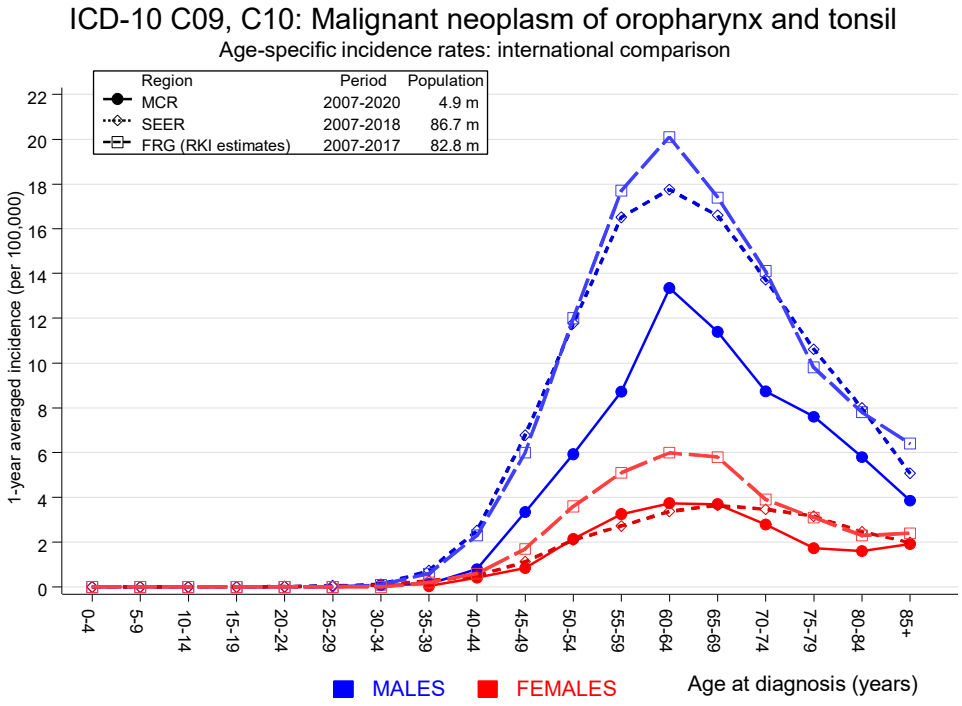

Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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	44	0.9	49.0	35.6	65.7	#	68.9	4.5
C07–C08	Salivary gland	1	0.2	6.0	0.2	33.6		1.3	
C09–C10	Oropharynx	26	1.2	22.2	14.5	32.6	#	39.7	
C11	Nasopharynx	3	0.1	39.3	8.1	114.9	#	4.7	
C12–C13	Hypopharynx	21	0.6	34.1	21.1	52.1	#	32.6	9.5
C14	ENT cancer	1	0.0	54.8	1.4	305.2	#	1.6	100.0
C15	Oesophagus	41	1.8	22.3	16.0	30.3	#	62.6	19.5
C16	Stomach	8	2.7	2.9	1.3	5.8	#	8.4	25.0
C18	Colon	18	6.8	2.7	1.6	4.2	#	18.0	
C19–C20	Rectum	3	4.4	0.7	0.1	2.0		−2.2	
C21	Anus/canal	1	0.2	4.6	0.1	25.6		1.3	
C22	Liver	15	2.3	6.4	3.6	10.6	#	20.2	13.3
C23–C24	Bile	2	0.8	2.6	0.3	9.5		2.0	
C25	Pancreas	8	2.9	2.8	1.2	5.4	#	8.2	25.0
C30–C31	Sinuses	2	0.2	12.7	1.5	46.0	#	2.9	
C32	Larynx	35	0.9	37.5	26.1	52.1	#	54.4	37.1
C33–C34	Lung	86	9.5	9.1	7.3	11.2	#	122.3	9.3
C43	Malign. melanoma	7	3.8	1.9	0.7	3.8		5.2	
C46,C49	Soft tissue	1	0.4	2.3	0.1	12.6		0.9	
C50	Breast	1	0.2	4.6	0.1	25.7		1.3	
C61	Prostate	22	22.0	1.0	0.6	1.5		−0.0	
C62	Testis	1	0.3	3.4	0.1	18.8		1.1	
C64	Kidney	7	2.9	2.4	1.0	5.0		6.6	
C67	Bladder	4	3.1	1.3	0.4	3.3		1.5	
C68	Urinary org.	1	0.0	30.5	0.8	169.8		1.5	
C70–C72	CNS cancer	2	1.1	1.8	0.2	6.7		1.5	
C73	Thyroid	3	0.7	4.4	0.9	13.0		3.7	
C76–C79	CUP	6	1.2	4.9	1.8	10.6	#	7.6	
C81	Hodgkin lymphoma	1	0.2	4.9	0.1	27.5		1.3	
C82–C85	NHL	5	3.1	1.6	0.5	3.7		3.0	
C90	Mult. myeloma	1	0.9	1.1	0.0	5.9		0.1	
C91–C96	Leukaemia	2	1.0	1.9	0.2	7.0		1.5	50.0
Not observed		0	2.4	0.0	0.0	1.5		−3.8	
All further malignancies		379	78.8	4.8	4.3	5.3	#	479.8	10.8

Patients	1731
Median age at next malignancy (years)	63.9
Person-years	6257
Mean observation time (years)	3.6
Median observation time (years)	1.9

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 %
C03–C06	Oral cavity	11	0.2	71.8	35.8	128.4	#	45.6	
C09–C10	Oropharynx	11	0.1	82.2	41.0	147.0	#	45.7	
C12–C13	Hypopharynx	8	0.0	237.4	102.5	467.8	#	33.5	
C14	ENT cancer	1	0.0	426.3	10.8	2375	#	4.2	100.0
C15	Oesophagus	12	0.2	72.3	37.4	126.3	#	49.7	8.3
C16	Stomach	3	0.6	4.8	1.0	14.1		10.0	
C18	Colon	7	1.8	3.9	1.6	8.0	#	21.8	
C19–C20	Rectum	1	0.8	1.2	0.0	6.8		0.8	
C22	Liver	1	0.3	3.9	0.1	21.9		3.1	
C32	Larynx	10	0.1	195.0	93.5	358.7	#	41.8	
C33–C34	Lung	23	1.9	12.1	7.7	18.2	#	88.7	13.0
C43	Malign. melanoma	1	0.9	1.1	0.0	5.9		0.3	
C50	Breast	12	7.8	1.5	0.8	2.7		17.6	
C51	Vulva	1	0.2	4.8	0.1	27.0		3.3	
C52	Vagina	1	0.0	27.5	0.7	153.1		4.1	
C53	Cervix uteri	3	0.3	8.7	1.8	25.3	#	11.2	33.3
C54	Corpus uteri	3	1.3	2.3	0.5	6.6		7.0	
C56	Ovary	4	0.9	4.4	1.2	11.3	#	13.0	25.0
C64	Kidney	1	0.5	2.1	0.1	11.7		2.2	
C70–C72	CNS cancer	1	0.3	3.5	0.1	19.3		3.0	
C76–C79	CUP	1	0.3	3.0	0.1	16.6		2.8	
C82–C85	NHL	2	0.8	2.5	0.3	9.0		5.0	
C91–C96	Leukaemia	2	0.3	7.1	0.9	25.5		7.2	
Not observed		0	3.1	0.0	0.0	1.2		-13.2	
All further malignancies		120	22.9	5.2	4.4	6.3	#	408.3	5.8

Patients	587
Median age at next malignancy (years)	63.5
Person-years	2379
Mean observation time (years)	4.1
Median observation time (years)	2.6

The occurrence of further specified malignancy is statistically significant.

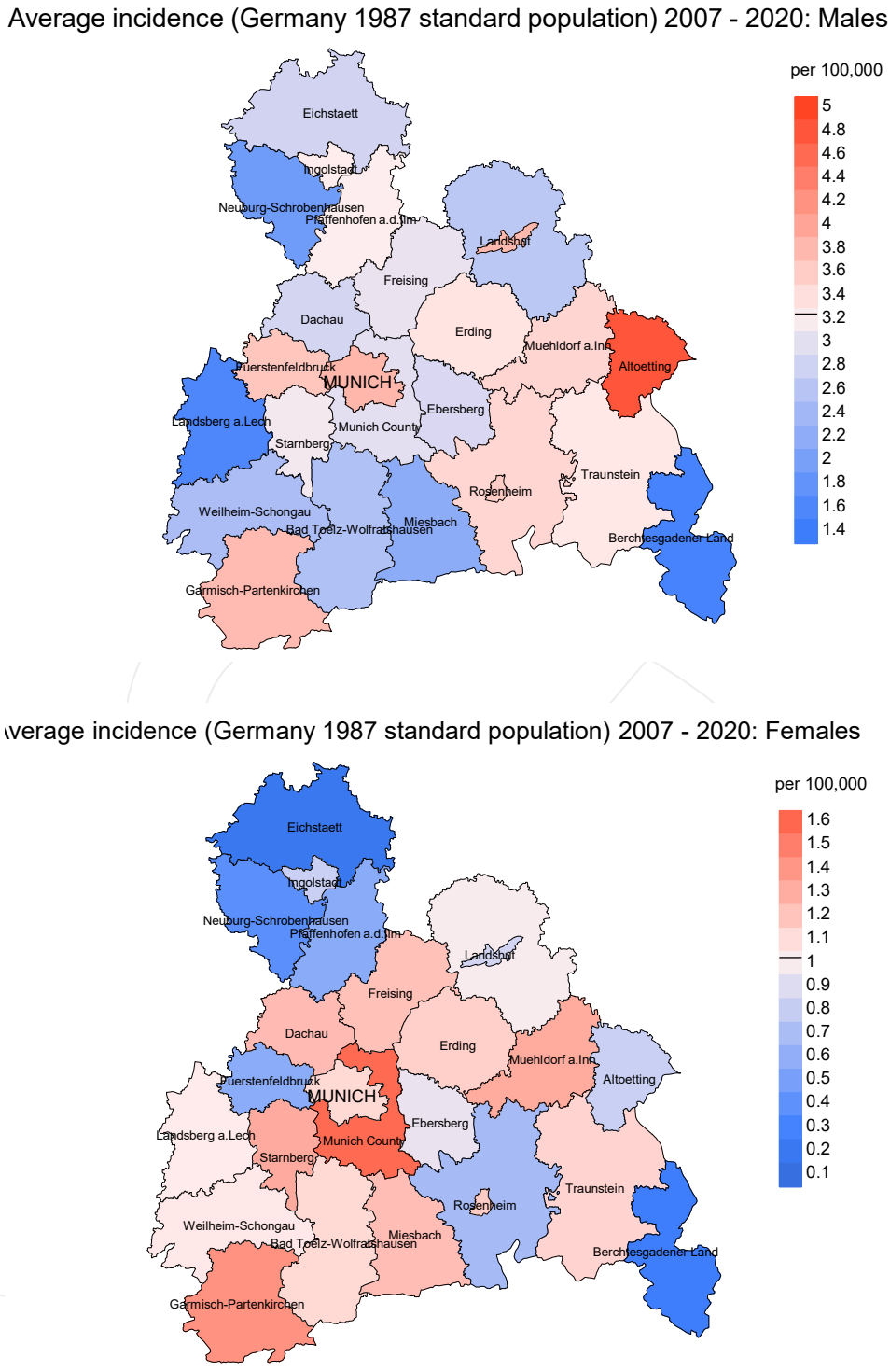

Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 3.3/100,000 WS N=1,156, females 1.0/100,000 WS N=407).

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 10 women were identified with newly diagnosed oropharynx cancer. Therefore, the mean incidence 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 0.4 and 2.1/100,000.

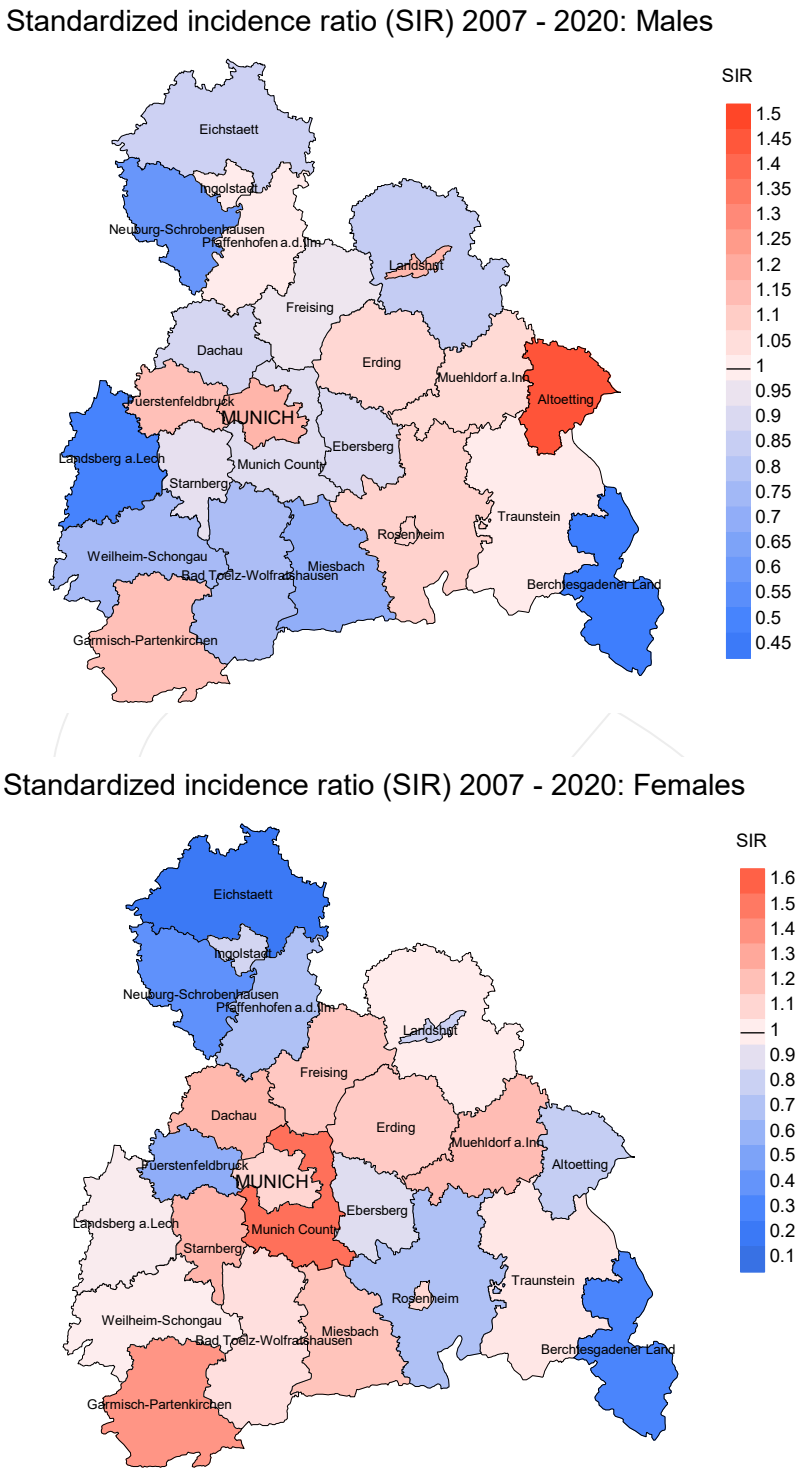

Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,156, females N=407).

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 10 women were identified with newly diagnosed oropharynx cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.88. Though, the value of this parameter may vary with an underlying probability of 99% between 0.33 and 1.89, 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	65	100.0	4.6	60	92.3	98.3
1999	67	100.0	1.5	57	85.1	87.7
2000	59	100.0	1.7	51	86.4	98.0
2001	68	94.1	4.4	55	80.9	94.5
2002	108	98.1	8.3	85	78.7	98.8
2003	126	97.6	3.2	102	81.0	98.0
2004	112	99.1	3.6	90	80.4	95.6
2005	126	96.8	4.8	90	71.4	97.8
2006	111	92.8	0.9	78	70.3	98.7
2007	127	96.9	9.4	85	66.9	95.3
2008	136	99.3	0.7	93	68.4	92.5
2009	144	97.9	1.4	100	69.4	96.0
2010	134	97.8	2.2	83	61.9	92.8
2011	139	99.3	4.3	87	62.6	93.1
2012	145	97.9	4.8	95	65.5	91.6
2013	137	97.8	2.9	79	57.7	93.7
2014	130	98.5	4.6	92	70.8	97.8
2015	131	99.2	2.3	66	50.4	90.9
2016	105	100.0	5.7	47	44.8	85.1
2017	94	100.0	6.4	40	42.6	67.5
2018	60	100.0	8.3	25	41.7	76.0
2019	50	98.0		17	34.0	88.2
2020	44	100.0		12	27.3	100.0
1998–2020	2418	98.2	3.8	1589	65.7	93.8

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	65	53	94.3	10	15.4
1999	67	56	82.1	14	20.9
2000	59	47	93.6	7	11.9
2001	68	47	97.9	14	20.6
2002	108	76	97.4	19	17.6
2003	126	82	96.3	26	20.6
2004	112	81	98.8	12	10.7
2005	126	88	96.6	22	17.5
2006	111	73	98.6	11	9.9
2007	127	94	96.8	22	17.3
2008	136	88	100.0	15	11.0
2009	144	87	98.9	22	15.3
2010	134	94	98.9	14	10.4
2011	139	88	98.9	25	18.0
2012	145	98	99.0	19	13.1
2013	137	123	96.7	20	14.6
2014	130	105	98.1	28	21.5
2015	131	114	100.0	23	17.6
2016	105	97	99.0	21	20.0
2017	94	78	93.6	15	16.0
2018	60	71	62.0	9	15.0
2019	50	70	54.3	8	16.0
2020	44	58	98.3	5	11.4
1998–2020	2418	1868	94.3	381	15.8

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	53	79.2	20.8	92.0
1999	56	60.7	39.3	87.0
2000	47	83.0	17.0	93.2
2001	47	80.9	19.1	95.7
2002	76	75.0	25.0	83.8
2003	82	79.3	20.7	92.4
2004	81	86.4	13.6	93.8
2005	88	86.4	13.6	91.8
2006	73	80.8	19.2	87.5
2007	94	86.2	13.8	92.3
2008	88	75.0	25.0	83.0
2009	87	82.8	17.2	97.7
2010	94	78.7	21.3	90.3
2011	88	73.9	26.1	85.1
2012	98	80.6	19.4	89.7
2013	123	73.2	26.8	84.9
2014	105	75.2	24.8	91.3
2015	114	87.7	12.3	93.9
2016	97	79.4	20.6	87.5
2017	78	70.5	29.5	87.7
2018	71	49.3	50.7	72.7
2019	70	32.9	67.1	84.2
2020	58	43.1	56.9	57.9
1998-2020	1868	75.0	25.0	88.3

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	41	60.0	57.7	75.3	57.7
1999	43	62.1	58.2	69.9	60.1
2000	34	61.2	61.2	62.3	60.7
2001	38	60.1	59.9	63.3	61.1
2002	62	61.1	59.7	63.9	59.7
2003	64	61.5	60.9	62.7	60.8
2004	63	60.8	60.8	62.5	61.3
2005	71	61.9	61.8	62.8	61.8
2006	57	64.8	64.5	65.8	64.3
2007	79	63.4	61.2	70.6	62.9
2008	62	69.0	69.1	68.8	69.0
2009	67	62.0	62.0	67.0	62.0
2010	73	65.6	63.8	72.2	64.0
2011	70	66.8	62.7	73.0	64.1
2012	68	67.6	67.6	65.6	67.5
2013	93	66.7	64.4	69.7	64.9
2014	84	69.4	68.2	74.8	68.8
2015	89	66.0	65.9	68.4	66.4
2016	72	67.4	66.6	70.7	66.8
2017	60	70.1	65.8	72.2	69.3
2018	57	75.3	74.5	75.5	77.0
2019	49	72.1	65.7	74.2	67.7
2020	50	71.8	67.5	74.2	68.3
1998–2020	1446	65.2	63.6	70.8	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	12	72.2	71.5	77.9	72.2
1999	13	59.4	59.4	68.1	58.4
2000	13	56.2	56.2	64.2	57.8
2001	9	63.6	63.4	69.4	63.5
2002	14	60.2	60.2	65.6	61.7
2003	18	62.9	62.9	68.2	64.3
2004	18	75.0	73.8	76.3	73.8
2005	17	63.9	61.8	81.8	61.8
2006	16	71.5	70.3	75.1	71.5
2007	15	68.1	72.5	58.2	68.1
2008	26	66.9	66.9	71.9	66.9
2009	20	69.5	69.5	72.0	69.0
2010	21	65.0	64.7	71.1	64.7
2011	18	68.8	67.4	82.4	67.4
2012	30	71.6	71.5	77.0	71.5
2013	30	69.2	66.5	77.6	67.3
2014	21	72.2	71.5	85.0	71.8
2015	25	67.3	66.9	67.9	66.5
2016	25	70.5	70.5	65.0	70.5
2017	18	67.8	63.9	76.8	65.1
2018	14	73.9	74.4	73.4	76.5
2019	21	72.1	68.6	73.9	70.1
2020	8	78.7	79.6	71.2	79.1
1998–2020	422	69.2	67.4	74.0	68.0

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	34	3.1	0.65	2.2	0.67	2.9	0.67	3.0	0.67
1999	29	2.6	0.57	1.7	0.55	2.3	0.56	2.6	0.60
2000	28	2.5	0.65	1.6	0.67	2.2	0.64	2.4	0.64
2001	31	2.7	0.58	1.7	0.56	2.4	0.56	2.7	0.59
2002	49	2.6	0.56	1.7	0.56	2.4	0.57	2.7	0.61
2003	53	2.8	0.58	1.8	0.56	2.5	0.57	2.8	0.59
2004	55	2.9	0.59	1.8	0.57	2.5	0.58	2.8	0.58
2005	62	3.3	0.70	2.0	0.66	2.8	0.67	3.1	0.71
2006	48	2.5	0.62	1.5	0.57	2.1	0.57	2.3	0.60
2007	67	3.0	0.68	1.8	0.68	2.6	0.70	2.9	0.70
2008	46	2.1	0.49	1.1	0.45	1.6	0.46	1.9	0.47
2009	57	2.6	0.53	1.5	0.52	2.2	0.53	2.5	0.53
2010	60	2.7	0.58	1.5	0.55	2.2	0.57	2.6	0.61
2011	52	2.3	0.52	1.3	0.50	1.9	0.51	2.2	0.54
2012	53	2.3	0.49	1.2	0.42	1.8	0.45	2.2	0.50
2013	68	3.0	0.69	1.6	0.61	2.3	0.65	2.6	0.68
2014	66	2.8	0.62	1.5	0.57	2.1	0.58	2.5	0.61
2015	78	3.3	0.92	1.8	0.87	2.5	0.89	3.0	0.91
2016	56	2.3	0.69	1.2	0.66	1.8	0.67	2.1	0.69
2017	40	1.7	0.57	0.8	0.54	1.2	0.54	1.5	0.57
2018	30	1.2	0.71	0.5	0.52	0.8	0.59	1.1	0.69
2019	16	0.7	0.48	0.3	0.41	0.5	0.43	0.6	0.48
2020	19	0.8	0.63	0.4	0.63	0.6	0.63	0.7	0.65
1998-2020	1097	2.4	0.61	1.4	0.58	1.9	0.59	2.2	0.62

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	8	0.7	0.62	0.3	0.41	0.4	0.45	0.6	0.59
1999	5	0.4	0.31	0.2	0.34	0.3	0.33	0.4	0.33
2000	11	0.9	0.69	0.5	0.63	0.7	0.65	0.9	0.71
2001	7	0.6	0.47	0.3	0.43	0.4	0.41	0.4	0.39
2002	8	0.4	0.38	0.2	0.35	0.3	0.36	0.4	0.37
2003	12	0.6	0.35	0.3	0.36	0.5	0.36	0.5	0.36
2004	15	0.8	0.83	0.3	0.68	0.5	0.68	0.6	0.79
2005	14	0.7	0.40	0.4	0.39	0.6	0.40	0.6	0.40
2006	11	0.5	0.33	0.3	0.23	0.4	0.26	0.5	0.31
2007	14	0.6	0.50	0.3	0.37	0.4	0.39	0.5	0.45
2008	20	0.9	0.47	0.5	0.46	0.7	0.48	0.7	0.45
2009	16	0.7	0.46	0.3	0.38	0.5	0.39	0.6	0.42
2010	14	0.6	0.48	0.3	0.42	0.5	0.44	0.5	0.48
2011	13	0.6	0.36	0.3	0.29	0.4	0.30	0.4	0.33
2012	26	1.1	0.74	0.5	0.59	0.7	0.63	0.9	0.69
2013	22	0.9	0.58	0.5	0.51	0.7	0.52	0.8	0.57
2014	13	0.5	0.57	0.2	0.47	0.4	0.50	0.4	0.50
2015	22	0.9	0.50	0.4	0.42	0.7	0.45	0.7	0.46
2016	21	0.9	0.88	0.4	0.79	0.5	0.80	0.7	0.87
2017	15	0.6	0.63	0.3	0.59	0.4	0.58	0.5	0.63
2018	5	0.2	0.28	0.1	0.27	0.1	0.26	0.2	0.28
2019	7	0.3	0.41	0.1	0.39	0.2	0.40	0.2	0.39
2020	6	0.2	0.46	0.1	0.28	0.1	0.32	0.2	0.42
1998-2020	305	0.6	0.50	0.3	0.43	0.4	0.45	0.5	0.48

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									
25-29									
30-34									
35-39	1	0.1	0.1	1	0.1	0.1			0.0
40-44	6	0.7	0.8	6	0.8	1.0			0.0
45-49	31	3.4	4.1	24	3.4	4.4	7	3.3	3.3
50-54	93	10.1	14.2	78	11.0	15.4	15	7.0	10.3
55-59	144	15.6	29.8	112	15.8	31.2	32	15.0	25.2
60-64	148	16.1	45.9	119	16.8	48.0	29	13.6	38.8
65-69	149	16.2	62.0	111	15.7	63.7	38	17.8	56.5
70-74	146	15.8	77.9	109	15.4	79.1	37	17.3	73.8
75-79	100	10.8	88.7	81	11.4	90.5	19	8.9	82.7
80-84	65	7.0	95.8	47	6.6	97.2	18	8.4	91.1
85+	39	4.2	100.0	20	2.8	100.0	19	8.9	100.0
All ages	922	100.0		708	100.0		214	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								
25-29								
30-34								
35-39	1		0.0	0.33			0.4	
40-44	6		0.2	0.30			1.0	
45-49	24	7	0.9	0.27	0.3	0.32	1.7	0.4
50-54	78	15	3.1	0.52	0.6	0.28	2.9	0.6
55-59	112	32	5.3	0.61	1.5	0.45	2.5	0.8
60-64	119	29	6.7	0.50	1.5	0.41	1.9	0.6
65-69	111	38	6.8	0.60	2.1	0.57	1.2	0.5
70-74	109	37	7.3	0.83	2.2	0.77	0.9	0.4
75-79	81	19	6.7	0.88	1.3	0.73	0.6	0.2
80-84	47	18	6.5	1.12	1.7	1.06	0.4	0.2
85+	20	19	4.3	1.11	1.8	0.95	0.2	0.2
All ages	708	214					1.0	0.3
Mortality								
Raw			2.2	0.61	0.6	0.53		
WS			1.2	0.56	0.3	0.45		
ES			1.7	0.58	0.4	0.47		
BRD-S			2.0	0.61	0.5	0.50		
PYLL-70								
per 100,000			16.3		4.0			
ES			13.8		3.3			
AYLL-70			10.4		9.4			

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	72	12.0	26	36.1	11	15.3	35	48.6
C07–C08	Salivary gland	2	0.3					2	100.0
C09–C10	Oropharynx	31	5.2			8	25.8	23	74.2
C11	Nasopharynx	5	0.8	1	20.0	2	40.0	2	40.0
C12–C13	Hypopharynx	43	7.2	20	46.5	16	37.2	7	16.3
C14	ENT cancer	2	0.3			1	50.0	1	50.0
C15	Oesophagus	57	9.5	12	21.1	11	19.3	34	59.6
C16	Stomach	9	1.5	2	22.2	3	33.3	4	44.4
C18	Colon	16	2.7	5	31.3	1	6.3	10	62.5
C19–C20	Rectum	2	0.3	1	50.0			1	50.0
C21	Anus/canal	3	0.5	2	66.7			1	33.3
C22	Liver	18	3.0	1	5.6	2	11.1	15	83.3
C23–C24	Bile	1	0.2	1	100.0				
C25	Pancreas	12	2.0					12	100.0
C30–C31	Sinuses	2	0.3					2	100.0
C32	Larynx	57	9.5	20	35.1	16	28.1	21	36.8
C33–C34	Lung	119	19.8	24	20.2	17	14.3	78	65.5
C37	Thymus	1	0.2	1	100.0				
C38,C45	Mesothelioma	1	0.2					1	100.0
C43	Malign. melanoma	6	1.0	2	33.3			4	66.7
C44	Skin others	34	5.7	6	17.6	10	29.4	18	52.9
C46,C49	Soft tissue	2	0.3	1	50.0			1	50.0
C50	Breast	2	0.3	1	50.0			1	50.0
C61	Prostate	37	6.2	20	54.1	1	2.7	16	43.2
C62	Testis	2	0.3	1	50.0			1	50.0
C64	Kidney	18	3.0	10	55.6	1	5.6	7	38.9
C65	Renal pelvis	2	0.3	1	50.0			1	50.0
C67	Bladder	9	1.5	4	44.4			5	55.6
C68	Urinary org.	1	0.2					1	100.0
C69	Eye melanoma	2	0.3	2	100.0				
C70–C72	CNS cancer	1	0.2					1	100.0
C73	Thyroid	5	0.8	3	60.0			2	40.0
C76–C79	CUP	12	2.0	6	50.0	2	16.7	4	33.3
C81	Hodgkin lymphoma	3	0.5	2	66.7			1	33.3
C82–C85	NHL	6	1.0	3	50.0			3	50.0
C91–C96	Leukaemia	5	0.8	3	60.0			2	40.0
All further malignancies		600	100.0	181	30.2	102	17.0	317	52.8

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	22	11.9	10	45.5	4	18.2	8	36.4
C09–C10 Oropharynx	7	3.8			4	57.1	3	42.9
C11 Nasopharynx	2	1.1	1	50.0	1	50.0		
C12–C13 Hypopharynx	5	2.7	1	20.0	1	20.0	3	60.0
C14 ENT cancer	1	0.5					1	100.0
C15 Oesophagus	14	7.6	2	14.3	3	21.4	9	64.3
C16 Stomach	3	1.6			1	33.3	2	66.7
C18 Colon	9	4.9	5	55.6	1	11.1	3	33.3
C19–C20 Rectum	1	0.5	1	100.0				
C21 Anus/canal	3	1.6	2	66.7			1	33.3
C22 Liver	1	0.5					1	100.0
C25 Pancreas	1	0.5					1	100.0
C26 GI cancer	1	0.5					1	100.0
C30–C31 Sinuses	3	1.6					3	100.0
C32 Larynx	13	7.0	4	30.8	4	30.8	5	38.5
C33–C34 Lung	28	15.1	7	25.0			21	75.0
C43 Malign. melanoma	2	1.1	2	100.0				
C44 Skin others	5	2.7	2	40.0			3	60.0
C50 Breast	28	15.1	20	71.4	1	3.6	7	25.0
C52 Vagina	1	0.5					1	100.0
C53 Cervix uteri	7	3.8	4	57.1			3	42.9
C54 Corpus uteri	3	1.6	3	100.0				
C56 Ovary	1	0.5					1	100.0
C67 Bladder	2	1.1	1	50.0			1	50.0
C68 Urethra	1	0.5	1	100.0				
C70–C72 CNS cancer	1	0.5					1	100.0
C73 Thyroid	4	2.2	3	75.0	1	25.0		
C76–C79 CUP	9	4.9	5	55.6			4	44.4
C82–C85 NHL	4	2.2	3	75.0			1	25.0
C90 Mult. myeloma	1	0.5	1	100.0				
C91–C96 Leukaemia	2	1.1	1	50.0			1	50.0
All further malignancies	185	100.0	79	42.7	21	11.4	85	45.9

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								
25-29								
30-34								
35-39	1		0.0	0.50			0.4	
40-44	4		0.2	0.22			0.7	
45-49	16	7	0.6	0.21	0.3	0.39	1.2	0.5
50-54	63	12	2.5	0.48	0.5	0.27	2.7	0.5
55-59	85	23	4.0	0.58	1.1	0.45	2.2	0.7
60-64	83	22	4.7	0.47	1.2	0.40	1.5	0.5
65-69	80	29	4.9	0.57	1.6	0.57	1.1	0.5
70-74	83	23	5.5	0.95	1.3	0.79	0.9	0.3
75-79	52	11	4.3	0.96	0.7	0.69	0.6	0.1
80-84	33	12	4.6	1.32	1.1	1.00	0.4	0.2
85+	16	11	3.4	1.33	1.1	0.69	0.2	0.1
All ages	516	150					1.0	0.3
Mortality								
Raw			1.6	0.59	0.4	0.49		
WS			0.9	0.53	0.2	0.43		
ES			1.2	0.56	0.3	0.45		
BRD-S			1.4	0.59	0.4	0.47		
PYLL-70								
per 100,000			12.2		3.2			
ES			10.4		2.6			
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.	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								
25-29								
30-34								
35-39	1		0.0	0.50			0.4	
40-44	4		0.2	0.24			0.7	
45-49	13	6	0.5	0.19	0.2	0.33	1.0	0.4
50-54	49	12	1.9	0.43	0.5	0.29	2.1	0.5
55-59	65	19	3.1	0.50	0.9	0.49	1.7	0.6
60-64	66	15	3.7	0.44	0.8	0.34	1.3	0.4
65-69	64	22	3.9	0.52	1.2	0.50	0.9	0.4
70-74	50	14	3.3	0.68	0.8	0.56	0.6	0.2
75-79	37	9	3.1	0.77	0.6	0.60	0.4	0.1
80-84	23	9	3.2	1.05	0.8	0.82	0.3	0.1
85+	10	9	2.1	1.00	0.9	0.60	0.2	0.1
All ages	382	115					0.7	0.2
Mortality								
Raw			1.2	0.50	0.3	0.44		
WS			0.7	0.46	0.2	0.39		
ES			0.9	0.48	0.2	0.41		
BRD-S			1.1	0.50	0.3	0.42		
PYLL-70								
per 100,000			9.6		2.7			
ES			8.2		2.2			
AYLL-70			10.5		10.1			

* See corresponding tables with multiple malignancies.

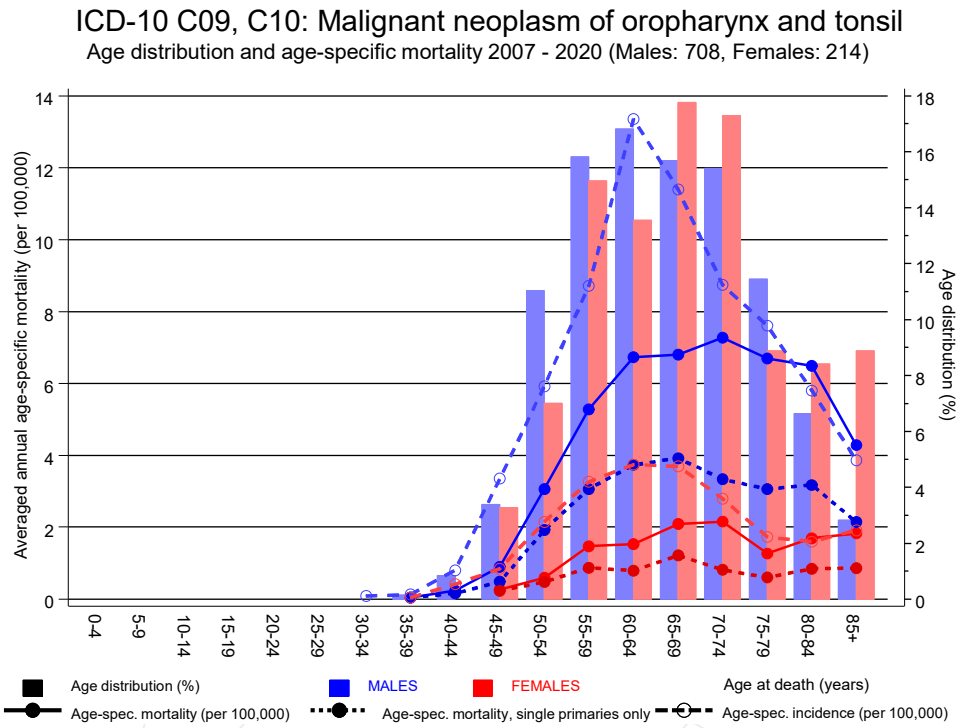

Figure 17. Distribution of age at death (bars; males: mean=62.3 yrs, median=61.6 yrs; females: mean=64.1 yrs, median=63.5 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

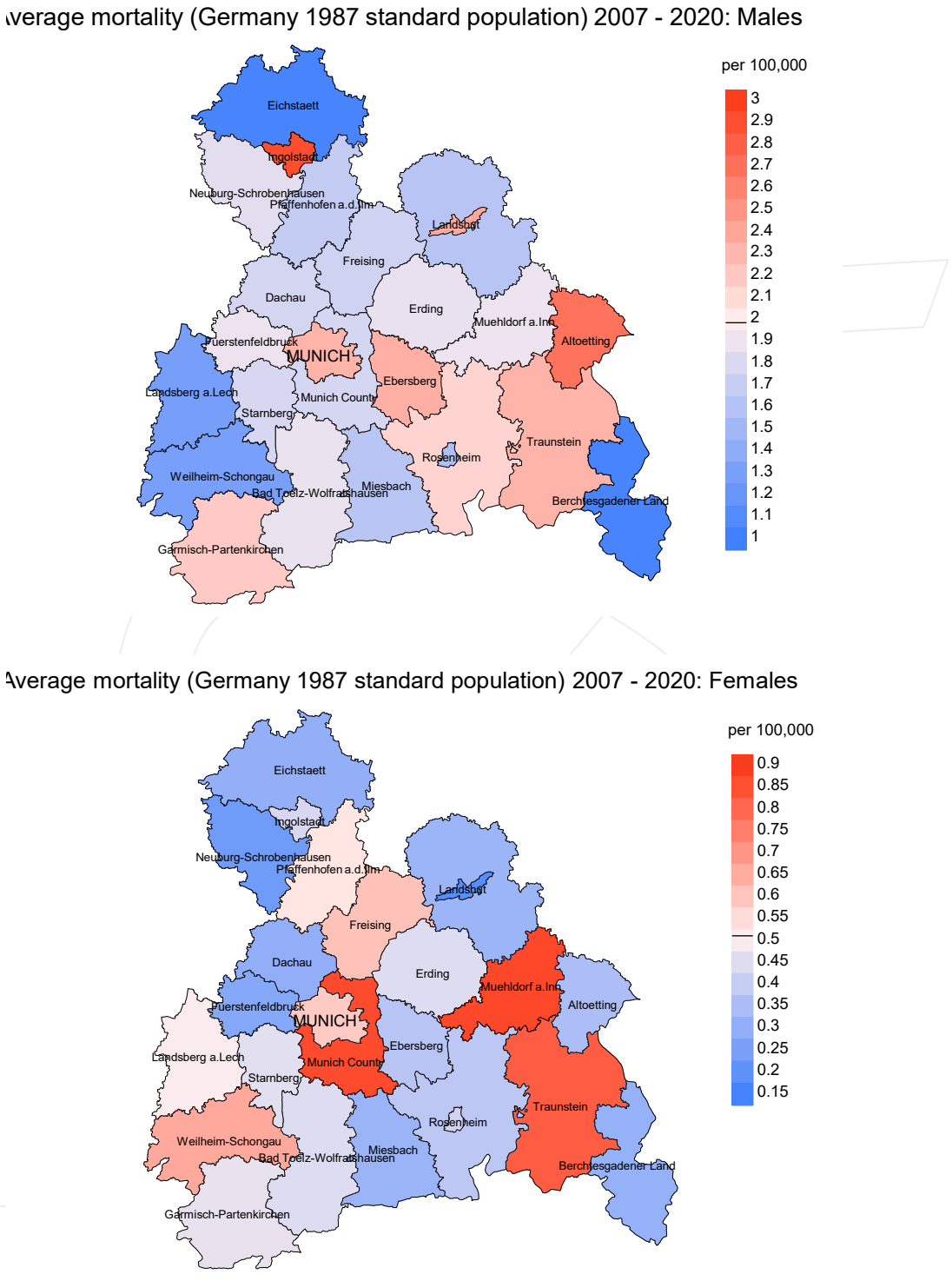

Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.0/100,000 WS N=708, females 0.5/100,000 WS N=214).

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 4 women died from oropharynx cancer. 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 1.2/100,000.

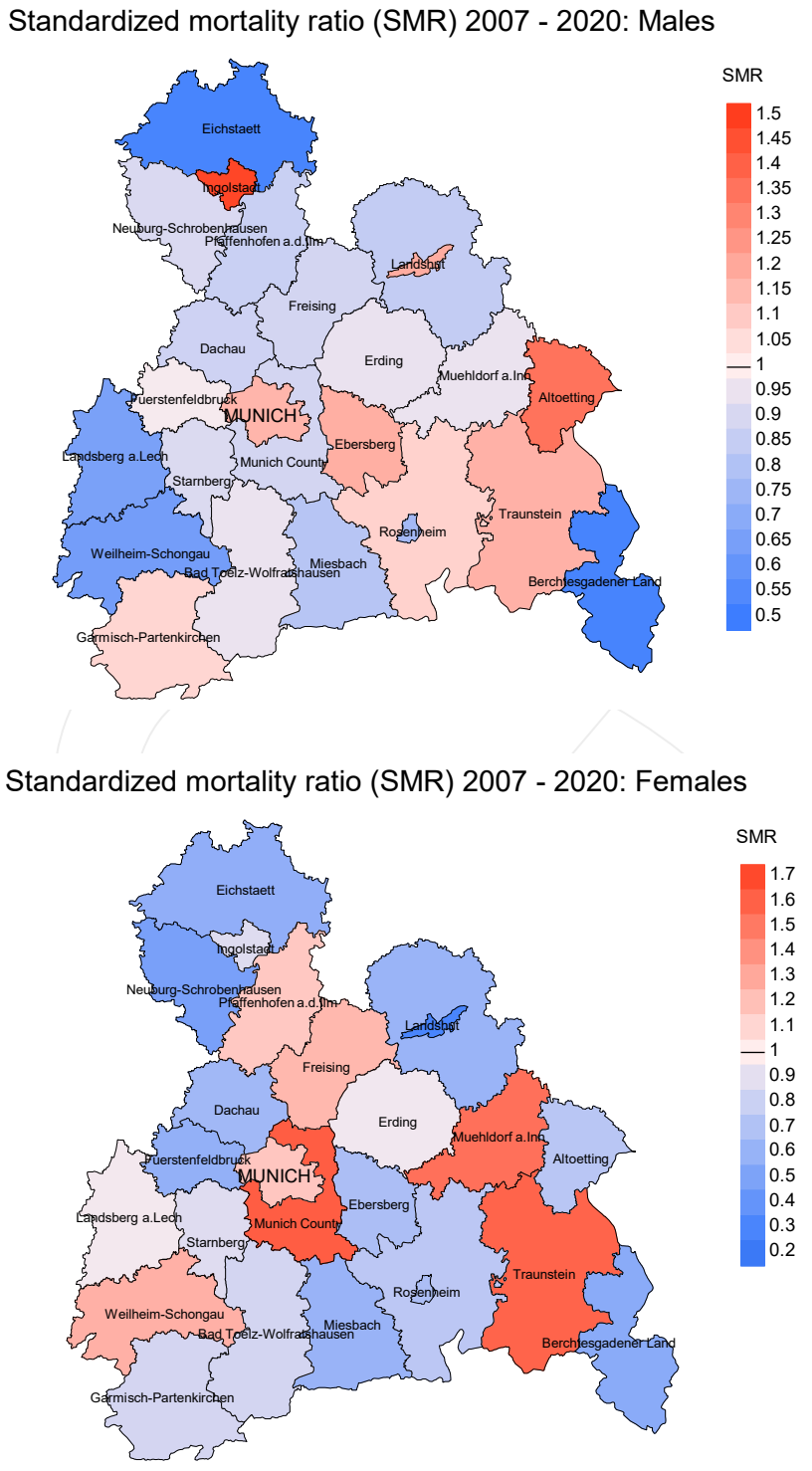

Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=708, females N=214).

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 4 women died from oropharynx cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.68. Though, the value of this parameter may vary with an underlying probability of 99% between 0.11 and 2.15, and is therefore not statistically striking.

Statistical Notes

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

1. **All multiple primaries included**

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

Recommended Citation

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