Munich Cancer Registry

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- *Deutsch*

ICD-10 C07, C08: Salivary gland cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	981
Diseases	982
Creation date	12/20/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/base/bC0708E-ICD-10-C07-C08-Salivary-gland-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 2015) used for specifying cancer site

Code	Description
C07	Malignant neoplasm of parotid gland
C08.-	Malignant neoplasm of other and unspecified major salivary glands
C08.0	Submandibular gland
C08.1	Sublingual gland
C08.8	Overlapping lesion of major salivary glands
C08.9	Major salivary gland, unspecified

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	26	5	19.2	11.5	14.7	65.4	96.2
1999	23	2	8.7	12.2	14.6	60.9	87.0
2000	29	4	13.8	14.1	14.6	79.3	96.6
2001	27	5	18.5	12.4	14.6	74.1	92.6
2002	47	3	6.4	15.1	14.4	70.2	93.6 #
2003	30	3	10.0	14.3	14.0	70.0	100.0
2004	39	5	12.8	14.9	13.7	66.7	100.0
2005	41	3	7.3	17.2	13.5	68.3	95.1
2006	37	2	5.4	16.7	13.4	59.5	89.2
2007	54	2	3.7	17.8	13.4	61.1	92.6 #
2008	55	3	5.5	17.2	12.7	61.8	94.5
2009	50			18.6	12.5	70.0	100.0
2010	68	6	8.8	20.0	11.8	55.9	94.1
2011	58	3	5.2	19.7	10.1	53.4	98.3
2012	49	1	2.0	19.4	8.5	46.9	98.0
2013	61	5	8.2	19.6	8.5	54.1	98.4
2014	54	3	5.6	20.1	8.5	48.1	92.6
2015	46	3	6.5	20.8	7.9	50.0	97.8
2016	44	1	2.3	21.2	8.2	38.6	100.0
2017	44	4	9.1	21.5	6.4	34.1	97.7
2018	52	1	1.9	21.9	5.1	25.0	96.2
2019	28			22.1	6.3	17.9	100.0
2020	20			22.6	5.0	25.0	100.0 ##
1998-2020	982	64	6.5	22.6	14.7	54.5	96.1

982 cases diagnosed 1998-2020 are related to a total of 981 patients. Currently, in 347 (35.4 %) of these 981 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 254 / 58 / 35 (25.9 % / 5.9 % / 3.6 %) 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 52 cases has been diagnosed, of which 21.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	15	57.7	2	13.3	6.7	14.3	66.7	93.3	
1999	10	43.5	1	10.0	12.0	14.1	60.0	80.0	
2000	16	55.2	1	6.3	17.1	14.0	68.8	100.0	
2001	12	44.4	2	16.7	15.1	13.8	91.7	91.7	
2002	24	51.1	1	4.2	18.2	13.9	62.5	95.8	#
2003	14	46.7			16.5	13.3	71.4	100.0	
2004	23	59.0	2	8.7	16.7	13.0	69.6	100.0	
2005	26	63.4	2	7.7	20.0	12.8	73.1	92.3	
2006	20	54.1	2	10.0	19.4	12.6	70.0	95.0	
2007	31	57.4			21.5	12.7	67.7	96.8	#
2008	37	67.3	1	2.7	20.6	11.6	59.5	97.3	
2009	29	58.0			21.8	11.9	79.3	100.0	
2010	48	70.6	2	4.2	24.3	11.7	60.4	95.8	
2011	33	56.9	2	6.1	24.0	10.3	54.5	97.0	
2012	24	49.0			23.8	8.2	62.5	100.0	
2013	32	52.5	3	9.4	23.9	7.7	65.6	96.9	
2014	30	55.6	2	6.7	23.6	7.4	63.3	100.0	
2015	23	50.0	2	8.7	23.9	6.8	56.5	100.0	
2016	26	59.1	1	3.8	24.5	6.5	46.2	100.0	
2017	30	68.2	2	6.7	24.7	6.1	36.7	96.7	
2018	34	65.4	1	2.9	25.1	5.7	38.2	97.1	
2019	19	67.9			25.2	5.4	21.1	100.0	
2020	18	90.0			26.0	5.6	27.8	100.0	##
1998-2020	574	58.5	29	5.1	26.0	14.3	58.9	97.2	

574 cases diagnosed 1998-2020 are related to a total of 573 patients. Currently, in 220 (38.4 %) of these 573 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 152 / 40 / 28 (26.5 % / 7.0 % / 4.9 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 34 cases has been diagnosed, of which 25.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.7 % 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	11	42.3	3	27.3	18.2	15.2	63.6	100.0	
1999	13	56.5	1	7.7	12.5	15.3	61.5	92.3	
2000	13	44.8	3	23.1	10.8	15.6	92.3	92.3	
2001	15	55.6	3	20.0	9.6	15.6	60.0	93.3	
2002	23	48.9	2	8.7	12.0	15.1	78.3	91.3	#
2003	16	53.3	3	18.8	12.1	15.0	68.8	100.0	
2004	16	41.0	3	18.8	13.1	14.8	62.5	100.0	
2005	15	36.6	1	6.7	13.9	14.6	60.0	100.0	
2006	17	45.9			13.7	14.6	47.1	82.4	
2007	23	42.6	2	8.7	13.6	14.4	52.2	87.0	#
2008	18	32.7	2	11.1	12.8	14.6	66.7	88.9	
2009	21	42.0			14.4	13.5	57.1	100.0	
2010	20	29.4	4	20.0	14.0	11.9	45.0	90.0	
2011	25	43.1	1	4.0	13.8	9.9	52.0	100.0	
2012	25	51.0	1	4.0	13.7	9.0	32.0	96.0	
2013	29	47.5	2	6.9	14.0	9.8	41.4	100.0	
2014	24	44.4	1	4.2	15.4	10.5	29.2	83.3	
2015	23	50.0	1	4.3	16.7	9.9	43.5	95.7	
2016	18	40.9			17.0	11.7	27.8	100.0	
2017	14	31.8	2	14.3	17.4	7.1	28.6	100.0	
2018	18	34.6			17.6	3.6		94.4	
2019	9	32.1			18.0	9.1	11.1	100.0	
2020	2	10.0			17.9	0.0		100.0	##
1998-2020	408	41.5	35	8.6	17.9	15.2	48.3	94.6	

408 cases diagnosed 1998-2020 are related to a total of 408 patients. Currently, in 127 (31.1 %) of these 408 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 102 / 18 / 7 (25.0 % / 4.4 % / 1.7 %) 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 17.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.6 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis 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	15	11	1.4	0.9	0.8	0.6	1.2	0.7	1.6	0.8
1999	10	13	0.9	1.1	0.5	0.6	0.8	0.7	0.9	0.9
2000	16	13	1.4	1.1	0.8	0.4	1.3	0.7	1.6	0.9
2001	12	15	1.0	1.2	0.6	0.8	0.9	1.0	1.2	1.1
2002	24	23	1.3	1.2	0.8	0.5	1.1	0.7	1.3	1.0
2003	14	16	0.7	0.8	0.5	0.4	0.7	0.6	0.7	0.7
2004	23	16	1.2	0.8	0.7	0.4	1.0	0.6	1.4	0.7
2005	26	15	1.4	0.8	0.8	0.4	1.1	0.6	1.4	0.6
2006	20	17	1.0	0.8	0.6	0.6	0.8	0.7	1.1	0.8
2007	31	23	1.4	1.0	0.8	0.6	1.1	0.7	1.4	0.8
2008	37	18	1.7	0.8	0.9	0.4	1.3	0.5	1.6	0.6
2009	29	21	1.3	0.9	0.7	0.6	1.0	0.7	1.3	0.8
2010	48	20	2.1	0.9	1.2	0.5	1.6	0.6	2.1	0.7
2011	33	25	1.5	1.1	0.7	0.6	1.1	0.8	1.3	0.9
2012	24	25	1.1	1.1	0.5	0.5	0.8	0.7	1.0	0.8
2013	32	29	1.4	1.2	0.8	0.7	1.0	0.9	1.3	1.0
2014	30	24	1.3	1.0	0.5	0.6	0.8	0.8	1.1	0.9
2015	23	23	1.0	0.9	0.6	0.5	0.8	0.6	0.9	0.8
2016	26	18	1.1	0.7	0.5	0.4	0.7	0.5	1.0	0.6
2017	30	14	1.2	0.6	0.7	0.3	0.9	0.4	1.1	0.4
2018	34	18	1.4	0.7	0.6	0.6	0.9	0.7	1.2	0.7
2019	19	9	0.8	0.4	0.4	0.2	0.5	0.2	0.7	0.3
2020	18	2	0.7	0.1	0.3	0.0	0.5	0.0	0.6	0.1
1998–2020	574	408	1.2	0.8	0.7	0.5	0.9	0.6	1.2	0.7

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	26	62.3	22.0	9.5	97.4	31.9	49.3	61.9	81.9	85.6
1999	23	66.7	19.2	13.9	90.9	33.0	60.9	69.0	80.7	85.3
2000	29	70.4	13.0	48.8	91.9	51.7	60.0	72.7	80.3	88.3
2001	27	64.8	17.9	16.4	95.8	42.4	55.1	65.5	78.6	84.0
2002	47	66.9	15.2	31.4	96.4	45.8	55.0	68.5	78.6	84.6
2003	30	61.5	17.9	22.9	90.5	33.3	51.4	61.6	75.5	82.4
2004	39	66.9	19.2	24.7	94.9	37.7	50.1	70.5	81.9	90.6
2005	41	65.2	15.9	31.9	93.1	43.5	54.3	65.9	79.0	82.0
2006	37	60.1	17.1	21.6	89.7	38.8	45.1	63.5	73.9	83.9
2007	54	63.7	18.7	7.7	92.9	33.2	54.3	68.0	76.1	85.0
2008	55	67.1	17.2	19.8	98.4	44.1	58.1	68.1	81.1	86.4
2009	50	66.1	18.7	16.6	96.1	38.9	60.8	68.8	80.1	85.7
2010	68	65.2	20.2	18.2	95.3	33.0	48.6	70.2	80.8	89.1
2011	58	67.6	17.2	14.4	95.5	45.2	56.8	70.3	78.9	87.1
2012	49	69.0	15.2	36.3	99.1	45.0	59.0	72.0	78.4	87.6
2013	61	65.7	21.6	10.0	93.9	34.8	51.4	72.1	82.1	88.0
2014	54	65.7	17.9	16.8	93.1	38.5	53.1	71.9	77.1	83.1
2015	46	66.3	19.3	0.9	91.8	44.1	55.3	70.9	82.7	84.7
2016	44	66.6	17.8	27.1	93.0	43.7	53.5	68.3	82.3	87.3
2017	44	66.7	18.4	17.1	95.8	39.9	59.7	70.9	79.7	84.7
2018	52	64.9	19.9	12.5	95.3	36.7	49.7	70.0	77.9	85.8
2019	28	68.9	19.9	19.5	95.5	29.7	59.2	77.3	81.2	87.1
2020	20	72.4	14.3	34.4	94.2	52.8	67.0	72.5	83.0	87.9
1998–2020	982	66.0	18.2	0.9	99.1	40.1	54.6	69.7	79.3	86.6

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	15	60.7	18.1	31.9	85.6	34.1	49.3	59.3	82.4	84.2
1999	10	62.5	18.7	32.0	90.4	32.5	54.0	66.4	72.3	84.5
2000	16	67.1	12.6	48.8	89.7	50.0	58.7	64.8	75.1	88.3
2001	12	66.9	11.8	48.6	84.0	52.0	57.8	66.6	76.4	83.9
2002	24	62.9	13.0	36.8	84.6	45.8	54.0	64.7	73.0	78.6
2003	14	57.5	13.9	29.1	81.1	36.2	51.4	58.8	64.7	72.6
2004	23	66.7	19.0	26.7	92.4	44.8	46.3	70.5	81.9	90.2
2005	26	65.7	15.7	31.9	87.8	40.9	61.2	70.0	77.8	82.0
2006	20	63.5	14.3	39.1	84.3	42.1	54.4	64.0	77.7	81.7
2007	31	64.1	16.6	15.7	84.6	33.2	54.3	70.5	76.1	77.9
2008	37	66.0	15.1	19.8	89.1	47.4	58.1	67.8	77.7	84.3
2009	29	68.7	15.3	16.6	86.8	48.2	64.1	69.7	80.1	85.5
2010	48	66.6	19.6	18.2	95.3	36.1	51.3	70.6	80.8	89.1
2011	33	70.2	16.0	14.4	95.5	50.8	62.9	72.5	79.9	87.1
2012	24	69.7	13.6	45.0	94.3	50.9	60.2	70.9	80.4	86.7
2013	32	66.7	22.3	10.0	93.9	29.1	52.2	73.2	83.4	88.0
2014	30	72.7	11.3	47.3	93.1	55.5	67.8	73.3	80.4	88.1
2015	23	66.3	20.6	0.9	91.8	44.1	55.7	69.1	83.3	88.0
2016	26	70.1	12.5	46.6	89.6	51.5	64.4	69.7	81.9	84.1
2017	30	66.2	17.6	17.1	92.8	40.2	60.1	70.4	78.2	82.8
2018	34	72.7	14.7	27.8	95.3	48.3	68.2	76.0	83.3	87.3
2019	19	67.1	19.5	26.1	95.5	29.7	54.4	75.5	79.5	87.0
2020	18	71.3	14.1	34.4	88.9	51.4	66.6	72.5	80.6	86.9
1998–2020	574	67.1	16.4	0.9	95.5	44.8	57.5	70.4	79.0	85.8

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	11	64.4	27.3	9.5	97.4	29.6	42.5	73.6	81.9	93.7
1999	13	69.9	19.8	13.9	90.9	55.1	64.3	75.7	81.6	85.3
2000	13	74.3	12.9	51.7	91.9	52.9	66.4	78.9	80.7	87.6
2001	15	63.1	21.9	16.4	95.8	27.1	52.2	65.5	78.6	90.7
2002	23	71.1	16.5	31.4	96.4	48.2	63.5	71.5	82.4	89.4
2003	16	65.0	20.6	22.9	90.5	30.3	50.1	74.1	79.9	85.2
2004	16	67.1	20.2	24.7	94.9	37.1	57.1	70.1	79.4	93.2
2005	15	64.1	16.7	33.8	93.1	43.5	51.3	61.1	80.3	83.7
2006	17	56.1	19.6	21.6	89.7	26.6	41.3	54.5	69.9	84.0
2007	23	63.1	21.6	7.7	92.9	35.7	50.7	65.7	85.0	88.1
2008	18	69.3	21.1	25.6	98.4	28.7	63.3	74.3	82.8	90.7
2009	21	62.6	22.5	16.8	96.1	31.1	48.4	67.5	79.4	85.8
2010	20	61.8	21.8	27.5	90.4	28.7	44.1	68.2	79.5	88.9
2011	25	64.2	18.4	17.2	94.6	40.3	54.8	67.4	75.3	87.6
2012	25	68.3	16.9	36.3	99.1	43.6	57.2	73.0	77.7	87.8
2013	29	64.5	21.1	12.1	93.6	34.8	49.7	69.3	80.5	91.7
2014	24	56.9	20.7	16.8	87.3	27.7	40.1	59.5	75.9	78.1
2015	23	66.2	18.3	19.0	84.7	51.1	54.7	71.9	80.7	83.2
2016	18	61.5	23.0	27.1	93.0	28.4	43.7	56.8	83.2	91.9
2017	14	68.0	20.6	29.6	95.8	35.6	59.3	74.8	82.2	88.7
2018	18	50.2	20.4	12.5	79.3	17.7	36.7	54.1	67.2	78.1
2019	9	72.6	21.4	19.5	88.6	19.5	72.7	77.5	84.4	88.6
2020	2	82.0	17.2	69.9	94.2	69.9	69.9	82.0	94.2	94.2
1998–2020	408	64.5	20.3	7.7	99.1	33.7	51.4	68.6	80.2	87.8

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.1	0.1	1	0.2	0.2			0.0
5-9	2	0.3	0.4	1	0.2	0.5	1	0.4	0.4
10-14	3	0.4	0.9	1	0.2	0.7	2	0.7	1.1
15-19	13	1.9	2.8	6	1.4	2.2	7	2.6	3.7
20-24	2	0.3	3.1			2.2	2	0.7	4.5
25-29	20	2.9	6.0	8	1.9	4.1	12	4.5	8.9
30-34	12	1.8	7.8	5	1.2	5.3	7	2.6	11.5
35-39	17	2.5	10.2	5	1.2	6.5	12	4.5	16.0
40-44	26	3.8	14.1	11	2.7	9.2	15	5.6	21.6
45-49	34	5.0	19.0	20	4.8	14.0	14	5.2	26.8
50-54	38	5.6	24.6	27	6.5	20.5	11	4.1	30.9
55-59	36	5.3	29.9	18	4.3	24.9	18	6.7	37.5
60-64	45	6.6	36.5	24	5.8	30.7	21	7.8	45.4
65-69	83	12.2	48.6	59	14.3	44.9	24	8.9	54.3
70-74	84	12.3	60.9	60	14.5	59.4	24	8.9	63.2
75-79	102	14.9	75.8	70	16.9	76.3	32	11.9	75.1
80-84	73	10.7	86.5	44	10.6	87.0	29	10.8	85.9
85+	92	13.5	100.0	54	13.0	100.0	38	14.1	100.0
All ages	683	100.0		414	100.0		269	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=16 %	Females DCO rate n=16 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0– 4	1		0.1				0.5	
5– 9	1	1	0.1	0.1			0.9	1.0
10–14	1	2	0.1	0.1			0.7	1.6
15–19	6	7	0.3	0.4			1.9	2.6
20–24		2		0.1				0.4
25–29	8	12	0.4	0.5			0.8	1.0
30–34	5	7	0.2	0.3			0.4	0.3
35–39	5	12	0.2	0.5			0.3	0.3
40–44	11	15	0.4	0.6			0.4	0.2
45–49	20	14	0.7	0.5			0.4	0.1
50–54	27	11	1.1	0.4		9.1	0.3	0.1
55–59	18	18	0.8	0.8			0.1	0.1
60–64	24	21	1.4	1.1			0.1	0.1
65–69	59	24	3.6	1.3			0.2	0.1
70–74	60	24	4.0	1.4	3.3		0.2	0.1
75–79	70	32	5.8	2.1	4.3	6.3	0.3	0.2
80–84	44	29	6.1	2.7	9.1	6.9	0.3	0.2
85+	54	38	11.6	3.6	13.0	28.9	0.5	0.2
All ages	414	269			3.9	5.9	0.3	0.2
Incidence								
Raw			1.3	0.8				
WS			0.7	0.4				
ES			0.9	0.6				
BRD-S			1.2	0.7				

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).

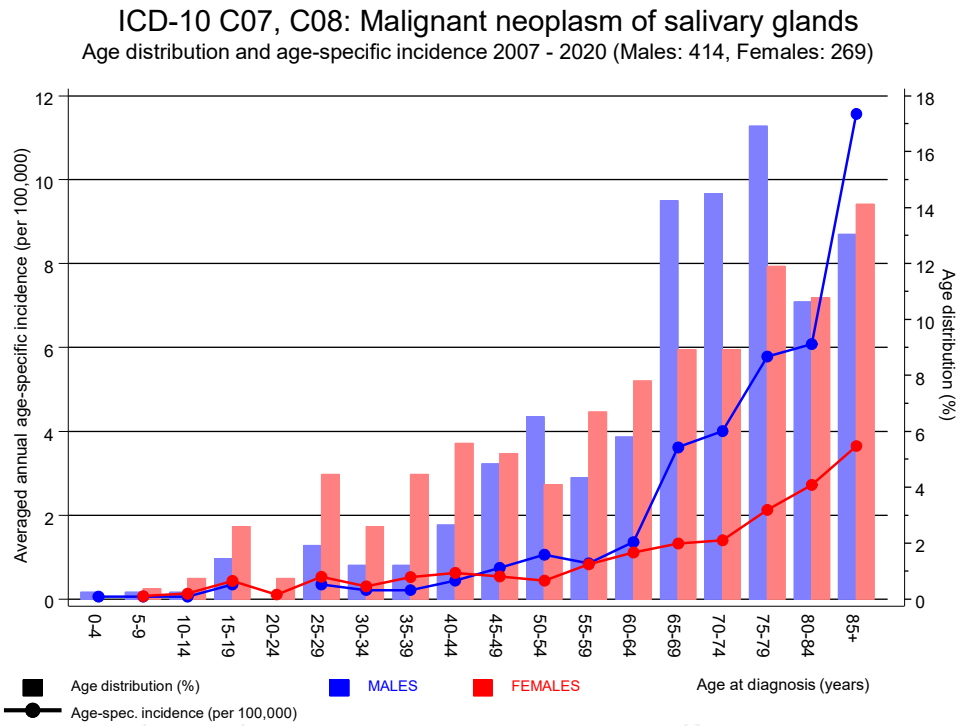


Figure 6. Age distribution (males: mean=68.3 yrs, median=71.4 yrs; females: mean=63.6 yrs, median=68.1 yrs) and age-specific incidence.

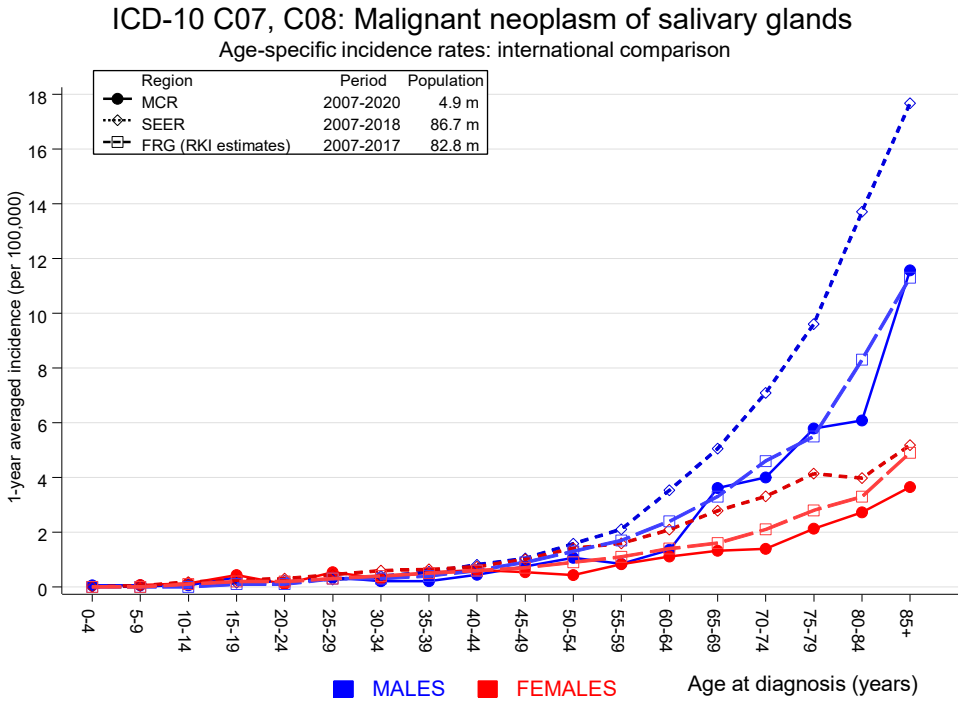


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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 %
C00	Lip	1	0.0	32.5	0.8	180.9		5.1	
C03–C06	Oral cavity	1	0.2	4.3	0.1	24.2		4.0	
C07–C08	Salivary gland	1	0.1	13.6	0.3	75.9		4.8	
C09–C10	Oropharynx	1	0.3	3.6	0.1	20.1		3.8	
C11	Nasopharynx	1	0.0	50.9	1.3	283.6	#	5.1	100.0
C15	Oesophagus	1	0.5	1.8	0.0	10.2		2.4	
C16	Stomach	2	1.1	1.8	0.2	6.6		4.7	
C18	Colon	5	2.7	1.9	0.6	4.3		12.0	
C19–C20	Rectum	2	1.5	1.4	0.2	5.0		2.9	
C22	Liver	2	0.8	2.5	0.3	9.0		6.3	
C25	Pancreas	3	1.1	2.7	0.6	7.9		9.9	33.3
C32	Larynx	2	0.3	7.4	0.9	26.7		9.0	
C33–C34	Lung	14	3.2	4.3	2.4	7.3	#	56.3	14.3
C43	Malign. melanoma	3	1.3	2.3	0.5	6.7		8.8	
C46,C49	Soft tissue	2	0.2	12.0	1.5	43.5	#	9.6	50.0
C61	Prostate	14	7.8	1.8	1.0	3.0		32.5	21.4
C64	Kidney	1	0.9	1.1	0.0	5.9		0.3	
C67	Bladder	6	1.3	4.5	1.7	9.8	#	24.4	
C69	Eye carcinoma	1	0.0	91.3	2.3	508.5	#	5.2	
C73	Thyroid	1	0.2	5.4	0.1	30.0		4.2	
C76–C79	CUP	2	0.5	4.3	0.5	15.4		8.0	
C82–C85	NHL	4	1.2	3.4	0.9	8.6		14.7	
C91–C96	Leukaemia	2	0.4	4.6	0.6	16.6		8.2	50.0
Not observed		0	2.5	0.0	0.0	1.5		-12.8	
All further malignancies		72	28.1	2.6	2.0	3.2	#	229.2	12.5

Patients	547
Median age at next malignancy (years)	72.8
Person-years	1916
Mean observation time (years)	3.5
Median observation time (years)	1.8

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 %
C00	Lip	1	0.0	73.8	1.9	411.1	#	5.9	
C03–C06	Oral cavity	1	0.1	10.7	0.3	59.9		5.4	
C11	Nasopharynx	1	0.0	164.0	4.2	914.0	#	5.9	
C12–C13	Hypopharynx	1	0.0	66.8	1.7	372.4	#	5.9	
C15	Oesophagus	2	0.1	18.9	2.3	68.4	#	11.3	50.0
C17	Small intestine	1	0.1	11.3	0.3	63.2		5.4	
C18	Colon	3	1.8	1.6	0.3	4.8		7.0	
C19–C20	Rectum	1	0.7	1.4	0.0	7.9		1.7	
C23–C24	Bile	1	0.3	3.7	0.1	20.8		4.4	
C25	Pancreas	2	0.9	2.3	0.3	8.4		6.8	100.0
C26	GI cancer	1	0.0	26.2	0.7	145.8		5.7	
C33–C34	Lung	12	1.2	10.1	5.2	17.6	#	64.4	33.3
C50	Breast	14	5.0	2.8	1.5	4.7	#	53.9	14.3
C53	Cervix uteri	1	0.2	4.3	0.1	23.8		4.6	
C56	Ovary	1	0.7	1.5	0.0	8.3		2.0	
C64	Kidney	2	0.4	5.1	0.6	18.3		9.6	50.0
C65	Renal pelvis	1	0.1	18.2	0.5	101.4		5.6	
C70–C72	CNS cancer	1	0.2	4.6	0.1	25.6		4.7	
C73	Thyroid	4	0.3	15.1	4.1	38.7	#	22.2	50.0
C76–C79	CUP	1	0.4	2.8	0.1	15.7		3.8	
C82–C85	NHL	3	0.7	4.4	0.9	12.8		13.8	
C90	Mult. myeloma	1	0.2	4.6	0.1	25.9		4.7	
C91–C96	Leukaemia	2	0.3	7.4	0.9	26.9		10.3	
Not observed		0	3.7	0.0	0.0	1.0	#	-22.1	
All further malignancies		58	17.2	3.4	2.6	4.3	#	242.7	20.7

Patients	380
Median age at next malignancy (years)	76.7
Person-years	1680
Mean observation time (years)	4.4
Median observation time (years)	3.1

The occurrence of further specified malignancy is statistically significant.

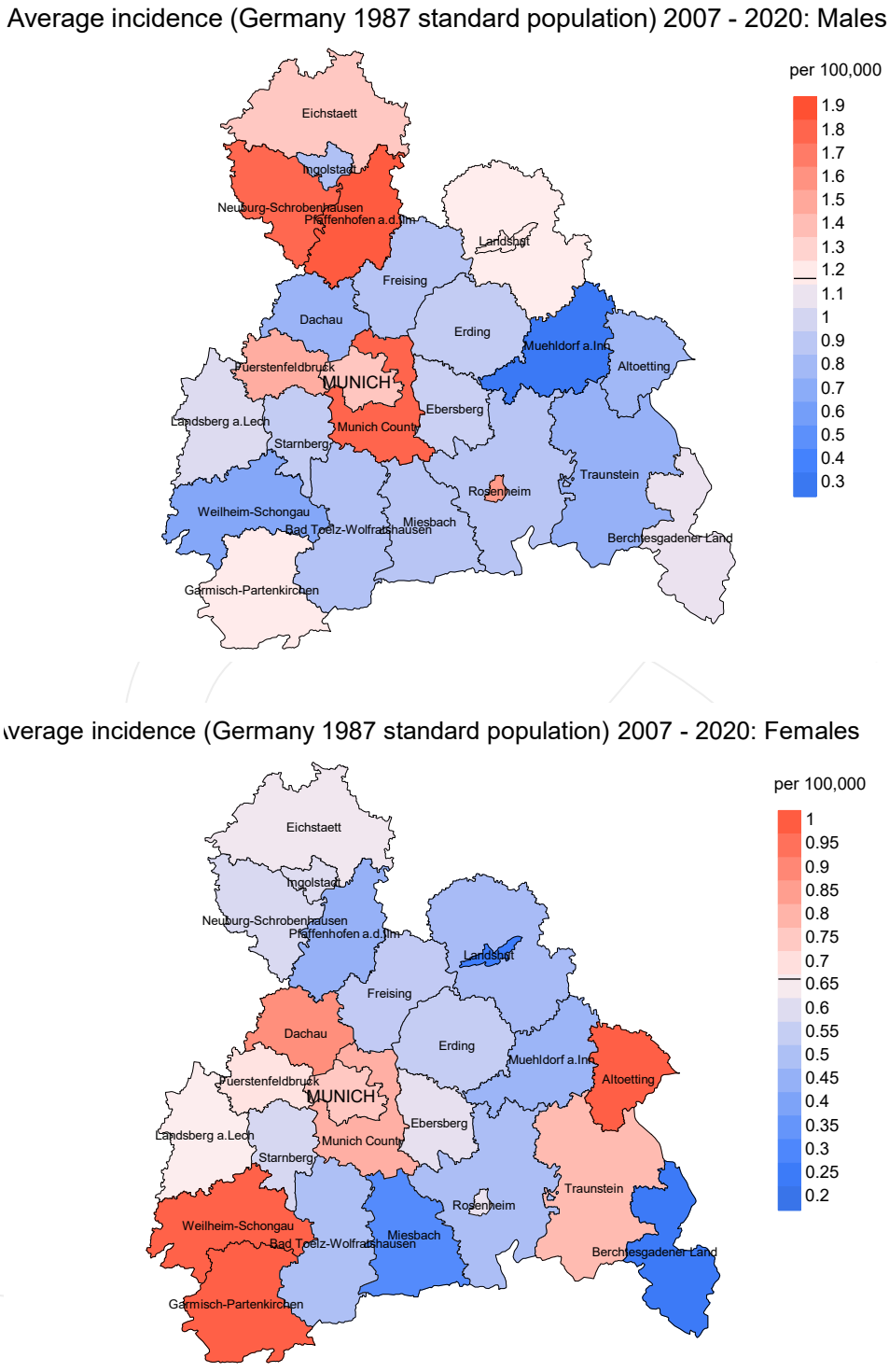
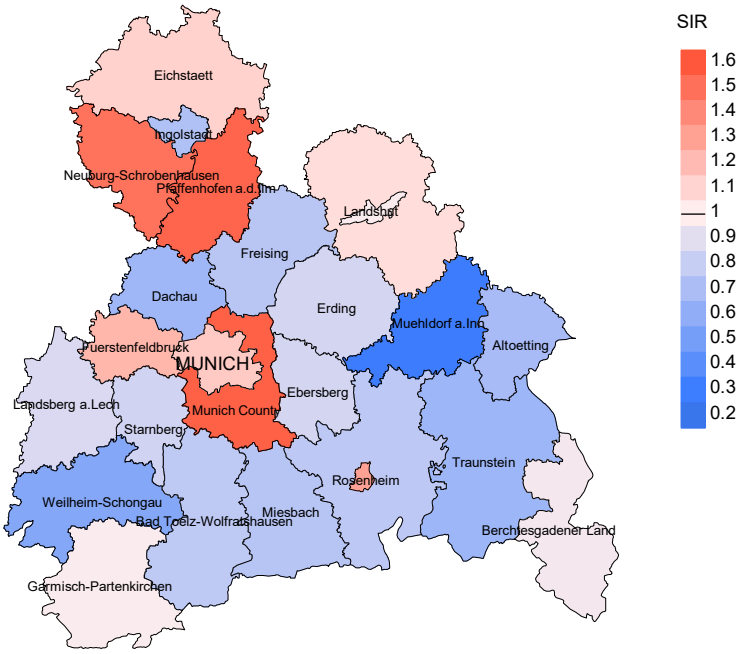


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.2/100,000 WS N=414, females 0.7/100,000 WS N=269).

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 6 women were identified with newly diagnosed salivary gland cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.6/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.2 and 1.6/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

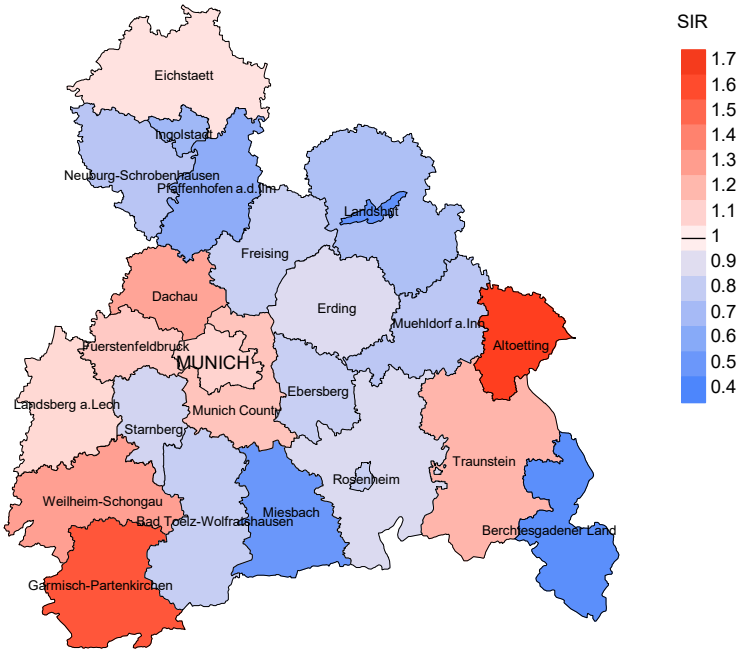


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=414, females N=269).

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 6 women were identified with newly diagnosed salivary gland cancer. Therefore, the mean standardized incidence ratio (SIR) 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 0.21 and 2.14, 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	26	96.2	19.2	17	65.4	100.0
1999	23	87.0	8.7	14	60.9	100.0
2000	29	96.6	13.8	23	79.3	95.7
2001	27	92.6	18.5	20	74.1	95.0
2002	47	93.6	6.4	33	70.2	93.9
2003	30	100.0	10.0	21	70.0	90.5
2004	39	100.0	12.8	26	66.7	88.5
2005	41	95.1	7.3	28	68.3	100.0
2006	37	89.2	5.4	22	59.5	90.9
2007	54	92.6	3.7	33	61.1	97.0
2008	55	94.5	5.5	34	61.8	91.2
2009	50	100.0		35	70.0	100.0
2010	68	94.1	8.8	38	55.9	94.7
2011	58	98.3	5.2	31	53.4	90.3
2012	49	98.0	2.0	23	46.9	100.0
2013	61	98.4	8.2	33	54.1	97.0
2014	54	92.6	5.6	26	48.1	96.2
2015	46	97.8	6.5	23	50.0	91.3
2016	44	100.0	2.3	17	38.6	94.1
2017	44	97.7	9.1	15	34.1	86.7
2018	52	96.2	1.9	13	25.0	76.9
2019	28	100.0		5	17.9	60.0
2020	20	100.0		5	25.0	80.0
1998–2020	982	96.1	6.5	535	54.5	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	26	16	87.5	7	26.9
1999	23	16	100.0	3	13.0
2000	29	17	100.0	6	20.7
2001	27	14	85.7	5	18.5
2002	47	27	92.6	4	8.5
2003	30	20	95.0	4	13.3
2004	39	31	90.3	10	25.6
2005	41	18	100.0	5	12.2
2006	37	19	94.7	6	16.2
2007	54	23	95.7	3	5.6
2008	55	25	100.0	4	7.3
2009	50	36	100.0	7	14.0
2010	68	34	97.1	9	13.2
2011	58	39	100.0	3	5.2
2012	49	43	95.3	5	10.2
2013	61	40	100.0	8	13.1
2014	54	40	97.5	5	9.3
2015	46	38	100.0	5	10.9
2016	44	36	100.0	5	11.4
2017	44	38	94.7	7	15.9
2018	52	21	81.0	4	7.7
2019	28	29	37.9	3	10.7
2020	20	23	87.0	1	5.0
1998–2020	982	643	93.3	119	12.1

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	16	50.0	50.0	85.7
1999	16	50.0	50.0	68.8
2000	17	94.1	5.9	100.0
2001	14	64.3	35.7	75.0
2002	27	63.0	37.0	80.0
2003	20	80.0	20.0	84.2
2004	31	77.4	22.6	100.0
2005	18	50.0	50.0	72.2
2006	19	63.2	36.8	83.3
2007	23	65.2	34.8	72.7
2008	25	84.0	16.0	84.0
2009	36	75.0	25.0	83.3
2010	34	88.2	11.8	90.9
2011	39	61.5	38.5	74.4
2012	43	72.1	27.9	85.4
2013	40	85.0	15.0	90.0
2014	40	80.0	20.0	84.6
2015	38	65.8	34.2	76.3
2016	36	61.1	38.9	66.7
2017	38	73.7	26.3	75.0
2018	21	52.4	47.6	64.7
2019	29	48.3	51.7	90.9
2020	23	52.2	47.8	65.0
1998-2020	643	69.2	30.8	80.8

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	4	78.9	79.6	78.7	82.4
1999	8	70.5	71.6	58.3	70.5
2000	7	82.0	82.0		82.0
2001	7	74.0	74.0	71.4	74.0
2002	17	71.8	71.8	72.5	73.2
2003	11	78.4	78.4		78.5
2004	19	76.6	77.8	76.6	75.7
2005	5	80.2	79.5	82.3	80.2
2006	12	76.5	74.4	79.2	74.5
2007	15	78.4	78.0	79.8	77.8
2008	15	72.6	71.6	78.1	70.7
2009	28	74.1	70.7	78.8	72.1
2010	22	74.4	74.4		74.5
2011	27	78.0	73.0	86.2	77.1
2012	24	80.4	78.2	83.7	78.7
2013	24	83.5	82.9	85.2	83.5
2014	28	79.0	79.0	81.4	79.5
2015	22	77.2	74.9	83.9	78.2
2016	21	81.9	78.7	86.4	80.6
2017	21	76.0	75.7	76.4	76.2
2018	14	84.2	76.1	89.1	76.1
2019	18	76.3	73.2	78.1	72.7
2020	20	78.8	78.5	79.1	74.9
1998–2020	389	77.1	76.1	79.7	76.6

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	80.7	78.5	87.6	79.4
1999	8	84.6	74.1	86.2	83.1
2000	10	80.3	80.7	70.0	80.3
2001	7	88.3	83.9	88.3	83.9
2002	10	81.4	78.3	84.6	74.0
2003	9	81.4	70.7	83.7	72.4
2004	12	82.9	82.9	82.5	84.6
2005	13	79.3	75.5	82.1	77.4
2006	7	89.7	87.5	89.9	87.5
2007	8	86.8	85.3	88.6	89.3
2008	10	76.9	67.2	85.0	70.1
2009	8	86.4	87.2	85.7	81.1
2010	12	77.8	73.5	86.6	73.5
2011	12	84.2	76.7	91.3	78.6
2012	19	78.1	77.3	83.4	77.6
2013	16	86.1	83.1	90.0	84.2
2014	12	82.6	80.2	83.3	82.6
2015	16	82.3	77.0	92.2	77.9
2016	15	84.8	83.7	89.4	82.6
2017	17	81.8	81.7	81.8	80.8
2018	7	82.0	80.3	89.9	80.3
2019	11	80.8	82.1	80.6	80.8
2020	3	83.8	77.2	87.4	84.0
1998–2020	254	82.5	79.4	85.4	80.6

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	2	0.2	0.13	0.1	0.10	0.2	0.14	0.3	0.21
1999	5	0.4	0.50	0.3	0.49	0.4	0.53	0.6	0.63
2000	7	0.6	0.44	0.3	0.40	0.6	0.44	0.8	0.52
2001	5	0.4	0.42	0.2	0.39	0.4	0.42	0.6	0.48
2002	11	0.6	0.46	0.3	0.42	0.5	0.47	0.7	0.54
2003	11	0.6	0.79	0.3	0.57	0.5	0.74	0.7	0.97
2004	14	0.7	0.61	0.4	0.56	0.6	0.62	0.9	0.65
2005	2	0.1	0.08	0.0	0.05	0.1	0.06	0.1	0.10
2006	8	0.4	0.40	0.2	0.33	0.3	0.37	0.4	0.40
2007	11	0.5	0.35	0.2	0.25	0.4	0.32	0.6	0.39
2008	14	0.6	0.38	0.3	0.34	0.5	0.38	0.6	0.39
2009	22	1.0	0.76	0.5	0.70	0.7	0.74	0.9	0.73
2010	22	1.0	0.46	0.5	0.39	0.7	0.43	1.0	0.46
2011	19	0.8	0.58	0.4	0.50	0.6	0.54	0.8	0.59
2012	17	0.7	0.71	0.3	0.61	0.5	0.68	0.7	0.70
2013	21	0.9	0.66	0.4	0.50	0.6	0.61	0.9	0.67
2014	24	1.0	0.80	0.4	0.69	0.6	0.75	0.9	0.82
2015	15	0.6	0.65	0.3	0.47	0.4	0.55	0.6	0.63
2016	14	0.6	0.54	0.3	0.66	0.4	0.57	0.5	0.54
2017	16	0.7	0.53	0.2	0.35	0.4	0.42	0.6	0.51
2018	7	0.3	0.21	0.1	0.21	0.2	0.21	0.3	0.20
2019	8	0.3	0.42	0.1	0.37	0.2	0.40	0.3	0.41
2020	11	0.5	0.61	0.2	0.48	0.3	0.54	0.4	0.60
1998-2020	286	0.6	0.50	0.3	0.42	0.4	0.47	0.6	0.51

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	6	0.5	0.55	0.1	0.19	0.2	0.33	0.4	0.47
1999	3	0.3	0.23	0.1	0.20	0.2	0.22	0.2	0.26
2000	9	0.7	0.69	0.2	0.57	0.4	0.59	0.6	0.64
2001	4	0.3	0.27	0.1	0.12	0.2	0.17	0.2	0.20
2002	6	0.3	0.26	0.1	0.22	0.2	0.22	0.2	0.23
2003	5	0.3	0.31	0.1	0.27	0.2	0.28	0.2	0.29
2004	10	0.5	0.63	0.2	0.38	0.3	0.47	0.4	0.54
2005	7	0.4	0.47	0.1	0.37	0.2	0.40	0.3	0.44
2006	4	0.2	0.24	0.0	0.06	0.1	0.10	0.1	0.14
2007	4	0.2	0.17	0.0	0.06	0.1	0.09	0.1	0.15
2008	7	0.3	0.39	0.1	0.37	0.2	0.40	0.2	0.36
2009	5	0.2	0.24	0.1	0.12	0.1	0.15	0.1	0.18
2010	8	0.3	0.40	0.2	0.33	0.2	0.37	0.3	0.40
2011	5	0.2	0.20	0.1	0.11	0.1	0.14	0.2	0.18
2012	14	0.6	0.56	0.2	0.53	0.3	0.50	0.4	0.52
2013	13	0.5	0.45	0.1	0.22	0.2	0.28	0.3	0.33
2014	8	0.3	0.33	0.1	0.17	0.2	0.22	0.2	0.25
2015	10	0.4	0.43	0.2	0.32	0.2	0.37	0.3	0.39
2016	8	0.3	0.44	0.1	0.26	0.2	0.31	0.2	0.36
2017	12	0.5	0.86	0.1	0.47	0.2	0.59	0.3	0.66
2018	4	0.2	0.22	0.0	0.07	0.1	0.11	0.1	0.14
2019	6	0.2	0.67	0.1	0.50	0.1	0.61	0.2	0.59
2020	1	0.0	0.50	0.0	0.27	0.0	0.36	0.0	0.58
1998-2020	159	0.3	0.39	0.1	0.24	0.2	0.29	0.2	0.33

Table 12

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.3	0.3	1	0.5	0.5			0.0
5-9	0	0.0	0.3			0.5			0.0
10-14	0	0.0	0.3			0.5			0.0
15-19	0	0.0	0.3			0.5			0.0
20-24	2	0.6	0.9	2	0.9	1.4			0.0
25-29	1	0.3	1.2			1.4	1	1.0	1.0
30-34	1	0.3	1.5			1.4	1	1.0	1.9
35-39	0	0.0	1.5			1.4			1.9
40-44	7	2.1	3.7	4	1.8	3.2	3	2.9	4.8
45-49	9	2.8	6.4	4	1.8	5.0	5	4.8	9.5
50-54	9	2.8	9.2	8	3.6	8.6	1	1.0	10.5
55-59	14	4.3	13.5	11	5.0	13.6	3	2.9	13.3
60-64	17	5.2	18.7	10	4.5	18.1	7	6.7	20.0
65-69	34	10.4	29.1	26	11.8	29.9	8	7.6	27.6
70-74	45	13.8	42.9	36	16.3	46.2	9	8.6	36.2
75-79	64	19.6	62.6	47	21.3	67.4	17	16.2	52.4
80-84	46	14.1	76.7	29	13.1	80.5	17	16.2	68.6
85+	76	23.3	100.0	43	19.5	100.0	33	31.4	100.0
All ages	326	100.0		221	100.0		105	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	1		0.1	1.00			5.3	
5- 9								
10-14								
15-19								
20-24	2		0.1	1.00			2.7	
25-29		1			0.0	0.08		1.0
30-34		1			0.0	0.14		0.6
35-39								
40-44	4	3	0.2	0.36	0.1	0.20	0.7	0.4
45-49	4	5	0.1	0.20	0.2	0.36	0.3	0.3
50-54	8	1	0.3	0.30	0.0	0.09	0.3	0.0
55-59	11	3	0.5	0.61	0.1	0.17	0.2	0.1
60-64	10	7	0.6	0.42	0.4	0.33	0.2	0.1
65-69	26	8	1.6	0.44	0.4	0.33	0.3	0.1
70-74	36	9	2.4	0.60	0.5	0.38	0.3	0.1
75-79	47	17	3.9	0.67	1.1	0.53	0.4	0.2
80-84	29	17	4.0	0.66	1.6	0.59	0.3	0.2
85+	43	33	9.2	0.80	3.2	0.87	0.5	0.3
All ages	221	105					0.3	0.2
Mortality								
Raw			0.7	0.53	0.3	0.39		
WS			0.3	0.45	0.1	0.24		
ES			0.5	0.50	0.2	0.29		
BRD-S			0.6	0.53	0.2	0.33		
PYLL-70								
per 100,000			2.7		1.4			
ES			2.5		1.2			
AYLL-70			11.8		13.9			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	2	1.0	2	100.0				
C03–C06	Oral cavity	2	1.0	1	50.0	1	50.0		
C09–C10	Oropharynx	4	2.0	2	50.0			2	50.0
C11	Nasopharynx	2	1.0	1	50.0			1	50.0
C12–C13	Hypopharynx	1	0.5	1	100.0				
C15	Oesophagus	1	0.5					1	100.0
C16	Stomach	4	2.0	3	75.0			1	25.0
C17	Small intestine	1	0.5	1	100.0				
C18	Colon	4	2.0	2	50.0			2	50.0
C19–C20	Rectum	4	2.0	2	50.0			2	50.0
C22	Liver	3	1.5			2	66.7	1	33.3
C25	Pancreas	5	2.4					5	100.0
C30	Middle/inner ear	2	1.0	2	100.0				
C30–C31	Sinuses	1	0.5					1	100.0
C32	Larynx	2	1.0	1	50.0			1	50.0
C33–C34	Lung	16	7.8	1	6.3	1	6.3	14	87.5
C38,C45	Mesothelioma	1	0.5					1	100.0
C40–C41	Bone	1	0.5	1	100.0				
C43	Malign. melanoma	2	1.0	1	50.0	1	50.0		
C44	Skin others	82	40.0	38	46.3	8	9.8	36	43.9
C46,C49	Soft tissue	2	1.0					2	100.0
C61	Prostate	26	12.7	19	73.1	4	15.4	3	11.5
C62	Testis	1	0.5	1	100.0				
C64	Kidney	2	1.0	1	50.0			1	50.0
C66	Ureter	1	0.5	1	100.0				
C67	Bladder	10	4.9	5	50.0			5	50.0
C69	Eye carcinoma	1	0.5					1	100.0
C70–C72	CNS cancer	3	1.5	1	33.3			2	66.7
C76–C79	CUP	4	2.0	2	50.0	2	50.0		
C82–C85	NHL	13	6.3	8	61.5	3	23.1	2	15.4
C90	Mult. myeloma	1	0.5	1	100.0				
C91–C96	Leukaemia	1	0.5					1	100.0
All further malignancies		205	100.0	98	47.8	22	10.7	85	41.5

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 ←%
C00	Lip	1	1.1			1	100.0		
C03–C06	Oral cavity	1	1.1					1	100.0
C12–C13	Hypopharynx	1	1.1					1	100.0
C15	Oesophagus	2	2.2					2	100.0
C16	Stomach	3	3.3	1	33.3			2	66.7
C18	Colon	1	1.1	1	100.0				
C19–C20	Rectum	2	2.2	1	50.0			1	50.0
C23–C24	Bile	1	1.1					1	100.0
C25	Pancreas	5	5.4					5	100.0
C26	GI cancer	1	1.1			1	100.0		
C33–C34	Lung	13	14.1	1	7.7	2	15.4	10	76.9
C44	Skin others	15	16.3	10	66.7			5	33.3
C50	Breast	20	21.7	9	45.0			11	55.0
C54	Corpus uteri	2	2.2	1	50.0	1	50.0		
C56	Ovary	2	2.2	1	50.0			1	50.0
C64	Kidney	4	4.3					4	100.0
C69	Eye carcinoma	1	1.1	1	100.0				
C73	Thyroid	3	3.3	1	33.3			2	66.7
C76–C79	CUP	2	2.2	2	100.0				
C82–C85	NHL	9	9.8	4	44.4			5	55.6
C90	Mult. myeloma	1	1.1					1	100.0
C91–C96	Leukaemia	2	2.2					2	100.0
All further malignancies		92	100.0	33	35.9	5	5.4	54	58.7

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

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1		0.1	1.00			5.3	
5- 9								
10-14								
15-19								
20-24	2		0.1	1.00			3.0	
25-29		1			0.0	0.09		1.1
30-34		1			0.0	0.20		0.6
35-39								
40-44	4	3	0.2	0.36	0.1	0.21	0.7	0.4
45-49	4	5	0.1	0.21	0.2	0.36	0.3	0.3
50-54	6	1	0.2	0.25	0.0	0.10	0.3	0.0
55-59	11	2	0.5	0.69	0.1	0.13	0.3	0.1
60-64	9	7	0.5	0.39	0.4	0.39	0.2	0.2
65-69	20	6	1.2	0.45	0.3	0.38	0.3	0.1
70-74	26	7	1.7	0.62	0.4	0.35	0.3	0.1
75-79	30	11	2.5	0.75	0.7	0.65	0.3	0.1
80-84	15	10	2.1	0.71	0.9	0.53	0.2	0.1
85+	21	27	4.5	0.91	2.6	0.90	0.3	0.3
All ages	149	81					0.3	0.2
Mortality								
Raw			0.5	0.52	0.2	0.39		
WS			0.2	0.43	0.1	0.24		
ES			0.3	0.47	0.1	0.28		
BRD-S			0.4	0.51	0.2	0.32		
PYLL-70								
per 100,000			2.5		1.4			
ES			2.4		1.2			
AYLL-70			12.7		14.8			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1		0.1	1.00			5.3	
5- 9								
10-14								
15-19								
20-24	2		0.1	1.00			3.0	
25-29		1			0.0	0.10		1.1
30-34								
35-39								
40-44	4	3	0.2	0.40	0.1	0.23	0.7	0.4
45-49	4	3	0.1	0.22	0.1	0.27	0.3	0.2
50-54	4		0.2	0.17			0.2	
55-59	7	2	0.3	0.50	0.1	0.14	0.2	0.1
60-64	8	5	0.5	0.36	0.3	0.29	0.2	0.1
65-69	13	5	0.8	0.38	0.3	0.36	0.2	0.1
70-74	20	4	1.3	0.61	0.2	0.27	0.2	0.1
75-79	18	6	1.5	0.50	0.4	0.50	0.2	0.1
80-84	13	5	1.8	0.68	0.5	0.36	0.2	0.1
85+	18	19	3.9	0.86	1.8	0.70	0.3	0.2
All ages	112	53					0.2	0.1
Mortality								
Raw			0.3	0.44	0.2	0.29		
WS			0.2	0.37	0.1	0.18		
ES			0.2	0.41	0.1	0.21		
BRD-S			0.3	0.44	0.1	0.24		
PYLL-70								
per 100,000			2.1		0.9			
ES			2.0		0.8			
AYLL-70			14.2		14.1			

* See corresponding tables with multiple malignancies.

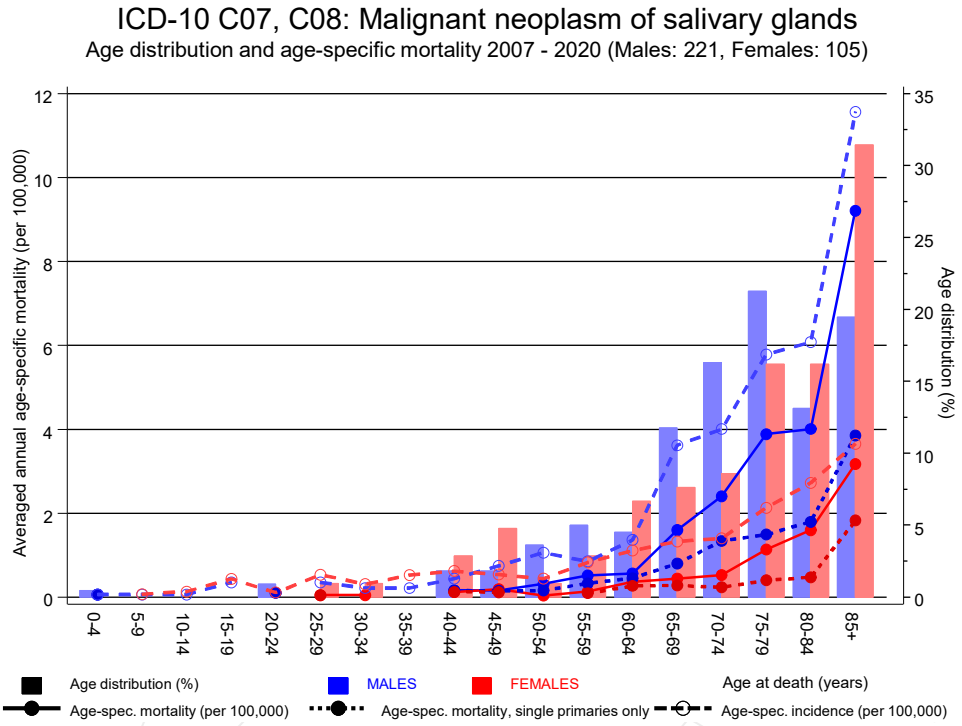


Figure 17. Distribution of age at death (bars; males: mean=69.7 yrs, median=70.9 yrs; females: mean=69.4 yrs, median=74.0 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

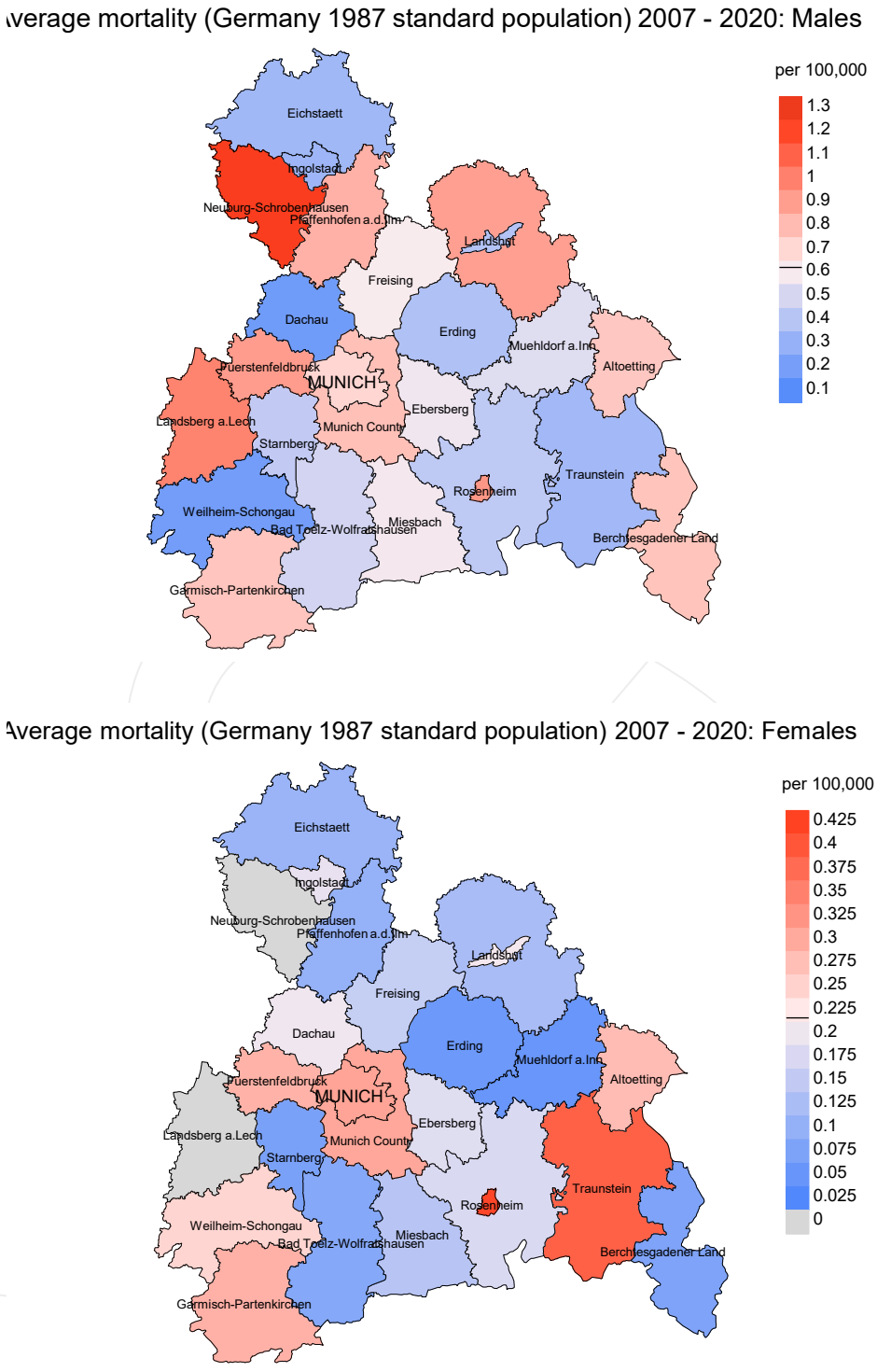
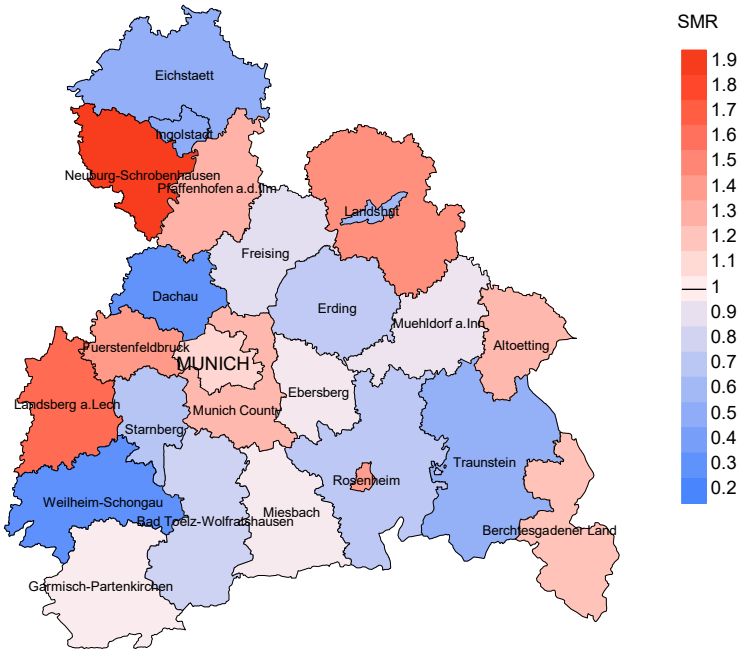


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.6/100,000 WS N=221, females 0.2/100,000 WS N=105).

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 2 women died from salivary gland cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.9/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

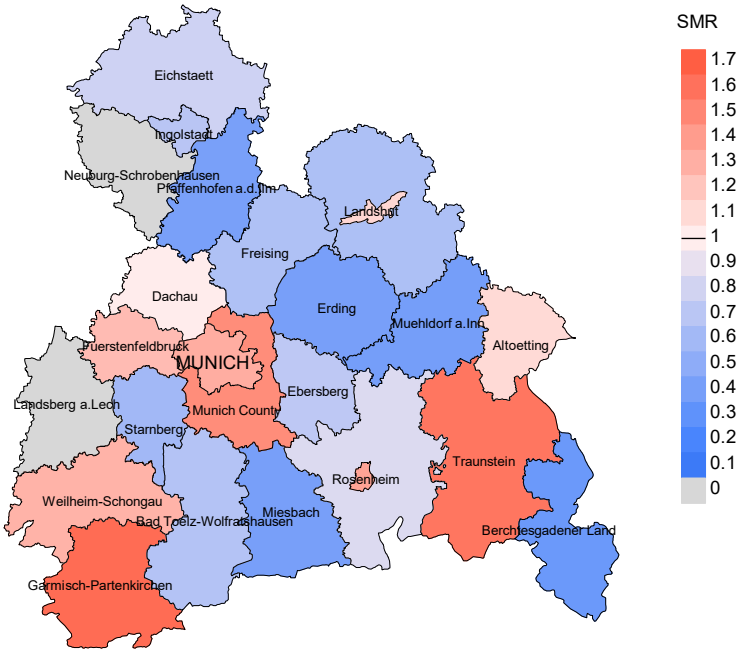


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=221, females N=105).

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 2 women died from salivary gland cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.72. Though, the value of this parameter may vary with an underlying probability of 99% between 0.04 and 3.33, 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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