Munich Cancer Registry

- Survival
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ICD-10 C04: Floor of mouth cancer

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	1,114
Diseases	1,115
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m

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

https://www.tumorregister-muenchen.de/en/facts/base/bC04__E-ICD-10-C04-Floor-of-mouth-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, January 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
C04.-	Malignant neoplasm of floor of mouth
C04.0	Anterior floor of mouth
C04.1	Lateral floor of mouth
C04.8	Overlapping lesion of floor of mouth
C04.9	Floor of mouth, 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	31	3	9.7	12.9	21.1	96.8	100.0
1999	43	5	11.6	12.2	21.0	86.0	93.0
2000	38	2	5.3	11.6	20.6	73.7	97.4
2001	48	3	6.3	11.9	20.5	81.3	95.8
2002	50	2	4.0	12.4	19.5	80.0	98.0 #
2003	64	5	7.8	13.9	19.8	76.6	98.4
2004	57	3	5.3	14.2	18.7	75.4	100.0
2005	47	4	8.5	15.1	17.4	74.5	97.9
2006	58	1	1.7	15.6	17.4	81.0	96.6
2007	64	5	7.8	14.8	15.9	78.1	98.4 #
2008	64	4	6.3	16.5	15.2	75.0	98.4
2009	80	4	5.0	16.5	15.1	70.0	97.5
2010	82	6	7.3	16.4	14.1	69.5	98.8
2011	47	3	6.4	16.9	12.7	61.7	97.9
2012	65	5	7.7	17.2	11.3	60.0	98.5
2013	74	5	6.8	16.9	10.3	59.5	97.3
2014	53	6	11.3	16.9	8.3	56.6	100.0
2015	57	5	8.8	17.5	6.3	56.1	96.5
2016	36	2	5.6	17.4	5.7	58.3	100.0
2017	32	2	6.3	18.1	5.6	53.1	100.0
2018	15	2	13.3	18.3	9.1	53.3	100.0
2019	10	1	10.0	18.2	0.0	40.0	80.0 ##
1998-2019	1115	78	7.0	18.2	21.1	70.2	97.8

1,115 cases diagnosed 1998-2019 are related to a total of 1,114 patients. Currently, in 427 (38.3 %) of these 1,114 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 319 / 81 / 27 (28.6 % / 7.3 % / 2.4 %) 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 2017, a subgroup of 32 cases has been diagnosed, of which 18.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.6 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	27	87.1	3	11.1	14.8	21.3	96.3	100.0	
1999	29	67.4	2	6.9	10.7	21.2	82.8	93.1	
2000	33	86.8	2	6.1	10.1	20.7	75.8	100.0	
2001	36	75.0	3	8.3	11.2	20.9	83.3	97.2	
2002	37	74.0	1	2.7	13.0	20.1	83.8	97.3	#
2003	48	75.0	5	10.4	14.3	20.1	81.3	100.0	
2004	48	84.2	1	2.1	14.3	19.1	75.0	100.0	
2005	37	78.7	2	5.4	14.9	17.3	70.3	97.3	
2006	49	84.5	1	2.0	15.4	17.4	83.7	98.0	
2007	50	78.1	2	4.0	14.7	15.7	80.0	98.0	#
2008	47	73.4	3	6.4	16.3	14.7	74.5	97.9	
2009	62	77.5	3	4.8	16.5	14.6	71.0	96.8	
2010	63	76.8	5	7.9	16.6	13.8	68.3	100.0	
2011	29	61.7	3	10.3	17.0	13.1	69.0	100.0	
2012	44	67.7	3	6.8	17.5	11.2	61.4	100.0	
2013	57	77.0	4	7.0	17.4	9.9	61.4	98.2	
2014	36	67.9	4	11.1	17.3	8.0	66.7	100.0	
2015	43	75.4	4	9.3	18.2	5.8	55.8	95.3	
2016	23	63.9	2	8.7	18.2	7.8	60.9	100.0	
2017	24	75.0	2	8.3	18.7	7.1	54.2	100.0	
2018	11	73.3	1	9.1	19.0	11.1	45.5	100.0	
2019	8	80.0			18.9	0.0	37.5	75.0	##
1998-2019	841	75.4	56	6.7	18.9	21.3	71.9	98.2	

841 cases diagnosed 1998-2019 are related to a total of 841 patients. Currently, in 329 (39.1 %) of these 841 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 247 / 61 / 21 (29.4 % / 7.3 % / 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 2017, a subgroup of 24 cases has been diagnosed, of which 18.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.1 % 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 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	4	12.9			0.0	20.5	100.0	100.0	
1999	14	32.6	3	21.4	16.7	20.4	92.9	92.9	
2000	5	13.2			17.4	20.3	60.0	80.0	
2001	12	25.0			14.3	19.5	75.0	91.7	
2002	13	26.0	1	7.7	10.4	17.9	69.2	100.0	#
2003	16	25.0			12.5	18.9	62.5	93.8	
2004	9	15.8	2	22.2	13.7	17.4	77.8	100.0	
2005	10	21.3	2	20.0	15.7	17.7	90.0	100.0	
2006	9	15.5			16.3	17.5	66.7	88.9	
2007	14	21.9	3	21.4	15.1	16.6	71.4	100.0	#
2008	17	26.6	1	5.9	17.1	16.6	76.5	100.0	
2009	18	22.5	1	5.6	16.3	16.4	66.7	100.0	
2010	19	23.2	1	5.3	15.6	14.8	73.7	94.7	
2011	18	38.3			16.9	11.7	50.0	94.4	
2012	21	32.3	2	9.5	16.1	11.8	57.1	95.2	
2013	17	23.0	1	5.9	15.3	11.1	52.9	94.1	
2014	17	32.1	2	11.8	15.5	9.1	35.3	100.0	
2015	14	24.6	1	7.1	15.4	7.9	57.1	100.0	
2016	13	36.1			15.0	0.0	53.8	100.0	
2017	8	25.0			16.0	0.0	50.0	100.0	
2018	4	26.7	1	25.0	16.2	0.0	75.0	100.0	
2019	2	20.0	1	50.0	16.1	0.0	50.0	100.0	##
1998-2019	274	24.6	22	8.0	16.1	20.5	65.0	96.7	

274 cases diagnosed 1998-2019 are related to a total of 273 patients. Currently, in 98 (35.9 %) of these 273 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 72 / 20 / 6 (26.4 % / 7.3 % / 2.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2017, a subgroup of 8 cases has been diagnosed, of which 16.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % 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 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 4.92 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	27	4	2.4	0.3	1.8	0.2	2.2	0.3	2.4	0.3
1999	29	14	2.6	1.2	1.7	0.6	2.3	0.9	2.4	1.0
2000	33	5	2.9	0.4	2.0	0.2	2.7	0.3	2.8	0.4
2001	36	12	3.1	1.0	2.0	0.6	2.8	0.8	3.1	0.8
2002	37	13	2.0	0.7	1.3	0.4	1.7	0.5	1.9	0.6
2003	48	16	2.6	0.8	1.7	0.5	2.3	0.7	2.4	0.8
2004	48	9	2.6	0.5	1.7	0.2	2.3	0.3	2.5	0.4
2005	37	10	2.0	0.5	1.2	0.3	1.6	0.4	1.9	0.4
2006	49	9	2.6	0.4	1.7	0.3	2.3	0.4	2.6	0.4
2007	50	14	2.3	0.6	1.4	0.3	2.0	0.5	2.2	0.5
2008	47	17	2.1	0.7	1.3	0.4	1.8	0.6	2.0	0.7
2009	62	18	2.8	0.8	1.8	0.4	2.4	0.6	2.5	0.7
2010	63	19	2.8	0.8	1.9	0.4	2.5	0.6	2.6	0.7
2011	29	18	1.3	0.8	0.8	0.4	1.1	0.6	1.2	0.6
2012	44	21	1.9	0.9	1.2	0.5	1.6	0.7	1.7	0.8
2013	57	17	2.5	0.7	1.5	0.4	2.1	0.5	2.3	0.6
2014	36	17	1.5	0.7	0.9	0.4	1.3	0.5	1.4	0.6
2015	43	14	1.8	0.6	1.1	0.3	1.5	0.4	1.6	0.5
2016	23	13	1.0	0.5	0.6	0.3	0.8	0.4	0.9	0.4
2017	24	8	1.0	0.3	0.6	0.2	0.8	0.3	0.9	0.3
2018	11	4	0.5	0.2	0.2	0.1	0.4	0.1	0.4	0.1
2019	8	2	0.3	0.1	0.2	0.0	0.3	0.0	0.3	0.0
1998–2019	841	274	1.9	0.6	1.2	0.3	1.6	0.5	1.8	0.5

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	31	55.0	13.5	0.9	80.5	45.4	49.6	56.5	58.6	66.8
1999	43	61.7	12.4	42.9	95.7	49.8	54.5	58.8	66.8	77.6
2000	38	57.0	10.2	39.1	85.8	44.6	49.9	57.2	63.3	72.6
2001	48	60.8	11.1	39.4	93.7	46.5	53.1	60.6	66.8	73.2
2002	50	59.8	11.7	38.0	99.0	45.5	51.2	60.1	64.7	75.2
2003	64	57.6	9.6	34.4	82.2	45.4	51.8	57.7	62.7	69.7
2004	57	59.9	10.5	39.4	84.8	46.1	52.9	59.7	66.1	75.0
2005	47	61.8	11.9	40.8	85.9	46.7	54.6	60.8	67.7	81.4
2006	58	59.8	10.5	34.7	91.4	48.4	52.9	58.6	64.9	76.4
2007	64	60.4	12.5	34.0	98.2	46.5	50.8	57.1	67.8	75.4
2008	64	62.7	11.7	41.2	100	49.2	53.4	62.0	69.2	79.4
2009	80	61.2	9.7	41.5	95.3	49.1	54.0	60.7	67.6	72.8
2010	82	59.1	11.0	29.9	90.9	45.7	51.4	59.7	67.1	70.9
2011	47	61.5	10.5	42.5	79.7	49.2	52.6	58.2	71.8	76.7
2012	65	61.4	10.2	43.7	100	48.0	52.1	62.3	67.3	72.2
2013	74	62.1	9.9	44.8	90.5	50.3	54.7	60.6	68.3	75.0
2014	53	63.5	10.5	43.5	90.0	49.2	57.2	63.1	69.9	77.3
2015	57	62.5	9.7	41.5	85.3	50.8	54.1	61.6	70.2	75.8
2016	36	64.4	9.9	46.4	90.6	53.4	57.8	62.0	70.1	77.8
2017	32	63.1	9.1	47.8	87.9	51.4	56.6	63.0	68.2	74.6
2018	15	67.1	10.6	51.4	91.8	52.6	58.8	66.5	73.3	79.0
2019	10	64.6	13.4	50.8	99.0	52.3	57.0	63.0	65.7	84.2
1998–2019	1115	60.9	10.9	0.9	100	48.2	53.2	60.0	67.5	74.7

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	27	55.0	14.4	0.9	80.5	44.0	48.1	56.5	64.6	72.0
1999	29	59.3	11.3	42.9	90.8	45.1	52.8	57.7	62.3	74.0
2000	33	55.9	9.2	39.1	77.5	44.6	49.9	55.5	59.5	68.0
2001	36	59.3	11.4	39.4	93.7	45.4	51.4	59.3	64.9	73.2
2002	37	58.6	10.2	38.0	79.4	45.2	51.2	60.3	63.7	74.8
2003	48	57.5	9.8	34.4	82.2	43.8	52.1	57.7	62.7	71.1
2004	48	58.9	9.8	39.4	81.9	45.5	52.8	59.1	63.6	73.0
2005	37	60.4	11.8	40.8	85.0	44.6	52.1	58.2	66.9	77.2
2006	49	58.7	10.1	34.7	84.4	48.0	52.5	57.6	63.4	76.4
2007	50	59.1	10.8	42.6	87.0	46.3	49.9	56.9	67.1	73.7
2008	47	62.1	11.8	41.2	100	49.2	51.6	61.9	68.3	80.0
2009	62	60.1	9.0	41.5	87.9	48.0	53.8	59.4	67.0	71.3
2010	63	56.9	10.2	29.9	78.6	44.4	50.6	56.6	64.2	69.8
2011	29	59.7	10.8	42.5	79.7	47.6	52.1	56.8	67.8	77.3
2012	44	60.0	9.1	43.7	79.5	48.0	51.5	61.4	67.1	70.5
2013	57	61.1	8.7	45.2	78.6	49.4	54.7	60.3	66.0	74.3
2014	36	62.0	10.7	43.5	90.0	48.4	52.8	62.6	69.6	74.9
2015	43	61.4	9.3	41.5	85.0	50.8	53.8	61.1	65.7	74.3
2016	23	63.1	9.0	51.3	84.4	53.4	55.2	60.8	69.6	73.8
2017	24	63.9	9.4	47.8	87.9	53.4	58.1	63.0	68.6	77.1
2018	11	65.7	9.3	51.4	79.0	52.6	56.7	66.5	73.3	77.3
2019	8	61.2	6.3	50.8	69.5	50.8	56.6	63.0	65.2	69.5
1998–2019	841	59.6	10.3	0.9	100	47.6	52.2	59.1	66.3	73.3

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	4	54.7	4.4	49.6	58.6	49.6	51.0	55.2	58.3	58.6
1999	14	66.7	13.5	53.6	95.7	53.6	56.2	63.5	72.2	91.9
2000	5	64.3	14.2	48.5	85.8	48.5	57.1	60.6	69.7	85.8
2001	12	65.3	8.9	56.4	89.8	56.7	60.4	62.9	69.1	69.3
2002	13	63.2	15.2	39.1	99.0	50.7	54.6	60.0	74.8	77.2
2003	16	57.9	9.5	43.5	80.2	46.2	49.3	58.3	63.0	67.4
2004	9	65.6	12.9	47.4	84.8	47.4	54.2	68.1	75.5	84.8
2005	10	66.9	11.6	54.1	85.9	54.5	58.9	63.2	80.8	83.7
2006	9	65.6	10.8	56.0	91.4	56.0	58.8	63.7	66.8	91.4
2007	14	65.0	17.0	34.0	98.2	50.0	55.1	63.4	71.9	91.0
2008	17	64.3	11.6	46.2	89.0	48.8	55.3	62.7	70.0	79.4
2009	18	64.8	11.1	48.4	95.3	50.6	58.2	63.9	68.9	77.2
2010	19	66.6	10.7	49.9	90.9	50.6	61.5	66.7	69.5	87.5
2011	18	64.5	9.4	49.5	77.1	51.6	55.1	68.2	71.8	75.4
2012	21	64.2	12.0	45.5	100	49.9	58.1	64.2	72.2	72.7
2013	17	65.6	13.0	44.8	90.5	51.3	55.7	66.2	72.7	88.3
2014	17	66.5	9.7	53.4	88.4	55.0	59.1	64.4	70.2	82.2
2015	14	66.0	10.4	49.1	85.3	53.4	57.3	68.0	73.3	76.4
2016	13	66.8	11.3	46.4	90.6	55.9	58.7	67.3	72.2	77.8
2017	8	60.5	8.0	49.7	70.6	49.7	53.0	61.8	67.2	70.6
2018	4	70.9	14.4	58.8	91.8	58.8	62.4	66.5	79.4	91.8
2019	2	78.0	29.7	57.0	99.0	57.0	57.0	78.0	99.0	99.0
1998–2019	274	64.8	11.7	34.0	100	51.3	56.5	63.6	71.2	80.2

Table 4

Age distribution by 5-year age group and sex for period 2007-2019
(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	1	0.1	0.1	1	0.2	0.2			0.0
30-34	1	0.1	0.3			0.2	1	0.5	0.5
35-39	2	0.3	0.6	2	0.4	0.6			0.5
40-44	17	2.5	3.1	16	3.2	3.8	1	0.5	1.1
45-49	62	9.1	12.2	50	10.1	13.9	12	6.6	7.7
50-54	116	17.1	29.3	96	19.3	33.2	20	11.0	18.7
55-59	110	16.2	45.5	79	15.9	49.1	31	17.0	35.7
60-64	115	16.9	62.4	91	18.3	67.4	24	13.2	48.9
65-69	115	16.9	79.4	78	15.7	83.1	37	20.3	69.2
70-74	76	11.2	90.6	48	9.7	92.8	28	15.4	84.6
75-79	35	5.2	95.7	24	4.8	97.6	11	6.0	90.7
80-84	10	1.5	97.2	7	1.4	99.0	3	1.6	92.3
85+	19	2.8	100.0	5	1.0	100.0	14	7.7	100.0
All ages	679	100.0		497	100.0		182	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2019

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=36 %	Females DCO rate n=14 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1		0.0				0.1	
30-34		1		0.0				0.1
35-39	2		0.1				0.1	
40-44	16	1	0.7	0.0			0.6	0.0
45-49	50	12	2.0	0.5	2.0		1.0	0.1
50-54	96	20	4.1	0.9	2.1		1.2	0.2
55-59	79	31	4.1	1.6	5.1	9.7	0.7	0.3
60-64	91	24	5.6	1.4	7.7	4.2	0.6	0.2
65-69	78	37	5.1	2.2	12.8	5.4	0.3	0.2
70-74	48	28	3.4	1.7	12.5		0.2	0.2
75-79	24	11	2.2	0.8	16.7		0.1	0.1
80-84	7	3	1.1	0.3		33.3	0.0	0.0
85+	5	14	1.2	1.5	40.0	50.0	0.1	0.1
All ages	497	182			7.2	7.7	0.3	0.1
Incidence								
Raw			1.6	0.6				
WS			1.0	0.3				
ES			1.4	0.4				
BRD-S			1.5	0.5				

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

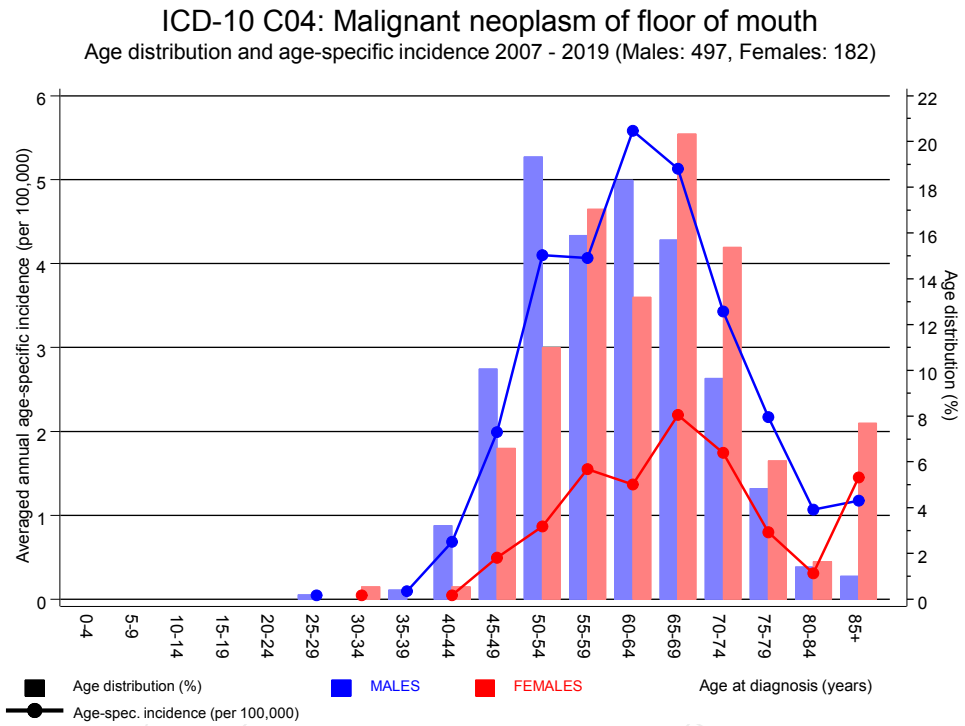


Figure 6. Age distribution (males: mean=60.6 yrs, median=60.3 yrs; females: mean=65.4 yrs, median=65.3 yrs) and age-specific incidence.

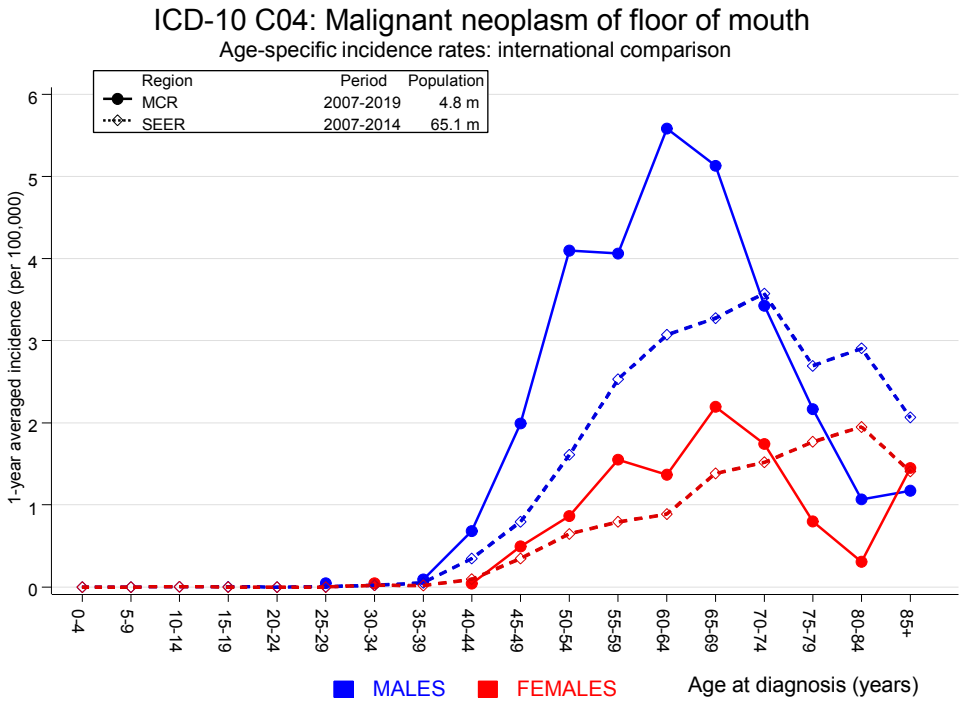


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 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 1998-2019

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
		1	0.0	127.2	3.2	708.5	#	3.2	
C03-C06	Oral cavity	5	0.4	11.4	3.7	26.5	#	14.9	
C09-C10	Oropharynx	24	0.6	42.2	27.0	62.8	#	76.6	4.2
C11	Nasopharynx	1	0.0	28.2	0.7	157.4		3.2	
C12-C13	Hypopharynx	18	0.3	60.0	35.5	94.8	#	57.8	
C15	Oesophagus	26	0.8	33.6	21.9	49.2	#	82.4	3.8
C16	Stomach	3	1.1	2.7	0.6	7.9		6.2	
C17	Small intestine	2	0.2	9.8	1.2	35.6	#	5.9	
C18	Colon	8	2.7	3.0	1.3	5.9	#	17.4	
C19-C20	Rectum	4	1.9	2.2	0.6	5.5		7.0	
C22	Liver	7	0.9	7.4	3.0	15.3	#	19.8	
C25	Pancreas	4	1.1	3.6	1.0	9.1		9.4	25.0
C32	Larynx	16	0.4	37.6	21.5	61.1	#	50.9	6.3
C33-C34	Lung	63	4.0	15.9	12.2	20.3	#	192.9	9.5
C43	Malign. melanoma	4	1.6	2.6	0.7	6.6		8.0	
C61	Prostate	13	9.0	1.4	0.8	2.5		13.2	
C62	Testis	1	0.2	5.5	0.1	30.7		2.7	
C64	Kidney	5	1.2	4.0	1.3	9.4	#	12.3	
C65	Renal pelvis	1	0.1	8.7	0.2	48.5		2.9	
C67	Bladder	4	1.1	3.5	0.9	8.9		9.3	
C68	Urethra	1	0.0	40.3	1.0	224.8	#	3.2	
C73	Thyroid	2	0.3	6.0	0.7	21.5		5.4	
C76-C79	CUP	5	0.5	9.8	3.2	23.0	#	14.7	
C81	Hodgkin lymphoma	1	0.1	10.8	0.3	60.3		3.0	
C82-C85	NHL	2	1.3	1.6	0.2	5.6		2.4	
Not observed		0	2.6	0.0	0.0	1.4		-8.7	
All further malignancies		221	32.5	6.8	5.9	7.8	#	615.9	4.5

Patients	802
Median age at next malignancy (years)	63.0
Person-years	3060
Mean observation time (years)	3.8
Median observation time (years)	2.4

The occurrence of further specified malignancy is statistically significant.

Table 7b

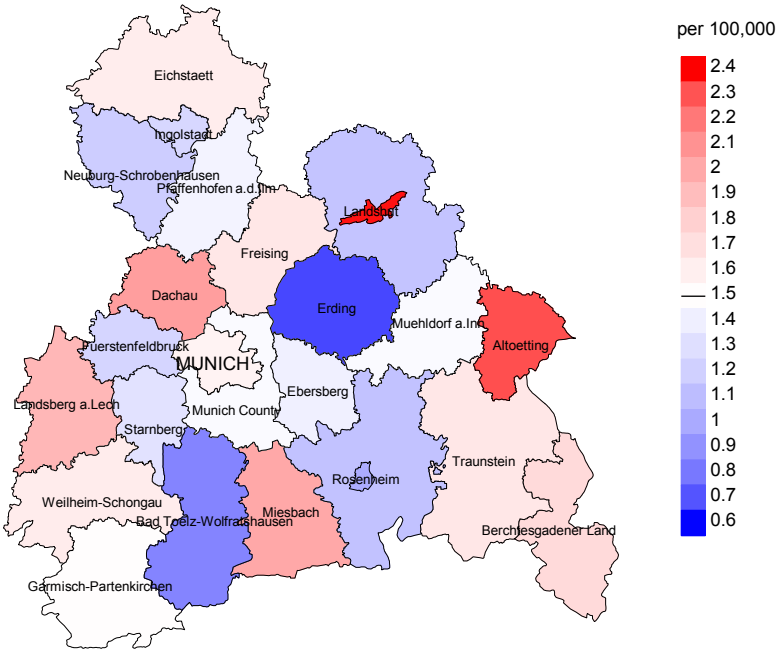
Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2019
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	2	0.1	28.0	3.4	101.1	#	18.0	
C09–C10	Oropharynx	10	0.1	167.4	80.3	307.8	#	92.6	
C12–C13	Hypopharynx	5	0.0	313.6	101.8	731.7	#	46.5	40.0
C15	Oesophagus	8	0.1	101.3	43.7	199.7	#	73.8	12.5
C18	Colon	3	0.9	3.3	0.7	9.7		19.5	
C19–C20	Rectum	1	0.4	2.5	0.1	13.9		5.6	
C21	Anus/canal	1	0.1	15.8	0.4	87.9		8.7	
C22	Liver	2	0.1	15.9	1.9	57.3	#	17.5	
C25	Pancreas	3	0.4	6.7	1.4	19.7	#	23.8	
C30–C31	Sinuses	2	0.0	134.3	16.3	485.1	#	18.5	100.0
C32	Larynx	1	0.0	43.9	1.1	244.5	#	9.1	
C33–C34	Lung	19	0.9	20.9	12.6	32.6	#	168.6	10.5
C50	Breast	6	3.7	1.6	0.6	3.6		21.8	
C51	Vulva	1	0.1	9.8	0.2	54.8		8.4	
C53	Cervix uteri	2	0.2	13.2	1.6	47.6	#	17.2	
C56	Ovary	1	0.4	2.2	0.1	12.5		5.2	
C81	Hodgkin lymphoma	1	0.0	52.3	1.3	291.1	#	9.1	
C82–C85	NHL	3	0.4	7.5	1.6	22.0	#	24.2	
Not observed		0	3.1	0.0	0.0	1.2		-29.0	
All further malignancies		71	11.0	6.5	5.0	8.1	#	559.2	9.9

Patients	257
Median age at next malignancy (years)	66.9
Person-years	1073
Mean observation time (years)	4.2
Median observation time (years)	3.0

The occurrence of further specified malignancy is statistically significant.

Average incidence (Germany 1987 standard population) 2007 - 2019: Males



Average incidence (Germany 1987 standard population) 2007 - 2019: Females

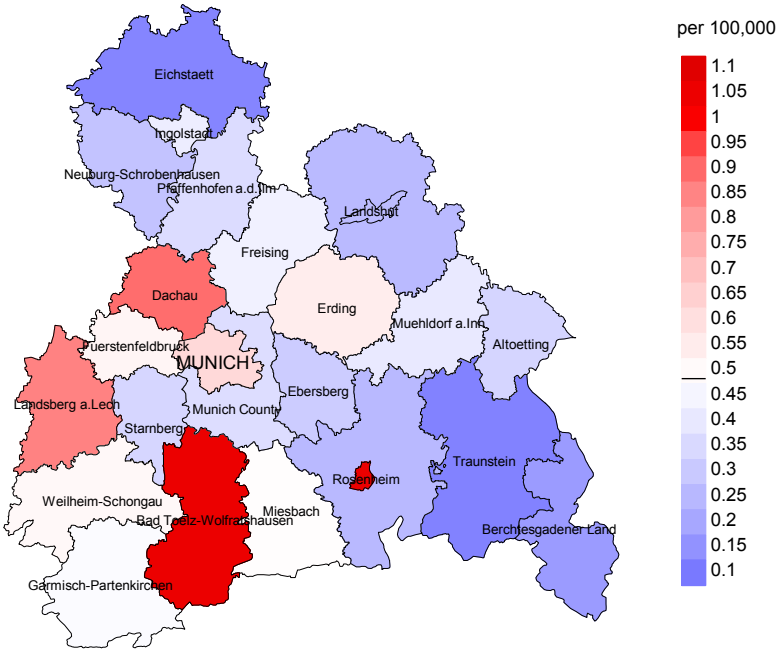
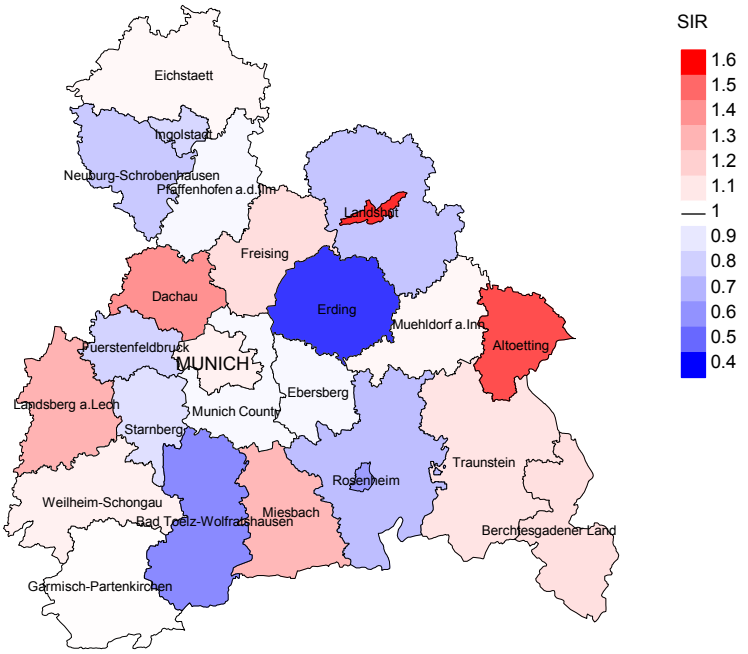


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.5/100,000 WS N=497, females 0.5/100,000 WS N=182).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 3 women were identified with newly diagnosed floor of mouth cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.3/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.2/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

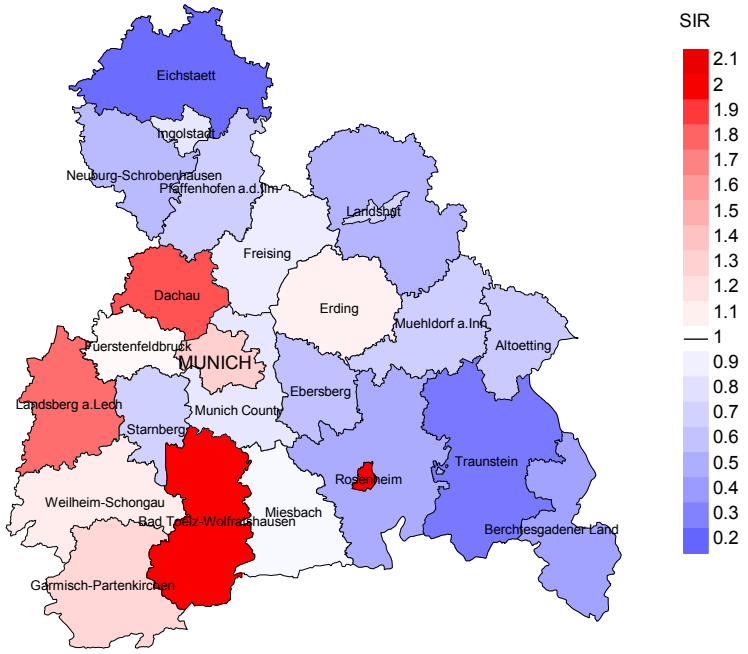


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=497, females N=182).

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 2019 a total of 3 women were identified with newly diagnosed floor of mouth cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.59. Though, the value of this parameter may vary with an underlying probability of 99% between 0.07 and 2.18, 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 4.92 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	31	100.0	9.7	30	96.8	93.3
1999	43	93.0	11.6	37	86.0	86.5
2000	38	97.4	5.3	28	73.7	96.4
2001	48	95.8	6.3	39	81.3	92.3
2002	50	98.0	4.0	40	80.0	95.0
2003	64	98.4	7.8	49	76.6	95.9
2004	57	100.0	5.3	43	75.4	97.7
2005	47	97.9	8.5	35	74.5	97.1
2006	58	96.6	1.7	47	81.0	93.6
2007	64	98.4	7.8	50	78.1	94.0
2008	64	98.4	6.3	48	75.0	91.7
2009	80	97.5	5.0	56	70.0	96.4
2010	82	98.8	7.3	57	69.5	96.5
2011	47	97.9	6.4	29	61.7	89.7
2012	65	98.5	7.7	39	60.0	87.2
2013	74	97.3	6.8	44	59.5	86.4
2014	53	100.0	11.3	30	56.6	90.0
2015	57	96.5	8.8	32	56.1	87.5
2016	36	100.0	5.6	21	58.3	90.5
2017	32	100.0	6.3	17	53.1	64.7
2018	15	100.0	13.3	8	53.3	50.0
2019	10	80.0	10.0	4	40.0	75.0
1998-2019	1115	97.8	7.0	783	70.2	91.7

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 4.92 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	31	26	96.2	8	25.8
1999	43	24	87.5	7	16.3
2000	38	24	91.7	4	10.5
2001	48	34	91.2	8	16.7
2002	50	47	97.9	6	12.0
2003	64	57	96.5	11	17.2
2004	57	43	93.0	12	21.1
2005	47	38	100.0	4	8.5
2006	58	39	100.0	2	3.4
2007	64	45	97.8	9	14.1
2008	64	50	98.0	9	14.1
2009	80	67	98.5	12	15.0
2010	82	63	100.0	11	13.4
2011	47	55	98.2	6	12.8
2012	65	65	98.5	9	13.8
2013	74	55	98.2	11	14.9
2014	53	43	97.7	10	18.9
2015	57	56	100.0	13	22.8
2016	36	43	100.0	7	19.4
2017	32	49	95.9	7	21.9
2018	15	36	41.7	4	26.7
2019	10	32	21.9	2	20.0
1998–2019	1115	991	92.9	172	15.4

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 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	26	80.8	19.2	92.0
1999	24	66.7	33.3	95.2
2000	24	62.5	37.5	77.3
2001	34	82.4	17.6	96.8
2002	47	87.2	12.8	95.7
2003	57	82.5	17.5	92.7
2004	43	74.4	25.6	92.5
2005	38	86.8	13.2	92.1
2006	39	79.5	20.5	87.2
2007	45	73.3	26.7	88.6
2008	50	78.0	22.0	91.8
2009	67	83.6	16.4	90.9
2010	63	74.6	25.4	92.1
2011	55	72.7	27.3	85.2
2012	65	81.5	18.5	93.8
2013	55	80.0	20.0	94.4
2014	43	72.1	27.9	83.3
2015	56	69.6	30.4	87.5
2016	43	72.1	27.9	76.7
2017	49	71.4	28.6	85.1
2018	36	47.2	52.8	53.3
2019	32	43.8	56.3	85.7
1998-2019	991	75.0	25.0	89.1

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	23	58.2	57.6	75.5	58.1
1999	18	54.7	57.5	50.3	53.1
2000	18	61.1	59.8	62.4	61.2
2001	28	60.7	60.5	61.5	61.0
2002	36	61.5	61.2	66.1	61.3
2003	48	63.2	63.0	68.4	64.9
2004	35	63.5	62.9	64.9	63.7
2005	30	69.1	67.7	79.6	69.1
2006	31	63.9	63.1	67.2	63.2
2007	37	62.7	59.6	66.0	62.2
2008	40	64.2	64.2	66.5	63.9
2009	55	66.6	63.9	74.1	63.9
2010	51	64.4	63.5	68.7	64.4
2011	43	63.2	61.9	67.1	62.5
2012	50	65.5	64.9	65.8	64.9
2013	40	66.3	65.3	72.4	65.3
2014	29	67.6	66.1	71.5	66.8
2015	39	62.5	61.7	65.2	62.5
2016	35	66.4	67.0	64.1	66.4
2017	35	62.7	59.0	68.8	60.0
2018	27	68.4	68.7	64.5	69.6
2019	23	70.4	70.4	69.7	69.7
1998–2019	771	64.3	63.1	67.2	63.5

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	3	56.0	57.6	55.0	55.8
1999	6	81.3	70.6	91.9	70.6
2000	6	63.3	63.3	70.3	63.3
2001	6	68.3	73.9	62.8	73.9
2002	11	62.1	62.1		62.1
2003	9	69.8	70.4	59.5	70.4
2004	8	74.3	74.3	76.9	72.3
2005	8	62.8	62.1	85.1	62.1
2006	8	65.3	66.6	64.9	65.7
2007	8	64.4	64.1	64.8	64.4
2008	10	64.6	66.1	63.0	67.9
2009	12	69.0	67.9	70.5	67.9
2010	12	71.9	63.9	86.1	68.8
2011	12	73.1	73.1	69.4	71.9
2012	15	72.0	70.8	87.4	72.0
2013	15	71.6	71.3	71.6	71.6
2014	14	75.5	69.7	77.1	76.5
2015	17	71.7	71.7	78.9	71.7
2016	8	73.7	70.5	81.3	70.5
2017	14	70.2	70.5	65.0	70.2
2018	9	61.7	58.9	73.1	56.0
2019	9	77.1	79.4	76.8	90.9
1998–2019	220	69.6	69.2	72.0	69.2

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	20	1.8	0.74	1.3	0.73	1.7	0.73	1.8	0.75
1999	13	1.2	0.45	0.7	0.43	1.0	0.43	1.1	0.45
2000	11	1.0	0.33	0.6	0.31	0.9	0.33	1.0	0.36
2001	23	2.0	0.64	1.3	0.64	1.8	0.63	2.0	0.64
2002	30	1.6	0.81	1.0	0.79	1.4	0.82	1.6	0.83
2003	39	2.1	0.81	1.2	0.73	1.7	0.75	2.1	0.85
2004	26	1.4	0.54	0.9	0.54	1.2	0.52	1.3	0.52
2005	26	1.4	0.70	0.7	0.62	1.1	0.66	1.4	0.73
2006	26	1.4	0.53	0.8	0.48	1.1	0.49	1.3	0.51
2007	28	1.3	0.56	0.8	0.54	1.1	0.56	1.2	0.58
2008	32	1.4	0.68	0.9	0.66	1.2	0.67	1.4	0.69
2009	45	2.0	0.73	1.2	0.67	1.7	0.69	1.9	0.73
2010	38	1.7	0.60	1.1	0.57	1.4	0.59	1.5	0.59
2011	30	1.3	1.03	0.8	1.04	1.1	1.03	1.2	1.03
2012	39	1.7	0.89	0.9	0.77	1.4	0.83	1.6	0.91
2013	32	1.4	0.56	0.8	0.54	1.1	0.54	1.3	0.56
2014	25	1.1	0.69	0.6	0.62	0.8	0.64	0.9	0.66
2015	26	1.1	0.60	0.7	0.61	0.9	0.61	1.0	0.61
2016	27	1.1	1.17	0.6	1.14	0.9	1.14	1.0	1.18
2017	25	1.0	1.04	0.6	1.08	0.9	1.07	0.9	1.02
2018	12	0.5	1.09	0.3	1.13	0.4	1.09	0.5	1.14
2019	11	0.5	1.38	0.2	1.00	0.3	1.08	0.4	1.37
1998-2019	584	1.3	0.69	0.8	0.65	1.1	0.67	1.2	0.70

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	1	0.1	0.25	0.0	0.19	0.1	0.21	0.1	0.21
1999	3	0.3	0.21	0.1	0.19	0.2	0.20	0.2	0.20
2000	4	0.3	0.80	0.2	0.74	0.3	0.80	0.3	0.76
2001	5	0.4	0.42	0.2	0.30	0.2	0.32	0.3	0.39
2002	11	0.6	0.85	0.3	0.85	0.5	0.86	0.5	0.86
2003	8	0.4	0.50	0.2	0.39	0.3	0.42	0.4	0.48
2004	6	0.3	0.67	0.1	0.56	0.2	0.62	0.3	0.70
2005	7	0.4	0.70	0.2	0.79	0.3	0.75	0.3	0.70
2006	5	0.2	0.56	0.1	0.48	0.2	0.48	0.2	0.48
2007	5	0.2	0.36	0.1	0.32	0.2	0.32	0.2	0.34
2008	7	0.3	0.41	0.1	0.36	0.2	0.36	0.2	0.33
2009	11	0.5	0.61	0.2	0.49	0.3	0.51	0.3	0.51
2010	9	0.4	0.47	0.2	0.42	0.3	0.46	0.3	0.52
2011	10	0.4	0.56	0.2	0.42	0.2	0.44	0.3	0.46
2012	14	0.6	0.67	0.3	0.55	0.4	0.59	0.5	0.64
2013	12	0.5	0.71	0.2	0.62	0.3	0.60	0.4	0.67
2014	6	0.2	0.35	0.1	0.30	0.2	0.31	0.2	0.32
2015	13	0.5	0.93	0.2	0.80	0.3	0.81	0.4	0.90
2016	4	0.2	0.31	0.1	0.31	0.1	0.31	0.1	0.31
2017	10	0.4	1.25	0.2	0.87	0.3	0.94	0.3	1.10
2018	5	0.2	1.25	0.1	1.49	0.2	1.49	0.2	1.46
2019	4	0.2	2.00	0.0	1.59	0.1	1.64	0.1	2.19
1998-2019	160	0.3	0.58	0.2	0.50	0.2	0.52	0.3	0.55

Table 12

Age distribution of age at death (cancer-related) for period 2007-2019
(**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									
40-44	7	1.5	1.5	6	1.6	1.6	1	0.9	0.9
45-49	19	4.0	5.4	18	4.9	6.5	1	0.9	1.8
50-54	51	10.6	16.0	46	12.4	18.9	5	4.5	6.4
55-59	71	14.8	30.8	60	16.2	35.1	11	10.0	16.4
60-64	82	17.1	47.9	67	18.1	53.2	15	13.6	30.0
65-69	103	21.5	69.4	81	21.9	75.1	22	20.0	50.0
70-74	71	14.8	84.2	47	12.7	87.8	24	21.8	71.8
75-79	42	8.8	92.9	32	8.6	96.5	10	9.1	80.9
80-84	16	3.3	96.3	10	2.7	99.2	6	5.5	86.4
85+	18	3.8	100.0	3	0.8	100.0	15	13.6	100.0
All ages	480	100.0		370	100.0		110	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**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								
40-44	6	1	0.3	0.38	0.0	1.00	1.0	0.1
45-49	18	1	0.7	0.36	0.0	0.08	1.3	0.1
50-54	46	5	2.0	0.48	0.2	0.25	1.8	0.2
55-59	60	11	3.1	0.76	0.6	0.35	1.5	0.3
60-64	67	15	4.1	0.74	0.9	0.63	1.1	0.3
65-69	81	22	5.3	1.04	1.3	0.59	0.9	0.3
70-74	47	24	3.4	0.98	1.5	0.86	0.4	0.3
75-79	32	10	2.9	1.33	0.7	0.91	0.3	0.1
80-84	10	6	1.5	1.43	0.6	2.00	0.1	0.1
85+	3	15	0.7	0.60	1.6	1.07	0.0	0.1
All ages	370	110					0.6	0.2
Mortality								
Raw			1.2	0.74	0.4	0.60		
WS			0.7	0.70	0.2	0.51		
ES			1.0	0.72	0.2	0.53		
BRD-S			1.1	0.74	0.3	0.56		
PYLL-70								
per 100,000			10.7		1.7			
ES			9.0		1.4			
AYLL-70			10.2		8.0			

Table 14a

Further malignancies in deaths in period 1998–2019
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	1	0.3	1	100.0				
C03–C06	Oral cavity	10	2.7					10	100.0
C07–C08	Salivary gland	1	0.3					1	100.0
C09–C10	Oropharynx	48	12.7	21	43.8	10	20.8	17	35.4
C12–C13	Hypopharynx	30	8.0	11	36.7	4	13.3	15	50.0
C15	Oesophagus	36	9.5	4	11.1	7	19.4	25	69.4
C16	Stomach	4	1.1	1	25.0			3	75.0
C17	Small intestine	1	0.3					1	100.0
C18	Colon	12	3.2	3	25.0	1	8.3	8	66.7
C19–C20	Rectum	10	2.7	1	10.0			9	90.0
C22	Liver	12	3.2	4	33.3	1	8.3	7	58.3
C23–C24	Bile	1	0.3					1	100.0
C25	Pancreas	3	0.8					3	100.0
C30–C31	Sinuses	2	0.5	1	50.0			1	50.0
C32	Larynx	21	5.6	7	33.3	5	23.8	9	42.9
C33–C34	Lung	100	26.5	8	8.0	11	11.0	81	81.0
C43	Malign. melanoma	6	1.6	2	33.3	2	33.3	2	33.3
C44	Skin others	20	5.3	7	35.0	1	5.0	12	60.0
C61	Prostate	17	4.5	10	58.8	2	11.8	5	29.4
C62	Testis	3	0.8	3	100.0				
C64	Kidney	8	2.1	2	25.0			6	75.0
C65	Renal pelvis	1	0.3					1	100.0
C67	Bladder	9	2.4	5	55.6			4	44.4
C70–C72	CNS cancer	2	0.5					2	100.0
C73	Thyroid	1	0.3	1	100.0				
C74–C80	Cancer others	1	0.3					1	100.0
C76–C79	CUP	10	2.7	5	50.0			5	50.0
C81	Hodgkin lymphoma	2	0.5	1	50.0			1	50.0
C82–C85	NHL	5	1.3	2	40.0	1	20.0	2	40.0
All further malignancies		377	100.0	100	26.5	45	11.9	232	61.5

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 1998–2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06 Oral cavity	5	5.1					5	100.0
C09–C10 Oropharynx	15	15.3	4	26.7	3	20.0	8	53.3
C12–C13 Hypopharynx	4	4.1			1	25.0	3	75.0
C15 Oesophagus	7	7.1					7	100.0
C16 Stomach	2	2.0					2	100.0
C18 Colon	6	6.1	4	66.7			2	33.3
C21 Anus/canal	2	2.0					2	100.0
C22 Liver	2	2.0					2	100.0
C23–C24 Bile	1	1.0					1	100.0
C25 Pancreas	3	3.1					3	100.0
C30–C31 Sinuses	2	2.0					2	100.0
C32 Larynx	2	2.0	2	100.0				
C33–C34 Lung	19	19.4					19	100.0
C43 Malign. melanoma	3	3.1	1	33.3	1	33.3	1	33.3
C44 Skin others	3	3.1					3	100.0
C50 Breast	8	8.2	5	62.5	2	25.0	1	12.5
C51 Vulva	2	2.0	1	50.0			1	50.0
C53 Cervix uteri	5	5.1	5	100.0				
C56 Ovary	2	2.0	1	50.0			1	50.0
C73 Thyroid	1	1.0	1	100.0				
C82–C85 NHL	4	4.1	1	25.0	1	25.0	2	50.0
All further malignancies	98	100.0	25	25.5	8	8.2	65	66.3

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 2007-2019
(**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								
40-44	5	1	0.2	0.36	0.0	1.00	0.9	0.1
45-49	15	1	0.6	0.33	0.0	0.09	1.2	0.1
50-54	37	4	1.6	0.49	0.2	0.21	1.7	0.2
55-59	48	10	2.5	0.81	0.5	0.38	1.3	0.3
60-64	46	11	2.8	0.75	0.6	0.61	0.9	0.3
65-69	62	19	4.1	1.07	1.1	0.73	0.9	0.4
70-74	34	19	2.4	1.06	1.2	0.90	0.4	0.3
75-79	24	9	2.2	2.00	0.7	1.00	0.3	0.1
80-84	7	5	1.1	1.40	0.5	1.67	0.1	0.1
85+	3	13	0.7	1.00	1.3	1.08	0.1	0.1
All ages	281	92					0.6	0.2
Mortality								
Raw			0.9	0.76	0.3	0.63		
WS			0.5	0.71	0.1	0.52		
ES			0.8	0.73	0.2	0.54		
BRD-S			0.8	0.76	0.2	0.58		
PYLL-70								
per 100,000			8.4		1.4			
ES			7.1		1.2			
AYLL-70			10.4		8.2			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**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								
40-44	5	1	0.2	0.50	0.0	1.00	1.0	0.1
45-49	11	1	0.4	0.28	0.0	0.11	0.9	0.1
50-54	28	3	1.2	0.43	0.1	0.21	1.3	0.1
55-59	29	8	1.5	0.58	0.4	0.36	0.8	0.3
60-64	25	7	1.5	0.45	0.4	0.41	0.5	0.2
65-69	31	10	2.0	0.63	0.6	0.50	0.5	0.2
70-74	22	12	1.6	0.81	0.7	0.71	0.3	0.2
75-79	15	5	1.4	1.25	0.4	0.71	0.2	0.1
80-84	5	4	0.8	1.25	0.4	1.33	0.1	0.1
85+	3	13	0.7	1.50	1.3	1.08	0.1	0.2
All ages	174	64					0.4	0.1
Mortality								
Raw			0.6	0.55	0.2	0.52		
WS			0.3	0.51	0.1	0.42		
ES			0.5	0.53	0.1	0.44		
BRD-S			0.5	0.55	0.2	0.47		
PYLL-70								
per 100,000			5.7		1.1			
ES			4.8		0.9			
AYLL-70			11.6		9.3			

* See corresponding tables with multiple malignancies.

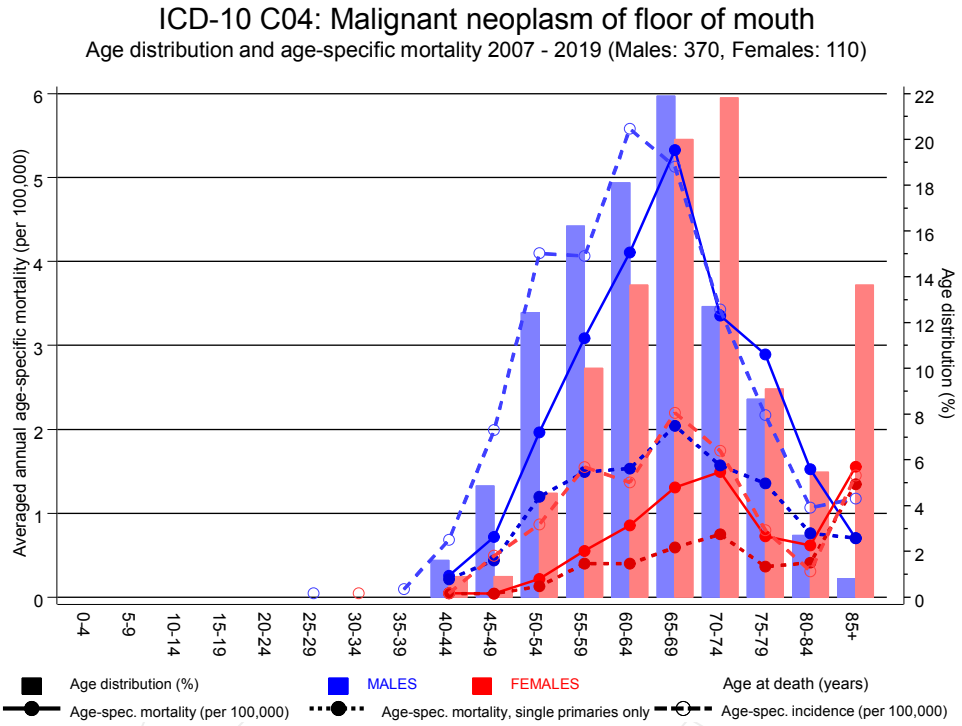


Figure 17. Distribution of age at death (bars; males: mean=59.0 yrs, median=58.4 yrs; females: mean=66.2 yrs, median=65.8 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

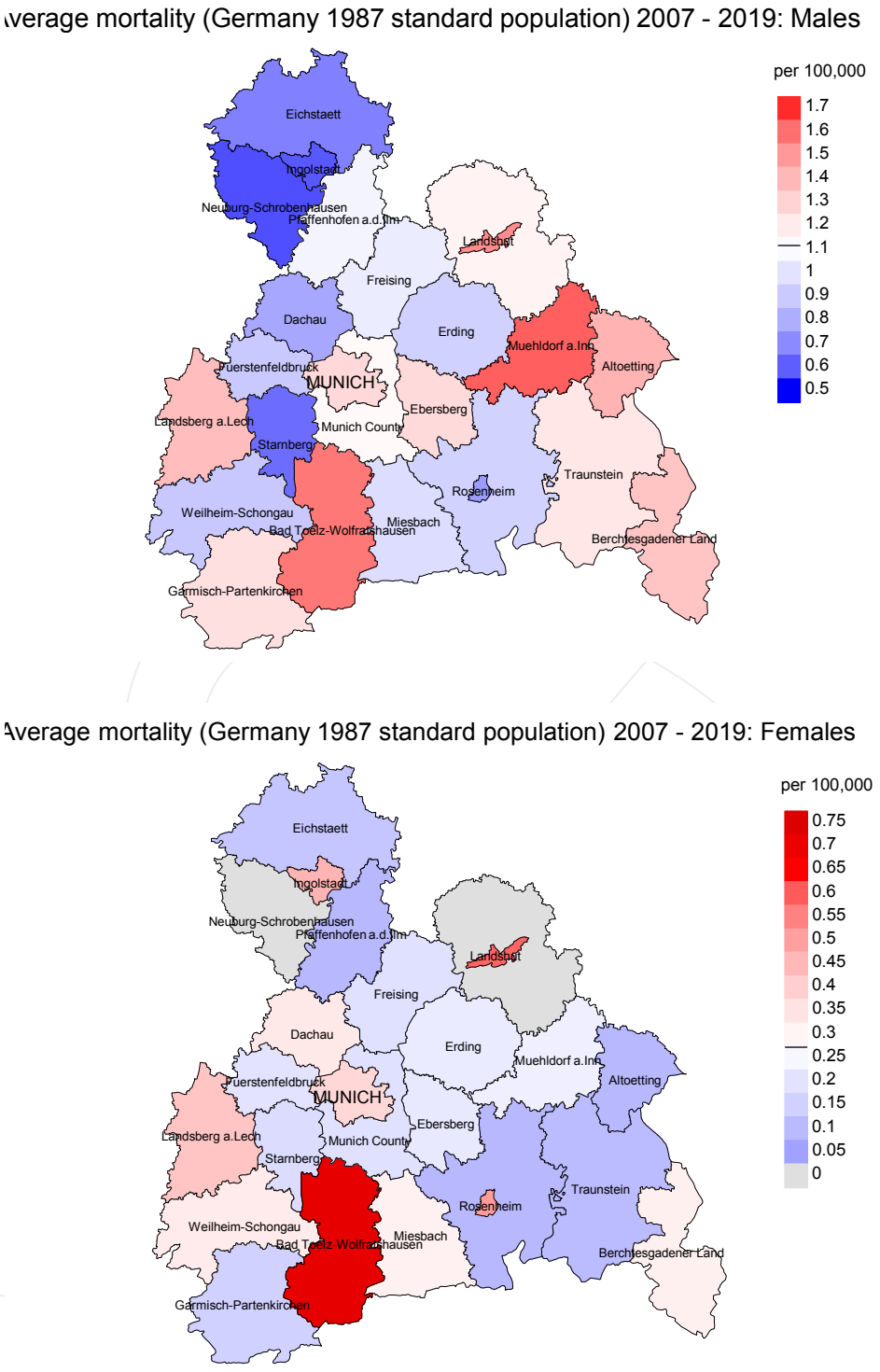
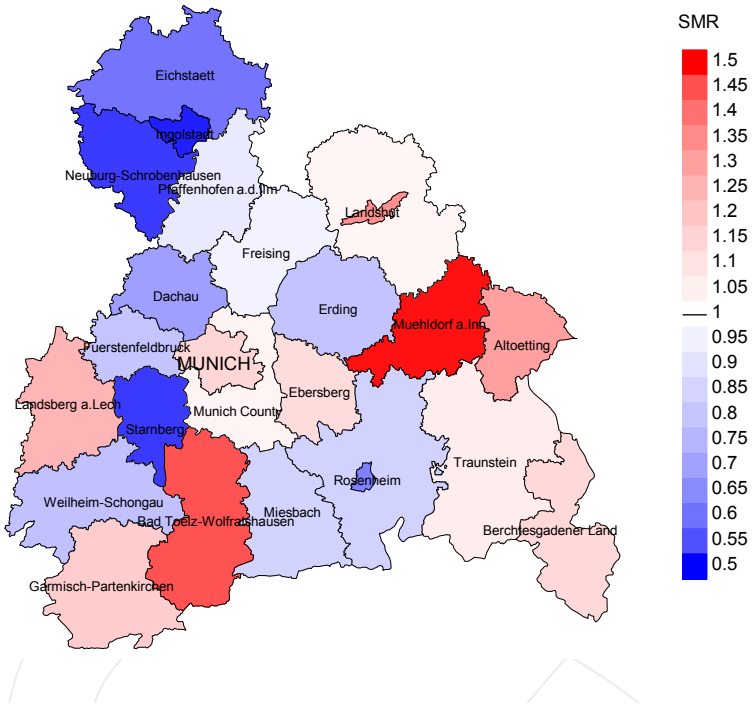


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.1/100,000 WS N=370, females 0.3/100,000 WS N=110).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 2 women died from floor of mouth 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 1.0/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

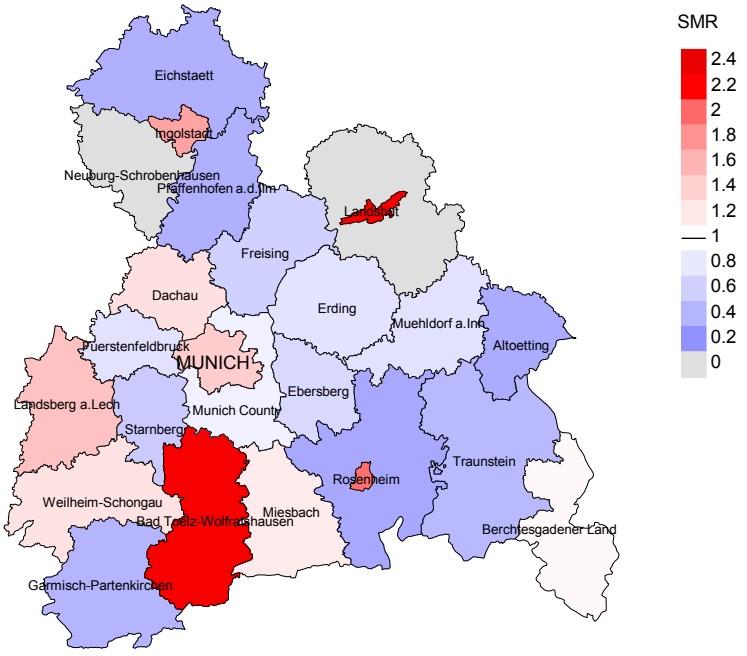


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=370, females N=110).

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 2019 a total of 2 women died from floor of mouth cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.67. Though, the value of this parameter may vary with an underlying probability of 99% between 0.03 and 3.10, and is therefore not statistically striking.

Statistical Notes

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

1. **All multiple primaries included**

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

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

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

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

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

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

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

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

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

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

Shortcuts

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

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