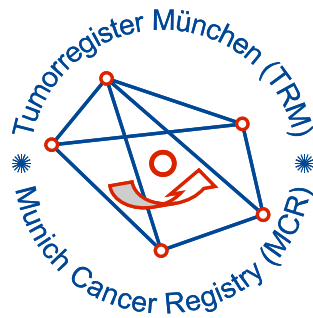


Munich Cancer Registry



- ▶ [Survival](#)
- ▶ [Selection Matrix](#)
- ▶ [Homepage](#)
- ▶ [Deutsch](#)

ICD-10 C03: Gum cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	432
Diseases	436
Creation date	12/20/2021
Database export	12/20/2021
Population	4.95 m



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

https://www.tumorregister-muenchen.de/en/facts/base/bC03__E-ICD-10-C03-Gum-cancer-incidence-and-mortality.pdf

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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
C03.-	Malignant neoplasm of gum
C03.0	Upper gum
C03.1	Lower gum
C03.9	Gum, unspecified

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	12	16.7	20.0	75.0	100.0
1999	7	21.1	19.9	42.9	85.7
2000	10	13.8	20.0	80.0	90.0
2001	8	13.5	19.9	87.5	100.0
2002	17	11.1	19.6	82.4	100.0 #
2003	21	12.0	19.7	85.7	100.0
2004	26	17.8	18.3	76.9	88.5
2005	17	17.8	18.1	82.4	100.0
2006	30	18.9	17.2	90.0	100.0
2007	22	19.4	15.7	68.2	86.4 #
2008	19	19.6	16.2	73.7	100.0
2009	22	20.4	16.6	86.4	100.0
2010	21	19.8	16.8	81.0	100.0
2011	21	19.0	16.1	61.9	100.0
2012	26	19.4	15.2	76.9	100.0
2013	31	20.0	13.7	58.1	100.0
2014	26	19.3	10.6	46.2	84.6
2015	23	18.7	10.2	52.2	95.7
2016	26	20.5	13.3	53.8	100.0
2017	22	21.1	12.2	40.9	100.0
2018	18	21.4	13.8	61.1	100.0
2019	6	21.8	9.1	66.7	100.0
2020	5	22.0	20.0	60.0	100.0 ##
1998–2020	436	22.0	20.0	69.0	97.0

436 cases diagnosed 1998-2020 are related to a total of 432 patients. Currently, in 162 (37.5 %) of these 432 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 111 / 41 / 10 (25.7 % / 9.5 % / 2.3 %) 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 retrieved from the respective headings.

How to interpret:

In 2018, a subgroup of 18 cases has been diagnosed, of which 21.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 13.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	7	58.3	14.3	18.1	85.7	100.0
1999	4	57.1	27.3	17.8	50.0	75.0
2000	5	50.0	18.8	18.1	80.0	80.0
2001	5	62.5	14.3	18.1	80.0	100.0
2002	12	70.6	9.1	17.6	91.7	100.0 #
2003	14	66.7	10.6	17.2	78.6	100.0
2004	16	61.5	17.5	15.4	68.8	87.5
2005	8	47.1	19.7	15.5	87.5	100.0
2006	17	56.7	20.5	15.1	94.1	100.0
2007	10	45.5	23.5	13.6	70.0	100.0 #
2008	8	42.1	22.6	13.2	62.5	100.0
2009	14	63.6	23.3	13.9	100.0	100.0
2010	14	66.7	22.4	13.7	71.4	100.0
2011	10	47.6	20.8	12.8	80.0	100.0
2012	13	50.0	21.0	12.1	76.9	100.0
2013	22	71.0	22.3	10.5	54.5	100.0
2014	17	65.4	21.9	6.8	58.8	88.2
2015	15	65.2	21.3	3.5	46.7	93.3
2016	16	61.5	22.9	4.8	50.0	100.0
2017	13	59.1	23.3	3.8	38.5	100.0
2018	7	38.9	23.1	7.1	57.1	100.0
2019	4	66.7	23.5	0.0	100.0	100.0
2020	3	60.0	23.6	0.0	66.7	100.0 ##
1998–2020	254	58.3	23.6	18.1	70.1	97.2

254 cases diagnosed 1998-2020 are related to a total of 254 patients. Currently, in 96 (37.8 %) of these 254 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 62 / 28 / 6 (24.4 % / 11.0 % / 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 retrieved from the respective headings.

How to interpret:

In 2018, a subgroup of 7 cases has been diagnosed, of which 23.1 % 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 further malignancies, deaths, and active follow-up (FEMALES)

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	5	41.7	20.0	22.6	60.0	100.0
1999	3	42.9	12.5	22.7	33.3	100.0
2000	5	50.0	7.7	22.5	80.0	100.0
2001	3	37.5	12.5	22.6	100.0	100.0
2002	5	29.4	14.3	22.4	60.0	100.0 #
2003	7	33.3	14.3	23.1	100.0	100.0
2004	10	38.5	18.4	22.1	90.0	90.0
2005	9	52.9	14.9	21.6	77.8	100.0
2006	13	43.3	16.7	20.0	84.6	100.0
2007	12	54.5	13.9	18.6	66.7	75.0 #
2008	11	57.9	15.7	20.6	81.8	100.0
2009	8	36.4	16.5	20.6	62.5	100.0
2010	7	33.3	16.3	21.3	100.0	100.0
2011	11	52.4	16.5	20.7	45.5	100.0
2012	13	50.0	17.2	19.7	76.9	100.0
2013	9	29.0	16.8	19.0	66.7	100.0
2014	9	34.6	15.7	16.3	22.2	77.8
2015	8	34.8	14.9	19.5	62.5	100.0
2016	10	38.5	17.1	24.2	60.0	100.0
2017	9	40.9	18.0	21.7	44.4	100.0
2018	11	61.1	19.1	20.0	63.6	100.0
2019	2	33.3	19.4	25.0		100.0
2020	2	40.0	19.8	50.0	50.0	100.0 ##
1998–2020	182	41.7	19.8	22.6	67.6	96.7

182 cases diagnosed 1998-2020 are related to a total of 178 patients. Currently, in 66 (37.1 %) of these 178 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 49 / 13 / 4 (27.5 % / 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 retrieved from the respective headings.

How to interpret:

In 2018, a subgroup of 11 cases has been diagnosed, of which 19.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 20.0 % 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
(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	7	5	0.6	0.4	0.4	0.2	0.6	0.3	0.6	0.4
1999	4	3	0.4	0.3	0.2	0.2	0.3	0.2	0.3	0.3
2000	5	5	0.4	0.4	0.3	0.2	0.4	0.4	0.4	0.4
2001	5	3	0.4	0.2	0.2	0.1	0.3	0.1	0.4	0.2
2002	12	5	0.6	0.3	0.4	0.1	0.5	0.2	0.6	0.2
2003	14	7	0.7	0.4	0.5	0.1	0.7	0.2	0.8	0.3
2004	16	10	0.9	0.5	0.5	0.1	0.7	0.2	0.8	0.4
2005	8	9	0.4	0.5	0.3	0.2	0.4	0.3	0.4	0.4
2006	17	13	0.9	0.6	0.5	0.3	0.7	0.5	1.0	0.6
2007	10	12	0.5	0.5	0.3	0.2	0.4	0.3	0.5	0.4
2008	8	11	0.4	0.5	0.2	0.2	0.3	0.3	0.4	0.4
2009	14	8	0.6	0.3	0.3	0.2	0.5	0.2	0.6	0.3
2010	14	7	0.6	0.3	0.3	0.1	0.5	0.1	0.6	0.2
2011	10	11	0.4	0.5	0.3	0.2	0.4	0.3	0.4	0.4
2012	13	13	0.6	0.6	0.3	0.2	0.5	0.3	0.5	0.4
2013	22	9	1.0	0.4	0.6	0.1	0.8	0.2	0.8	0.3
2014	17	9	0.7	0.4	0.4	0.2	0.6	0.3	0.6	0.3
2015	15	8	0.6	0.3	0.3	0.1	0.5	0.2	0.5	0.3
2016	16	10	0.7	0.4	0.3	0.2	0.5	0.3	0.6	0.3
2017	13	9	0.5	0.4	0.2	0.2	0.3	0.3	0.5	0.3
2018	7	11	0.3	0.4	0.1	0.2	0.2	0.3	0.2	0.3
2019	4	2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2020	3	2	0.1	0.1	0.1	0.0	0.1	0.0	0.1	0.0
1998-2020	254	182	0.5	0.4	0.3	0.2	0.4	0.2	0.5	0.3

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

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	12	59.9	10.7	46.0	76.3	50.5	50.7	57.8	67.9	76.3
1999	7	60.1	8.9	47.1	73.0	47.1	53.1	59.7	68.0	73.0
2000	10	61.0	9.7	47.5	77.0	49.2	51.4	60.9	66.6	74.8
2001	8	70.1	12.5	59.7	88.1	59.7	60.5	63.0	82.9	88.1
2002	17	63.5	10.6	44.8	85.8	50.0	58.5	62.9	66.0	80.8
2003	21	64.8	11.6	45.4	81.4	53.1	53.5	62.6	76.1	78.7
2004	26	67.3	14.7	34.2	85.9	44.1	60.2	72.4	78.2	84.3
2005	17	64.6	14.2	39.1	89.6	47.5	54.7	62.0	71.7	84.2
2006	30	67.3	15.2	23.9	87.7	47.5	57.0	70.3	78.7	84.6
2007	22	68.2	11.8	48.9	93.3	54.1	58.6	69.1	74.8	84.6
2008	19	68.6	10.7	53.4	97.6	53.5	61.7	68.2	72.5	82.8
2009	22	70.1	14.9	38.7	98.4	53.3	55.7	73.7	81.1	85.1
2010	21	72.7	11.2	52.0	91.8	57.8	67.9	72.9	81.5	85.2
2011	21	64.2	15.5	27.0	86.4	47.7	55.6	67.3	76.7	78.0
2012	26	68.9	10.6	51.2	89.1	55.5	60.0	69.2	76.0	84.4
2013	31	66.4	11.8	47.2	92.8	49.5	58.7	65.8	71.6	86.5
2014	26	62.1	10.5	45.9	89.0	47.5	53.5	62.9	68.5	74.1
2015	23	66.8	13.3	40.9	90.3	50.4	57.3	66.7	77.3	86.3
2016	26	66.3	13.1	45.9	89.1	46.7	54.7	67.7	77.6	81.5
2017	22	69.0	16.9	14.0	96.1	55.0	68.9	73.4	77.1	80.5
2018	18	73.2	11.9	53.3	92.0	57.1	64.1	72.8	83.6	89.2
2019	6	63.4	8.1	50.9	72.3	50.9	58.3	64.7	69.4	72.3
2020	5	76.0	11.6	59.9	87.9	59.9	68.3	81.2	82.8	87.9
1998–2020	436	66.9	12.9	14.0	98.4	50.8	57.6	67.8	76.3	84.1

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	7	57.1	9.9	46.0	76.3	46.0	50.6	57.6	60.1	76.3
1999	4	58.2	4.6	53.1	63.8	53.1	54.7	58.0	61.8	63.8
2000	5	61.6	9.3	47.5	72.7	47.5	59.5	62.2	65.9	72.7
2001	5	65.0	7.4	59.7	78.0	59.7	61.2	62.4	63.6	78.0
2002	12	63.7	11.4	44.8	85.8	50.0	58.6	63.0	67.1	80.8
2003	14	61.5	11.1	45.4	81.4	51.1	53.3	59.2	69.6	81.4
2004	16	61.2	14.5	34.2	79.8	39.9	49.1	62.4	75.3	77.5
2005	8	58.4	11.6	39.1	71.7	39.1	49.6	60.4	68.2	71.7
2006	17	65.5	16.8	23.9	87.7	46.6	54.1	66.4	78.2	86.3
2007	10	63.8	10.4	48.9	80.3	51.5	56.8	60.9	74.8	77.9
2008	8	67.8	9.9	53.5	82.8	53.5	60.4	67.2	75.4	82.8
2009	14	70.0	12.6	46.5	88.1	53.3	55.7	73.7	77.0	83.8
2010	14	68.5	10.6	52.0	91.5	55.5	58.2	70.5	75.3	76.1
2011	10	61.6	16.5	27.0	86.4	38.1	51.7	64.2	70.1	82.2
2012	13	65.3	9.9	51.2	84.4	55.1	56.0	67.5	71.8	76.0
2013	22	63.1	7.6	48.3	73.4	49.5	58.6	65.5	68.3	71.6
2014	17	62.3	9.3	45.9	74.4	47.1	54.5	62.5	68.5	74.1
2015	15	63.8	13.5	40.9	87.6	50.2	55.3	59.6	76.1	86.3
2016	16	64.4	13.4	45.9	85.6	46.4	53.4	65.2	76.8	80.6
2017	13	74.9	10.6	55.8	96.1	57.1	71.0	76.5	78.3	84.8
2018	7	75.2	12.1	57.4	89.2	57.4	64.1	77.3	86.2	89.2
2019	4	65.2	9.7	50.9	72.3	50.9	59.6	68.9	70.9	72.3
2020	3	72.0	14.4	59.9	87.9	59.9	59.9	68.3	87.9	87.9
1998–2020	254	64.8	12.1	23.9	96.1	49.5	56.2	64.5	74.0	80.3

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	5	63.9	11.6	50.5	76.3	50.5	57.5	59.2	75.8	76.3
1999	3	62.7	13.7	47.1	73.0	47.1	47.1	68.0	73.0	73.0
2000	5	60.5	11.2	50.9	77.0	50.9	51.4	56.7	66.6	77.0
2001	3	78.5	16.3	59.8	88.1	59.8	59.8	87.8	88.1	88.1
2002	5	63.0	9.7	51.2	77.3	51.2	58.5	62.0	66.0	77.3
2003	7	71.5	10.2	53.1	78.7	53.1	61.1	76.1	78.5	78.7
2004	10	77.0	8.7	61.5	85.9	61.9	75.0	78.2	84.3	85.4
2005	9	70.1	14.7	50.8	89.6	50.8	59.1	68.9	83.7	89.6
2006	13	69.6	13.1	48.2	86.0	51.2	57.1	75.6	79.2	83.2
2007	12	71.8	12.1	50.1	93.3	62.2	63.3	70.9	79.1	88.2
2008	11	69.2	11.7	53.4	97.6	55.7	62.2	68.2	72.5	75.8
2009	8	70.2	19.4	38.7	98.4	38.7	55.7	73.6	83.1	98.4
2010	7	81.1	7.4	70.8	91.8	70.8	72.1	82.5	85.2	91.8
2011	11	66.5	14.9	34.5	84.1	47.7	55.6	69.2	77.1	77.2
2012	13	72.5	10.5	55.7	89.1	59.4	64.9	71.2	80.9	87.4
2013	9	74.5	16.4	47.2	92.8	47.2	59.2	84.8	86.7	92.8
2014	9	61.8	13.0	47.5	89.0	47.5	51.4	63.3	66.4	89.0
2015	8	72.5	11.6	58.7	90.3	58.7	61.4	72.2	81.8	90.3
2016	10	69.3	12.8	48.3	89.1	51.2	60.6	71.2	79.2	85.3
2017	9	60.5	21.2	14.0	75.3	14.0	55.0	71.8	73.1	75.3
2018	11	72.0	12.3	53.3	92.0	57.1	60.4	72.0	83.6	87.4
2019	2	59.7	2.0	58.3	61.1	58.3	58.3	59.7	61.1	61.1
2020	2	82.0	1.1	81.2	82.8	81.2	81.2	82.0	82.8	82.8
1998–2020	182	69.9	13.5	14.0	98.4	51.4	59.4	71.3	79.6	86.5

Table 4

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

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0–4									
5–9									
10–14	1	0.3	0.3			0.0	1	0.8	0.8
15–19	0	0.0	0.3			0.0			0.8
20–24	0	0.0	0.3			0.0			0.8
25–29	1	0.3	0.7	1	0.6	0.6			0.8
30–34	1	0.3	1.0			0.6	1	0.8	1.6
35–39	2	0.7	1.7			0.6	2	1.6	3.3
40–44	1	0.3	2.1	1	0.6	1.2			3.3
45–49	15	5.2	7.3	11	6.6	7.8	4	3.3	6.6
50–54	24	8.3	15.6	16	9.6	17.5	8	6.6	13.1
55–59	41	14.2	29.9	29	17.5	34.9	12	9.8	23.0
60–64	25	8.7	38.5	13	7.8	42.8	12	9.8	32.8
65–69	48	16.7	55.2	31	18.7	61.4	17	13.9	46.7
70–74	49	17.0	72.2	26	15.7	77.1	23	18.9	65.6
75–79	28	9.7	81.9	19	11.4	88.6	9	7.4	73.0
80–84	24	8.3	90.3	9	5.4	94.0	15	12.3	85.2
85+	28	9.7	100.0	10	6.0	100.0	18	14.8	100.0
All ages	288	100.0		166	100.0		122	100.0	

Table 5

Age-specific incidence and proportion of all cancers
for period 2007–2020

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0– 4						
5– 9						
10–14		1		0.1		0.8
15–19						
20–24						
25–29	1		0.0		0.1	
30–34		1		0.0		0.0
35–39		2		0.1		0.1
40–44	1		0.0		0.0	
45–49	11	4	0.4	0.2	0.2	0.0
50–54	16	8	0.6	0.3	0.2	0.1
55–59	29	12	1.4	0.6	0.2	0.1
60–64	13	12	0.7	0.6	0.1	0.1
65–69	31	17	1.9	0.9	0.1	0.1
70–74	26	23	1.7	1.3	0.1	0.1
75–79	19	9	1.6	0.6	0.1	0.0
80–84	9	15	1.2	1.4	0.1	0.1
85+	10	18	2.1	1.7	0.1	0.1
All ages	166	122			0.1	0.1
Incidence						
Raw			0.5	0.4		
WS			0.3	0.2		
ES			0.4	0.2		
BRD–S			0.5	0.3		

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).

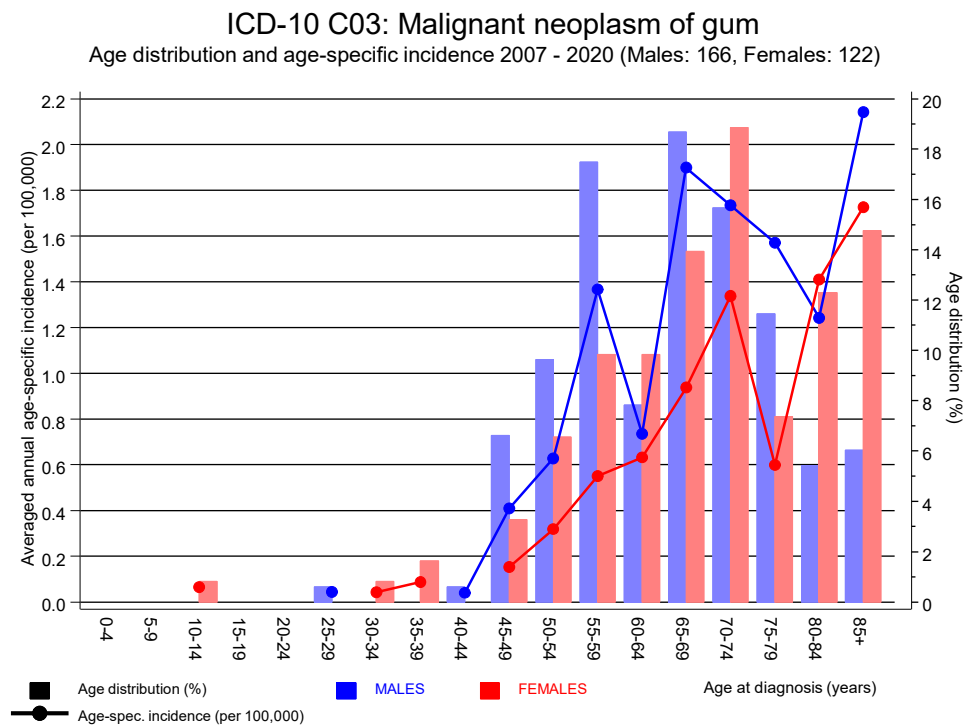


Figure 6. Age distribution (males: mean=66.2 yrs, median=67.4 yrs; females: mean=70.0 yrs, median=70.9 yrs) and age-specific incidence.

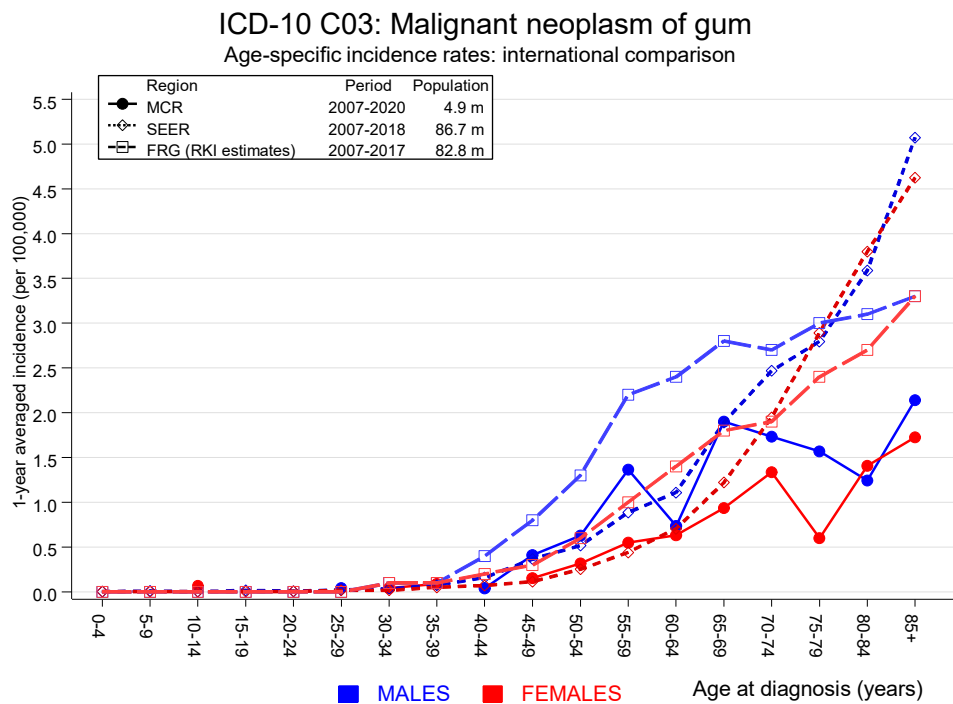


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Estimated age-specific patient population of Germany, latest update: 16 March 2021. German Centre for Cancer Registry Data, Robert Koch Institute (RKI), based on data of the population based cancer registries. <http://www.krebsdaten.de>. Last access: 08/17/2021
 Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 21 Regs Research Data, released April 2021, based on the November 2020 submission. <http://www.seer.cancer.gov>.

Table 7a

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

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	1	0.1	7.5	0.2	42.0	9.1	
C09-C10 Oropharynx	2	0.2	11.8	1.4	42.7 #	19.1	
C12-C13 Hypopharynx	5	0.1	54.2	17.6	126.5 #	51.2	
C14 ENT cancer	1	0.0	271.3	6.9	1512 #	10.4	100.0
C15 Oesophagus	7	0.3	23.7	9.5	48.8 #	70.0	14.3
C16 Stomach	1	0.5	2.0	0.1	11.1	5.2	
C18 Colon	3	1.2	2.4	0.5	7.1	18.3	
C19-C20 Rectum	1	0.7	1.3	0.0	7.5	2.7	
C22 Liver	1	0.4	2.5	0.1	13.9	6.3	
C25 Pancreas	1	0.5	1.9	0.0	10.7	5.0	
C30-C31 Sinuses	2	0.0	79.2	9.6	286.0 #	20.6	
C32 Larynx	2	0.1	13.6	1.6	49.1 #	19.3	
C33-C34 Lung	6	1.6	3.7	1.4	8.1 #	45.8	
C38,C45 Mesothelioma	1	0.1	10.8	0.3	60.0	9.5	
C40-C41 Bone	1	0.0	81.1	2.1	451.7 #	10.3	
C43 Malign. melanoma	1	0.6	1.6	0.0	8.7	3.7	
C46,C49 Soft tissue	2	0.1	25.9	3.1	93.6 #	20.1	
C61 Prostate	5	3.9	1.3	0.4	3.0	11.8	20.0
C64 Kidney	1	0.5	2.1	0.1	11.5	5.4	
C67 Bladder	3	0.6	5.1	1.0	14.8 #	25.1	
C70-C72 CNS cancer	1	0.2	5.6	0.1	31.1	8.6	
C91-C96 Leukaemia	1	0.2	5.2	0.1	29.1	8.4	
Not observed	0	1.7	0.0	0.0	2.1	-18.0	
All further malignancies	49	13.8	3.6	2.6	4.7 #	367.9	6.1
Patients		252					
Median age at next malignancy (years)		67.9					
Person-years		958					
Mean observation time (years)		3.8					
Median observation time (years)		1.9					

The occurrence of further specified malignancy is statistically significant.

Table 7b

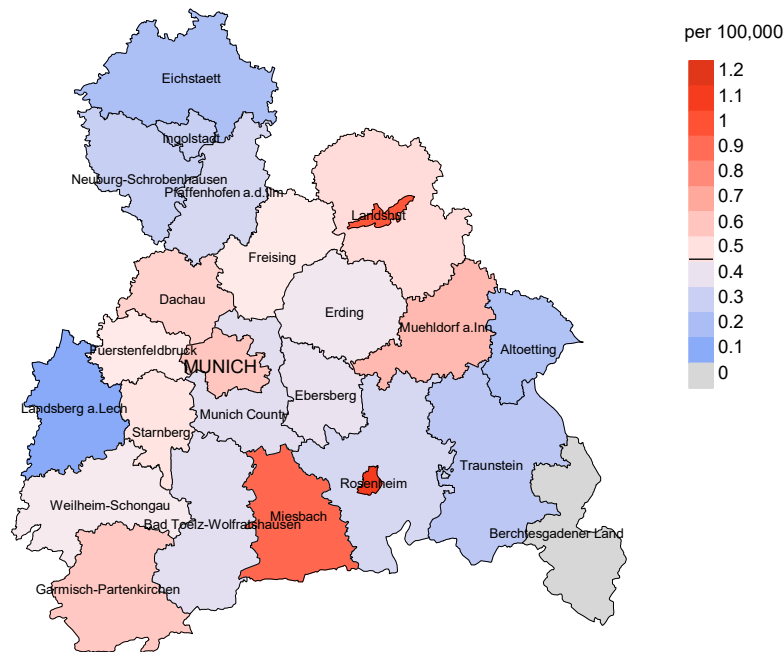
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2020

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	1	0.0	126.1	3.2	702.7 #	12.8	
C03-C06 Oral cavity	8	0.1	143.9	62.1	283.5 #	102.6	
C09-C10 Oropharynx	4	0.0	107.5	29.3	275.3 #	51.2	
C12-C13 Hypopharynx	1	0.0	106.7	2.7	594.4 #	12.8	
C14 ENT cancer	1	0.0	562.4	14.2	3133 #	12.9	100.0
C15 Oesophagus	1	0.1	15.3	0.4	85.1	12.1	
C18 Colon	4	1.0	3.9	1.1	10.0 #	38.5	
C19-C20 Rectum	1	0.4	2.5	0.1	13.9	7.8	
C22 Liver	1	0.1	7.8	0.2	43.6	11.3	
C25 Pancreas	1	0.5	2.0	0.1	11.3	6.6	
C30-C31 Sinuses	1	0.0	74.4	1.9	414.7 #	12.7	
C33-C34 Lung	3	0.7	4.1	0.8	12.0	29.3	
C40-C41 Bone	2	0.0	222.5	27.0	803.9 #	25.7	50.0
C43 Malign. melanoma	1	0.4	2.8	0.1	15.9	8.4	
C46,C49 Soft tissue	1	0.1	17.7	0.4	98.6	12.2	
C50 Breast	7	2.8	2.5	1.0	5.1 #	54.2	
C51 Vulva	1	0.1	9.0	0.2	50.2	11.5	
C53 Cervix uteri	1	0.1	9.1	0.2	50.7	11.5	100.0
C67 Bladder	1	0.2	4.6	0.1	25.9	10.1	
Not observed	0	3.1	0.0	0.0	1.2	-40.6	
All further malignancies	41	9.8	4.2	3.0	5.7 #	403.4	7.3
Patients		176					
Median age at next malignancy (years)		74.7					
Person-years		774					
Mean observation time (years)		4.4					
Median observation time (years)		2.7					

The occurrence of further specified malignancy is statistically significant.

Average incidence (Germany 1987 standard population) 2007 - 2020: Males



Average incidence (Germany 1987 standard population) 2007 - 2020: Females

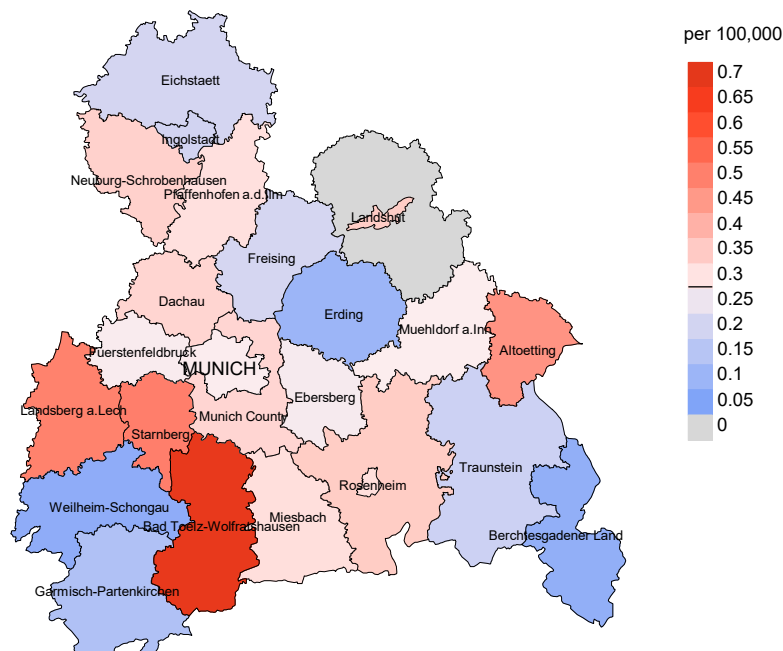
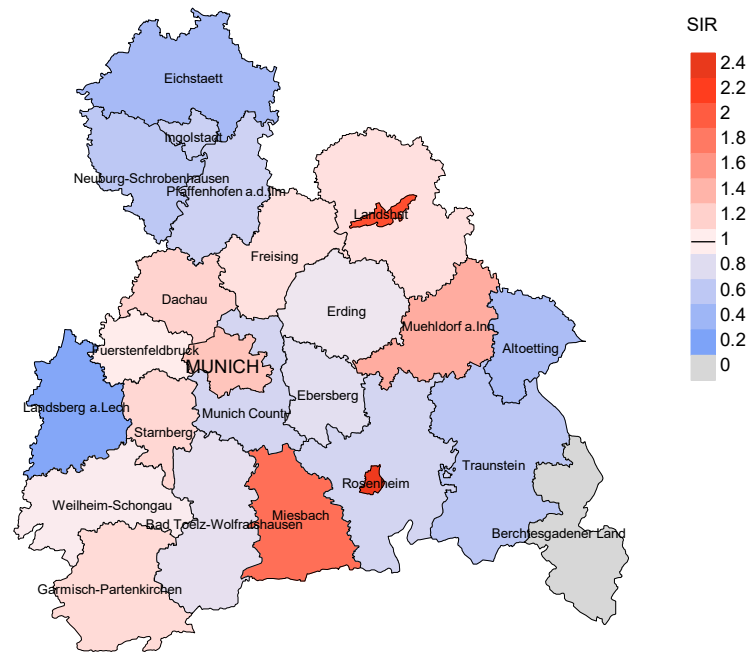


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.5/100,000 WS N=166, females 0.3/100,000 WS N=122).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 4 women were identified with newly diagnosed gum 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 1.0/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

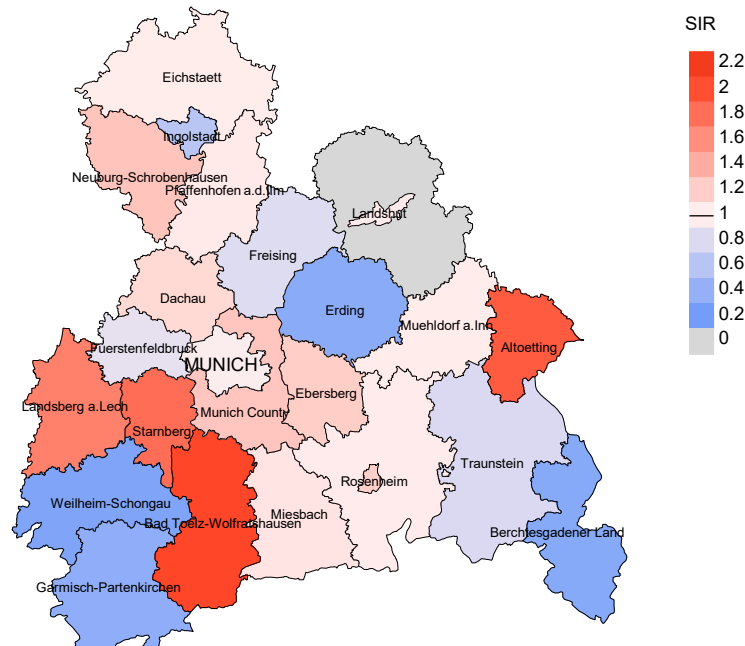


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=166, females N=122).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2020 a total of 4 women were identified with newly diagnosed gum cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.20. Though, the value of this parameter may vary with an underlying probability of 99% between 0.20 and 3.79, and is therefore not statistically striking.

MORTALITY

Table 9a

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

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	12	100.0	9	75.0	88.9
1999	7	85.7	3	42.9	100.0
2000	10	90.0	8	80.0	87.5
2001	8	100.0	7	87.5	100.0
2002	17	100.0	14	82.4	100.0
2003	21	100.0	18	85.7	94.4
2004	26	88.5	20	76.9	90.0
2005	17	100.0	14	82.4	92.9
2006	30	100.0	27	90.0	85.2
2007	22	86.4	15	68.2	100.0
2008	19	100.0	14	73.7	92.9
2009	22	100.0	19	86.4	100.0
2010	21	100.0	17	81.0	88.2
2011	21	100.0	13	61.9	100.0
2012	26	100.0	20	76.9	85.0
2013	31	100.0	18	58.1	94.4
2014	26	84.6	12	46.2	91.7
2015	23	95.7	12	52.2	100.0
2016	26	100.0	14	53.8	100.0
2017	22	100.0	9	40.9	66.7
2018	18	100.0	11	61.1	63.6
2019	6	100.0	4	66.7	100.0
2020	5	100.0	3	60.0	100.0
1998–2020	436	97.0	301	69.0	91.7

Table 9b

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

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	12			
1999	7	6	1	14.3
2000	10	5		
2001	8	10		
2002	17	9	1	5.9
2003	21	9	3	14.3
2004	26	14	4	15.4
2005	17	14	2	11.8
2006	30	17	7	23.3
2007	22	12	4	18.2
2008	19	17	3	15.8
2009	22	20	4	18.2
2010	21	22	6	28.6
2011	21	17	4	19.0
2012	26	15	5	19.2
2013	31	18	4	12.9
2014	26	19	2	7.7
2015	23	13	1	4.3
2016	26	28	7	26.9
2017	22	25	2	9.1
2018	18	16	2	11.1
2019	6	17	1	16.7
2020	5	28	2	40.0
1998–2020	436	351	65	14.9

Table 9c

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

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1999	6	66.7	33.3	66.7
2000	5	80.0	20.0	80.0
2001	10	80.0	20.0	100.0
2002	9	33.3	66.7	55.6
2003	9	55.6	44.4	77.8
2004	14	71.4	28.6	78.6
2005	14	92.9	7.1	100.0
2006	17	64.7	35.3	85.7
2007	12	66.7	33.3	90.9
2008	17	76.5	23.5	82.4
2009	20	80.0	20.0	85.0
2010	22	90.9	9.1	95.2
2011	17	70.6	29.4	81.3
2012	15	86.7	13.3	93.3
2013	18	77.8	22.2	82.4
2014	19	63.2	36.8	68.4
2015	13	69.2	30.8	76.9
2016	28	89.3	10.7	92.9
2017	25	52.0	48.0	66.7
2018	16	56.3	43.8	81.8
2019	17	35.3	64.7	100.0
2020	28	35.7	64.3	73.1
1999–2020	351	67.8	32.2	82.5

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
1999	4	57.4	56.8	86.3	56.8
2000	4	64.0	64.0		64.0
2001	7	66.7	65.3	73.6	66.7
2002	3	68.1	60.6	71.3	60.6
2003	5	62.4	63.2	60.2	62.4
2004	10	72.0	72.0	69.3	71.9
2005	6	73.1	73.1		73.1
2006	13	64.0	64.0	61.6	61.6
2007	6	60.8	60.6	70.7	60.6
2008	11	67.9	66.9	78.8	67.4
2009	11	69.9	69.6	75.4	69.6
2010	13	72.1	73.7	68.4	73.7
2011	10	66.8	60.9	71.4	60.9
2012	11	67.9	67.9		67.9
2013	11	75.2	70.5	84.8	70.5
2014	11	73.3	72.9	73.4	73.3
2015	6	65.9	65.5	66.2	67.2
2016	18	57.6	56.5	64.2	57.2
2017	15	75.7	77.0	73.3	77.0
2018	7	77.7	70.5	77.7	70.3
2019	7	71.3	73.0	71.3	73.0
2020	19	70.5	66.8	73.4	65.2
1999–2020	208	68.4	67.3	72.8	67.5

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
1999	2	66.7	49.4	84.0	49.4
2000	1	88.3		88.3	
2001	3	61.8	57.7	71.9	61.8
2002	6	82.9	61.8	87.6	79.0
2003	4	74.1	75.5	72.7	74.1
2004	4	74.5	78.4	64.9	78.4
2005	8	80.9	78.1	92.2	80.9
2006	4	80.6	83.4	76.7	83.4
2007	6	78.5	78.5	80.9	78.5
2008	6	81.7	78.3	83.9	78.3
2009	9	83.9	72.9	93.0	76.9
2010	9	86.1	85.0	94.7	85.0
2011	7	75.1	74.3	84.3	75.1
2012	4	84.2	84.0	84.2	82.7
2013	7	72.7	68.3	94.2	68.3
2014	8	85.0	78.9	90.0	78.9
2015	7	80.2	80.2	77.0	80.2
2016	10	81.5	81.5		81.5
2017	10	85.8	80.3	87.0	85.8
2018	9	68.0	64.9	75.6	64.9
2019	10	78.6	77.5	79.1	77.5
2020	9	78.4	74.4	87.2	77.9
1999–2020	143	80.7	76.4	84.5	78.4

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
1999	3	0.3	0.75	0.2	0.75	0.2	0.77	0.2	0.75
2000	4	0.4	0.80	0.2	0.71	0.3	0.77	0.3	0.76
2001	6	0.5	1.20	0.3	1.24	0.4	1.29	0.6	1.44
2002	1	0.1	0.08	0.0	0.08	0.0	0.07	0.0	0.07
2003	2	0.1	0.14	0.1	0.13	0.1	0.11	0.1	0.11
2004	8	0.4	0.50	0.2	0.45	0.3	0.51	0.5	0.54
2005	6	0.3	0.75	0.2	0.57	0.3	0.69	0.4	0.90
2006	9	0.5	0.53	0.3	0.60	0.4	0.58	0.5	0.57
2007	4	0.2	0.40	0.1	0.43	0.2	0.40	0.2	0.34
2008	9	0.4	1.13	0.2	1.20	0.3	1.14	0.4	1.05
2009	10	0.4	0.71	0.2	0.73	0.3	0.67	0.4	0.64
2010	12	0.5	0.86	0.2	0.75	0.4	0.78	0.6	0.93
2011	6	0.3	0.60	0.2	0.54	0.2	0.57	0.2	0.58
2012	11	0.5	0.85	0.3	0.83	0.4	0.79	0.4	0.84
2013	8	0.3	0.36	0.2	0.28	0.2	0.32	0.3	0.35
2014	8	0.3	0.47	0.2	0.39	0.2	0.42	0.3	0.46
2015	4	0.2	0.27	0.1	0.29	0.1	0.28	0.2	0.28
2016	15	0.6	0.94	0.4	1.14	0.5	1.10	0.6	0.96
2017	9	0.4	0.69	0.1	0.70	0.2	0.70	0.3	0.69
2018	4	0.2	0.57	0.1	0.61	0.1	0.60	0.1	0.57
2019	4	0.2	1.00	0.1	0.72	0.1	0.78	0.1	0.98
2020	8	0.3	2.67	0.2	2.70	0.2	2.54	0.3	2.72
1999-2020	151	0.3	0.61	0.2	0.58	0.3	0.59	0.3	0.61

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
1999	1	0.1	0.33	0.1	0.44	0.1	0.40	0.1	0.39
2000									
2001	2	0.2	0.67	0.1	1.31	0.1	1.04	0.1	0.94
2002	2	0.1	0.40	0.1	0.44	0.1	0.45	0.1	0.43
2003	3	0.2	0.43	0.1	0.38	0.1	0.38	0.1	0.41
2004	2	0.1	0.20	0.0	0.22	0.1	0.21	0.1	0.20
2005	7	0.4	0.78	0.1	0.68	0.2	0.71	0.3	0.75
2006	2	0.1	0.15	0.0	0.05	0.0	0.07	0.1	0.12
2007	4	0.2	0.33	0.1	0.25	0.1	0.29	0.1	0.28
2008	4	0.2	0.36	0.1	0.23	0.1	0.25	0.1	0.30
2009	6	0.3	0.75	0.1	0.71	0.2	0.68	0.2	0.68
2010	8	0.3	1.14	0.1	1.36	0.1	1.27	0.2	1.07
2011	6	0.3	0.55	0.1	0.43	0.1	0.46	0.2	0.44
2012	2	0.1	0.15	0.0	0.07	0.0	0.10	0.1	0.13
2013	6	0.3	0.67	0.1	0.80	0.2	0.75	0.2	0.71
2014	4	0.2	0.44	0.1	0.24	0.1	0.28	0.1	0.37
2015	5	0.2	0.63	0.1	0.45	0.1	0.47	0.1	0.51
2016	10	0.4	1.00	0.1	0.56	0.2	0.65	0.3	0.79
2017	4	0.2	0.44	0.1	0.22	0.1	0.28	0.1	0.32
2018	5	0.2	0.45	0.1	0.65	0.2	0.59	0.2	0.54
2019	2	0.1	1.00	0.0	0.32	0.0	0.47	0.1	0.82
2020	2	0.1	1.00	0.0	2.34	0.0	1.94	0.1	1.27
1999–2020	87	0.2	0.49	0.1	0.40	0.1	0.42	0.1	0.44

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34									
35-39	1	0.6	0.6			0.0	1	1.5	1.5
40-44	2	1.1	1.7	1	0.9	0.9	1	1.5	2.9
45-49	8	4.4	6.1	6	5.4	6.3	2	2.9	5.9
50-54	9	5.0	11.1	9	8.0	14.3			5.9
55-59	17	9.4	20.6	13	11.6	25.9	4	5.9	11.8
60-64	16	8.9	29.4	12	10.7	36.6	4	5.9	17.6
65-69	33	18.3	47.8	25	22.3	58.9	8	11.8	29.4
70-74	26	14.4	62.2	16	14.3	73.2	10	14.7	44.1
75-79	21	11.7	73.9	15	13.4	86.6	6	8.8	52.9
80-84	16	8.9	82.8	7	6.3	92.9	9	13.2	66.2
85+	31	17.2	100.0	8	7.1	100.0	23	33.8	100.0
All ages	180	100.0		112	100.0		68	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(incl. multiple malignancies)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39		1			0.0	0.50		0.2
40-44	1	1	0.0	1.00	0.0	1.00	0.2	0.1
45-49	6	2	0.2	0.55	0.1	0.50	0.4	0.1
50-54	9		0.4	0.56			0.3	
55-59	13	4	0.6	0.45	0.2	0.33	0.3	0.1
60-64	12	4	0.7	0.92	0.2	0.33	0.2	0.1
65-69	25	8	1.5	0.81	0.4	0.47	0.3	0.1
70-74	16	10	1.1	0.62	0.6	0.43	0.1	0.1
75-79	15	6	1.2	0.79	0.4	0.67	0.1	0.1
80-84	7	9	1.0	0.78	0.8	0.60	0.1	0.1
85+	8	23	1.7	0.80	2.2	1.28	0.1	0.2
All ages	112	68					0.2	0.1
Mortality								
Raw			0.3	0.67	0.2	0.56		
WS			0.2	0.66	0.1	0.43		
ES			0.3	0.66	0.1	0.46		
BRD-S			0.3	0.68	0.1	0.49		
PYLL-70								
per 100,000			2.2		0.7			
ES			1.9		0.6			
AYLL-70			9.6		10.3			

Table 14a

Further malignancies in deaths in period 1999-2020
MALES

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	4	4.4					4	100.0
C07-C08 Salivary gland	1	1.1	1	100.0				
C09-C10 Oropharynx	10	11.0	8	80.0	1	10.0	1	10.0
C12-C13 Hypopharynx	6	6.6	3	50.0			3	50.0
C14 ENT cancer	1	1.1					1	100.0
C15 Oesophagus	7	7.7			1	14.3	6	85.7
C16 Stomach	1	1.1					1	100.0
C18 Colon	2	2.2	1	50.0	1	50.0		
C19-C20 Rectum	6	6.6	4	66.7			2	33.3
C22 Liver	2	2.2			2	100.0		
C25 Pancreas	1	1.1					1	100.0
C30-C31 Sinuses	5	5.5	2	40.0			3	60.0
C32 Larynx	3	3.3	1	33.3	1	33.3	1	33.3
C33-C34 Lung	14	15.4	3	21.4			11	78.6
C38,C45 Mesothelioma	1	1.1					1	100.0
C43 Malign. melanoma	2	2.2	1	50.0			1	50.0
C44 Skin others	3	3.3	1	33.3	1	33.3	1	33.3
C46,C49 Soft tissue	2	2.2	2	100.0				
C61 Prostate	5	5.5	3	60.0			2	40.0
C64 Kidney	2	2.2	1	50.0			1	50.0
C67 Bladder	5	5.5	4	80.0			1	20.0
C70-C72 CNS cancer	1	1.1					1	100.0
C76-C79 CUP	1	1.1	1	100.0				
C82-C85 NHL	3	3.3	2	66.7			1	33.3
C91-C96 Leukaemia	2	2.2					2	100.0
All further malignancies	91	100.0	39	42.9	7	7.7	45	49.5

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 1999-2020
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	1	2.2					1	100.0
C03-C06 Oral cavity	4	8.9					4	100.0
C09-C10 Oropharynx	3	6.7					3	100.0
C14 ENT cancer	1	2.2					1	100.0
C15 Oesophagus	2	4.4	1	50.0			1	50.0
C16 Stomach	1	2.2	1	100.0				
C18 Colon	2	4.4					2	100.0
C19-C20 Rectum	1	2.2					1	100.0
C22 Liver	1	2.2			1	100.0		
C25 Pancreas	1	2.2					1	100.0
C33-C34 Lung	4	8.9					4	100.0
C40-C41 Bone	1	2.2					1	100.0
C44 Skin others	7	15.6	4	57.1	1	14.3	2	28.6
C46,C49 Soft tissue	1	2.2					1	100.0
C50 Breast	8	17.8	4	50.0			4	50.0
C53 Cervix uteri	2	4.4	1	50.0			1	50.0
C54 Corpus uteri	2	4.4	1	50.0			1	50.0
C67 Bladder	2	4.4	1	50.0			1	50.0
C76-C79 CUP	1	2.2					1	100.0
All further malignancies	45	100.0	13	28.9	2	4.4	30	66.7

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.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39								
40-44	1	1	0.0	1.00	0.0	1.00	0.2	0.1
45-49	5	1	0.2	0.50	0.0	0.50	0.4	0.1
50-54	7		0.3	0.50			0.3	
55-59	11	3	0.5	0.50	0.1	0.27	0.3	0.1
60-64	9	2	0.5	0.90	0.1	0.29	0.2	0.0
65-69	16	6	1.0	0.89	0.3	0.43	0.2	0.1
70-74	14	9	0.9	0.74	0.5	0.50	0.2	0.1
75-79	11	5	0.9	0.85	0.3	0.71	0.1	0.1
80-84	5	7	0.7	0.71	0.7	0.88	0.1	0.1
85+	7	18	1.5	1.00	1.7	1.20	0.1	0.2
All ages	86	52					0.2	0.1
Mortality								
Raw			0.3	0.70	0.2	0.57		
WS			0.1	0.68	0.1	0.40		
ES			0.2	0.69	0.1	0.44		
BRD-S			0.2	0.70	0.1	0.49		
PYLL-70								
per 100,000			1.8		0.4			
ES			1.5		0.3			
AYLL-70			10.4		9.0			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39								
40-44	1	1	0.0	1.00	0.0	1.00	0.2	0.1
45-49	5	1	0.2	0.56	0.0	0.50	0.4	0.1
50-54	7		0.3	0.54			0.3	
55-59	8	2	0.4	0.42	0.1	0.20	0.2	0.1
60-64	5	2	0.3	0.63	0.1	0.33	0.1	0.1
65-69	11	5	0.7	0.73	0.3	0.45	0.2	0.1
70-74	9	5	0.6	0.53	0.3	0.38	0.1	0.1
75-79	8	4	0.7	0.62	0.3	0.57	0.1	0.1
80-84	2	7	0.3	0.33	0.7	1.00	0.0	0.1
85+	5	13	1.1	0.83	1.2	1.00	0.1	0.1
All ages	61	40					0.1	0.1
Mortality								
Raw			0.2	0.56	0.1	0.51		
WS			0.1	0.56	0.0	0.37		
ES			0.1	0.56	0.1	0.40		
BRD-S			0.2	0.56	0.1	0.45		
PYLL-70								
per 100,000			1.5		0.4			
ES			1.3		0.3			
AYLL-70			11.6		9.3			

* See corresponding tables with multiple malignancies.

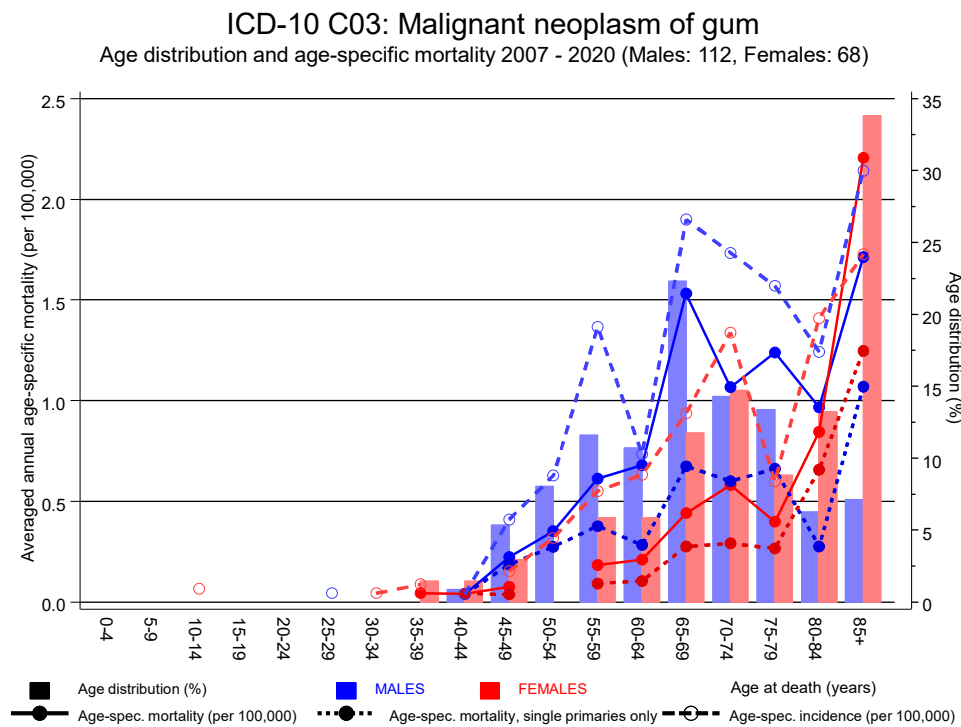
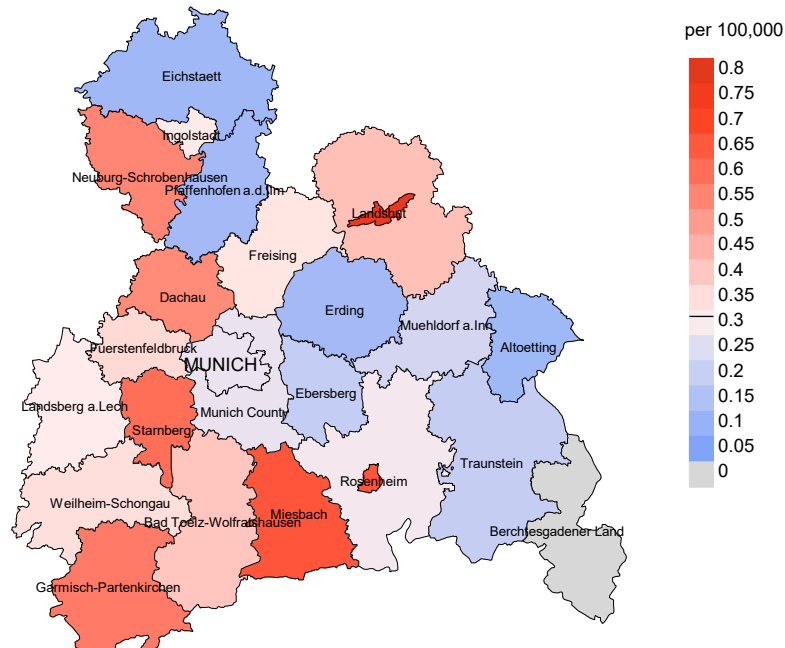


Figure 17. Distribution of age at death (bars; males: mean=62.9 yrs, median=62.5 yrs; females: mean=72.0 yrs, median=72.9 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (Germany 1987 standard population) 2007 - 2020: Males



Average mortality (Germany 1987 standard population) 2007 - 2020: Females

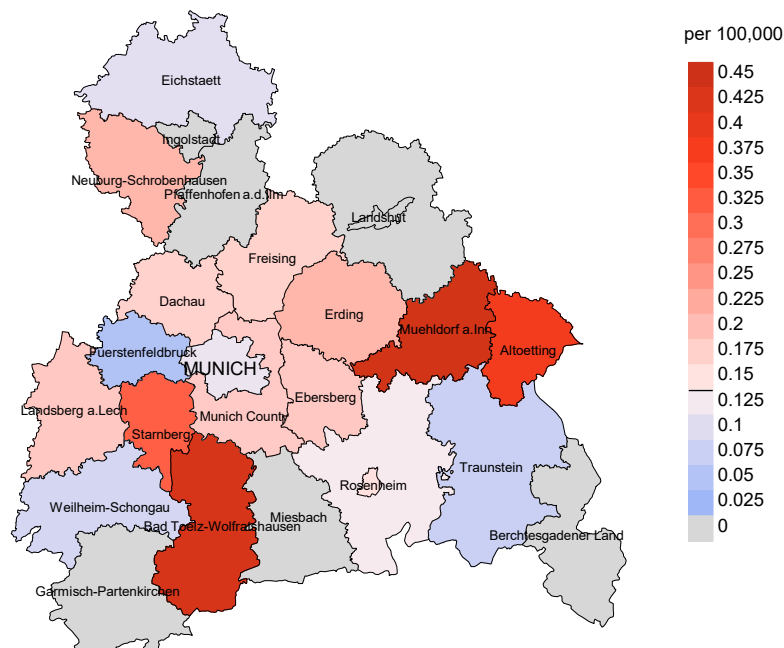
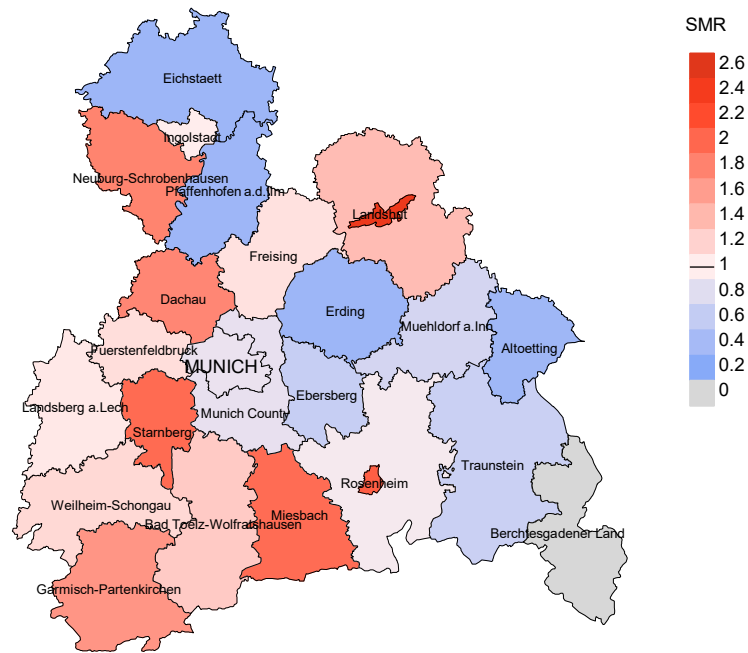


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.3/100,000 WS N=112, females 0.1/100,000 WS N=68).

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 3 women died from gum 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 0.8/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

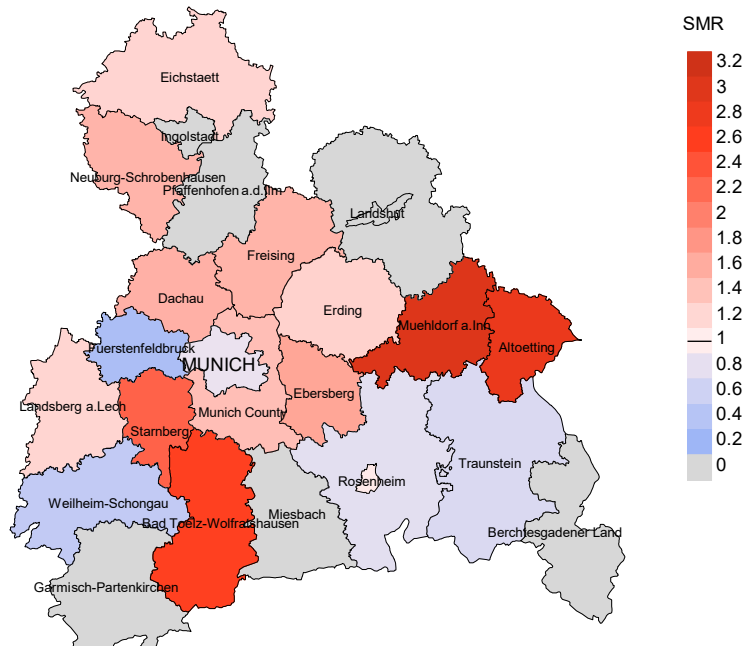


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=112, females N=68).

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 3 women died from gum cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.66. Though, the value of this parameter may vary with an underlying probability of 99% between 0.19 and 6.09, 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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