

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C06: Mouth cancer NOS

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	450
Diseases	451
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m



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

https://www.tumorregister-muenchen.de/en/facts/base/bC06__E-ICD-10-C06-Mouth-cancer-NOS-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, August 2018

[#] 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
C06.-	Malignant neoplasm of other and unspecified parts of mouth
C06.0	Cheek mucosa
C06.1	Vestibule of mouth
C06.2	Retromolar area
C06.8	Overlapping lesion of other and unspecified parts of mouth
C06.9	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	13			0.0	16.0	69.2	100.0
1999	16			13.8	16.3	81.3	100.0
2000	18	1	5.6	10.6	16.1	88.9	100.0
2001	11	2	18.2	10.3	16.0	81.8	100.0
2002	29	10	34.5	14.9	15.6	86.2	96.6 #
2003	17	2	11.8	14.4	15.2	64.7	100.0
2004	22	2	9.1	15.1	15.6	72.7	100.0
2005	11	1	9.1	14.6	14.4	81.8	100.0
2006	21			14.6	14.2	57.1	100.0
2007	27			13.5	14.1	59.3	88.9 #
2008	24			14.4	12.0	62.5	79.2
2009	34			15.6	10.9	52.9	70.6
2010	31	4	12.9	15.3	8.7	67.7	80.6
2011	27			16.6	7.8	55.6	85.2
2012	29			16.7	5.7	34.5	79.3
2013	55	1	1.8	17.4	5.2	41.8	74.5
2014	34	1	2.9	17.2	1.6	52.9	82.4
2015	16			17.0	0.0	25.0	93.8
2016	16	1	6.3	17.3	0.0	25.0	68.8 ##
1998-2016	451	25	5.5	17.3	16.0	58.5	86.5

451 cases diagnosed 1998-2016 are related to a total of 450 patients. Currently, in 157 (34.9 %) of these 450 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 121 / 27 / 9 (26.9 % / 6.0 % / 2.0 %) 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 2014, a subgroup of 34 cases has been diagnosed, of which 17.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 1.6 % 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	6	46.2			0.0	17.7	66.7	100.0
1999	8	50.0			14.3	18.2	75.0	100.0
2000	14	77.8	1	7.1	10.7	17.9	92.9	100.0
2001	7	63.6	2	28.6	11.4	17.5	100.0	100.0
2002	17	58.6	6	35.3	13.5	17.1	88.2	94.1 #
2003	9	52.9	1	11.1	13.1	15.6	55.6	100.0
2004	15	68.2	2	13.3	14.5	16.3	60.0	100.0
2005	5	45.5			13.6	14.8	80.0	100.0
2006	9	42.9			13.3	14.6	77.8	100.0
2007	9	33.3			13.1	14.2	66.7	100.0 #
2008	15	62.5			14.9	13.1	53.3	73.3
2009	21	61.8			16.3	12.2	57.1	71.4
2010	18	58.1	2	11.1	15.7	10.1	66.7	77.8
2011	13	48.1			17.5	8.8	53.8	76.9
2012	15	51.7			17.7	6.7	26.7	73.3
2013	33	60.0	1	3.0	18.2	5.2	45.5	75.8
2014	26	76.5	1	3.8	18.3	2.2	57.7	84.6
2015	11	68.8			18.3	0.0	18.2	90.9
2016	10	62.5			18.8	0.0	30.0	70.0 ##
1998-2016	261	57.9	16	6.1	18.8	17.7	59.0	85.4

261 cases diagnosed 1998-2016 are related to a total of 260 patients. Currently, in 96 (36.9 %) of these 260 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 70 / 17 / 9 (26.9 % / 6.5 % / 3.5 %) 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 retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 26 cases has been diagnosed, of which 18.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.2 % 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	7	53.8			0.0	13.6	71.4	100.0
1999	8	50.0			13.3	13.5	87.5	100.0
2000	4	22.2			10.5	13.5	75.0	100.0
2001	4	36.4			8.7	13.8	50.0	100.0
2002	12	41.4	4	33.3	17.1	13.5	83.3	100.0 #
2003	8	47.1	1	12.5	16.3	14.7	75.0	100.0
2004	7	31.8			16.0	14.7	100.0	100.0
2005	6	54.5	1	16.7	16.1	14.0	83.3	100.0
2006	12	57.1			16.2	13.6	41.7	100.0
2007	18	66.7			14.0	13.9	55.6	83.3 #
2008	9	37.5			13.7	10.3	77.8	88.9
2009	13	38.2			14.8	8.9	46.2	69.2
2010	13	41.9	2	15.4	14.9	6.5	69.2	84.6
2011	14	51.9			15.6	6.3	57.1	92.9
2012	14	48.3			15.4	3.9	42.9	85.7
2013	22	40.0			16.4	5.1	36.4	72.7
2014	8	23.5			15.6	0.0	37.5	75.0
2015	5	31.3			15.2	0.0	40.0	100.0
2016	6	37.5	1	16.7	15.3	0.0	16.7	66.7 ##
1998-2016	190	42.1	9	4.7	15.3	13.6	57.9	87.9

190 cases diagnosed 1998-2016 are related to a total of 190 patients. Currently, in 61 (32.1 %) of these 190 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 51 / 10 / 0 (26.8 % / 5.3 % / 0.0 %) 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 2014, a subgroup of 8 cases has been diagnosed, of which 15.6 % 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 4.81 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	6	7	0.5	0.6	0.4	0.3	0.5	0.5	0.6	0.6
1999	8	8	0.7	0.7	0.4	0.3	0.7	0.5	0.9	0.6
2000	14	4	1.2	0.3	0.8	0.1	1.1	0.2	1.2	0.3
2001	7	4	0.6	0.3	0.4	0.2	0.6	0.2	0.7	0.3
2002	17	12	0.9	0.6	0.6	0.2	0.8	0.3	0.9	0.5
2003	9	8	0.5	0.4	0.3	0.2	0.4	0.3	0.5	0.4
2004	15	7	0.8	0.4	0.5	0.2	0.7	0.2	0.8	0.3
2005	5	6	0.3	0.3	0.1	0.2	0.2	0.2	0.3	0.2
2006	9	12	0.5	0.6	0.3	0.3	0.4	0.4	0.5	0.5
2007	9	18	0.4	0.8	0.3	0.3	0.4	0.5	0.4	0.7
2008	15	9	0.7	0.4	0.4	0.2	0.6	0.3	0.7	0.3
2009	21	13	0.9	0.6	0.5	0.3	0.8	0.4	0.9	0.5
2010	18	13	0.8	0.6	0.5	0.2	0.7	0.3	0.7	0.4
2011	13	14	0.6	0.6	0.3	0.3	0.5	0.4	0.5	0.5
2012	15	14	0.7	0.6	0.4	0.3	0.6	0.4	0.6	0.5
2013	33	22	1.4	0.9	0.8	0.5	1.1	0.7	1.3	0.7
2014	26	8	1.1	0.3	0.6	0.1	0.9	0.2	1.0	0.3
2015	11	5	0.5	0.2	0.3	0.1	0.4	0.1	0.4	0.2
2016	10	6	0.4	0.2	0.2	0.2	0.3	0.2	0.4	0.2
1998-2016	261	190	0.7	0.5	0.4	0.2	0.6	0.3	0.7	0.4

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	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	13	60.4	13.8	38.5	80.8	42.1	52.1	60.3	69.0	78.4
1999	16	68.4	11.1	53.4	90.5	53.6	61.1	65.3	76.3	85.5
2000	18	65.7	10.4	45.0	85.5	50.6	58.6	66.8	71.8	82.1
2001	11	67.8	15.3	43.1	94.3	49.6	56.5	68.5	78.6	84.0
2002	29	69.1	14.2	41.2	94.9	52.0	58.4	70.7	80.8	91.8
2003	17	61.8	12.0	43.4	83.7	45.7	50.3	62.5	66.7	82.7
2004	22	63.5	14.2	31.2	89.8	45.4	55.4	62.9	73.1	81.3
2005	11	65.7	17.2	41.4	98.7	46.4	47.0	65.8	79.2	84.0
2006	21	66.7	12.4	43.5	89.3	55.5	58.7	63.4	76.9	84.6
2007	27	67.2	14.4	31.0	87.2	47.8	54.7	70.9	77.8	83.3
2008	24	64.0	12.4	45.6	91.5	49.9	56.4	61.0	70.9	83.5
2009	34	62.9	14.0	29.6	83.7	47.6	53.7	63.3	72.2	82.1
2010	31	65.4	14.6	21.9	87.9	51.9	56.0	67.0	72.8	87.0
2011	27	67.1	13.2	43.5	96.9	52.2	57.3	67.4	72.7	85.9
2012	29	60.8	14.2	21.5	90.1	48.6	53.0	60.8	68.1	82.1
2013	55	65.9	11.2	44.2	92.3	49.5	57.7	65.9	72.0	80.0
2014	34	66.4	11.5	47.3	90.8	50.6	58.2	65.7	75.0	81.9
2015	16	61.8	10.6	47.7	86.8	50.2	52.3	61.5	66.4	76.7
2016	16	67.5	12.9	42.4	90.0	46.4	61.2	66.4	76.6	82.8
1998-2016	451	65.3	13.0	21.5	98.7	49.6	56.1	64.7	73.4	83.3

Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	6	54.3	14.9	38.5	80.8	38.5	42.1	53.5	57.6	80.8
1999	8	68.5	12.4	53.4	85.5	53.4	58.8	65.6	80.2	85.5
2000	14	64.4	9.5	45.0	85.5	53.6	58.6	65.3	68.0	72.0
2001	7	66.4	18.0	43.1	94.3	43.1	49.6	63.0	78.6	94.3
2002	17	61.7	11.5	41.2	92.2	51.7	52.5	61.4	66.4	72.9
2003	9	63.5	7.6	48.4	74.3	48.4	59.6	62.6	66.7	74.3
2004	15	60.6	13.0	31.2	87.0	45.4	53.8	62.5	65.4	75.5
2005	5	65.0	17.6	46.4	84.0	46.4	47.0	68.3	79.2	84.0
2006	9	68.4	11.5	55.5	89.3	55.5	61.2	63.7	76.9	89.3
2007	9	65.2	13.1	50.5	87.2	50.5	54.7	64.1	71.8	87.2
2008	15	62.4	9.4	46.6	78.8	49.9	56.6	59.6	68.1	77.2
2009	21	64.8	10.8	47.6	83.7	52.7	55.8	64.4	69.7	80.7
2010	18	61.0	9.9	35.2	73.9	51.1	54.6	62.5	68.5	72.8
2011	13	63.9	14.8	43.5	93.0	46.0	53.6	64.0	71.1	81.1
2012	15	57.2	10.4	40.9	78.5	48.6	51.8	53.3	64.9	77.2
2013	33	64.3	10.1	44.2	85.0	49.5	57.0	65.9	70.6	75.9
2014	26	64.3	11.3	47.3	87.1	50.2	55.3	62.2	71.0	81.6
2015	11	60.6	8.7	47.7	76.7	50.2	50.4	61.6	65.8	67.0
2016	10	71.3	10.8	56.1	90.0	58.6	62.7	70.2	81.0	86.4
1998-2016	261	63.4	11.5	31.2	94.3	49.9	55.0	63.2	70.6	79.2

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median				
						10%	25%	50%	75%	90%
1998	7	65.5	11.2	45.2	78.4	45.2	60.3	68.2	75.9	78.4
1999	8	68.4	10.5	58.9	90.5	58.9	61.1	65.1	72.6	90.5
2000	4	69.9	13.7	50.6	82.1	50.6	60.7	73.6	79.2	82.1
2001	4	70.1	11.3	56.5	84.0	56.5	62.5	69.9	77.6	84.0
2002	12	79.6	10.6	54.3	94.9	71.5	74.9	80.9	85.7	91.8
2003	8	60.0	15.9	43.4	83.7	43.4	47.7	55.4	73.4	83.7
2004	7	69.6	15.9	43.1	89.8	43.1	55.4	72.0	81.3	89.8
2005	6	66.3	18.6	41.4	98.7	41.4	60.3	64.5	68.5	98.7
2006	12	65.3	13.4	43.5	86.2	48.7	57.8	62.6	75.1	84.6
2007	18	68.3	15.3	31.0	87.1	41.5	65.0	73.4	77.8	81.6
2008	9	66.7	16.7	45.6	91.5	45.6	55.4	62.3	83.5	91.5
2009	13	60.0	18.2	29.6	83.6	30.7	49.4	60.9	72.8	82.1
2010	13	71.6	18.0	21.9	87.9	57.4	66.2	72.7	87.0	87.7
2011	14	70.1	11.3	57.3	96.9	58.6	63.0	67.9	72.7	85.9
2012	14	64.6	17.0	21.5	90.1	49.9	58.1	64.0	72.7	87.0
2013	22	68.3	12.5	45.0	92.3	55.3	63.2	66.4	72.9	87.7
2014	8	73.2	9.9	59.1	90.8	59.1	67.8	70.4	79.6	90.8
2015	5	64.6	14.8	51.3	86.8	51.3	53.3	59.6	72.0	86.8
2016	6	61.1	14.5	42.4	78.3	42.4	46.4	62.1	75.0	78.3
1998-2016	190	67.8	14.6	21.5	98.7	48.2	59.1	68.5	78.4	87.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2016
(incl. DCO)

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24	2	0.7	0.7		0.0		2	1.6	1.6
25-29	1	0.3	1.0		0.0		1	0.8	2.5
30-34	2	0.7	1.7		0.0		2	1.6	4.1
35-39	1	0.3	2.0	1	0.6	0.6			4.1
40-44	7	2.4	4.4	4	2.3	2.9	3	2.5	6.6
45-49	18	6.1	10.6	11	6.4	9.4	7	5.7	12.3
50-54	34	11.6	22.2	28	16.4	25.7	6	4.9	17.2
55-59	38	13.0	35.2	27	15.8	41.5	11	9.0	26.2
60-64	48	16.4	51.5	28	16.4	57.9	20	16.4	42.6
65-69	44	15.0	66.6	27	15.8	73.7	17	13.9	56.6
70-74	36	12.3	78.8	18	10.5	84.2	18	14.8	71.3
75-79	18	6.1	85.0	11	6.4	90.6	7	5.7	77.0
80-84	22	7.5	92.5	10	5.8	96.5	12	9.8	86.9
85+	22	7.5	100.0	6	3.5	100.0	16	13.1	100.0
All ages	293	100.0		171	100.0		122	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 2007-2016

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=4 %	Females DCO rate n=3 %	Males	Females
							Prop.all cancers n=113978 %	Prop.all cancers n=112253 %
0- 4								
5- 9								
10-14								
15-19								
20-24		2		0.1				0.5
25-29		1		0.1				0.1
30-34		2		0.1				0.1
35-39	1		0.1				0.1	
40-44	4	3	0.2	0.2			0.2	0.1
45-49	11	7	0.6	0.4			0.3	0.1
50-54	28	6	1.6	0.4			0.5	0.1
55-59	27	11	1.9	0.7	3.7		0.3	0.1
60-64	28	20	2.3	1.5	7.1	5.0	0.2	0.2
65-69	27	17	2.3	1.3			0.1	0.1
70-74	18	18	1.6	1.4	5.6		0.1	0.1
75-79	11	7	1.4	0.7			0.1	0.1
80-84	10	12	2.2	1.7			0.1	0.1
85+	6	16	2.0	2.2		12.5	0.1	0.1
All ages	171	122			2.3	2.5	0.2	0.1
Incidence								
Raw			0.7	0.5				
WS			0.4	0.3				
ES			0.6	0.4				
BRD-S			0.7	0.4				

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).

ICD-10 C06: Malignant neoplasm of other and unspecified parts of mouth

Age distribution and age-specific incidence 2007 - 2016 (Males: 171, Females: 122)

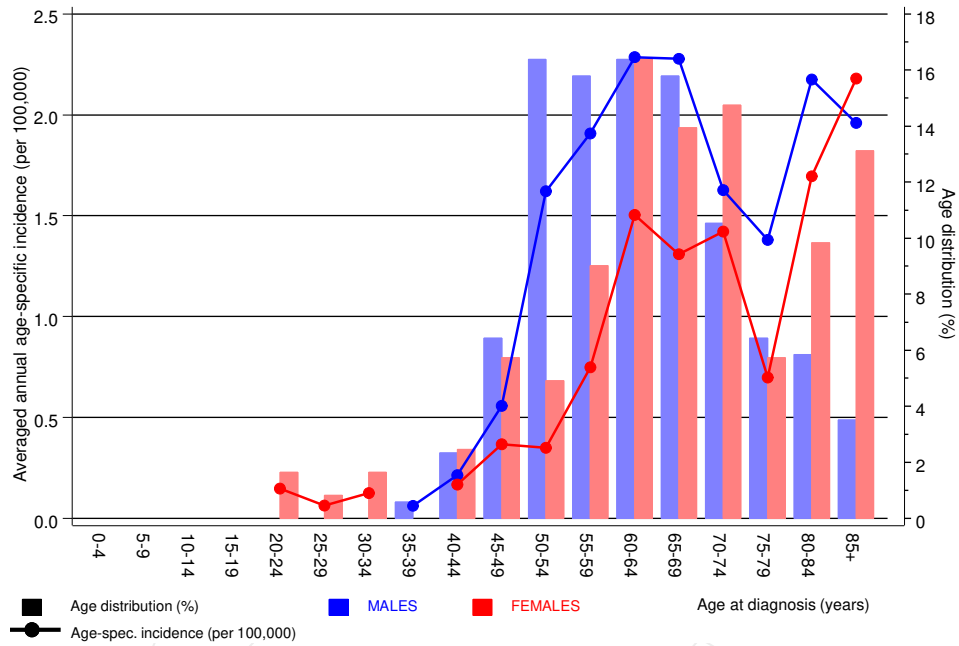


Figure 6. Age distribution (males: mean=63.4 yrs, median=63.6 yrs; females: mean=67.2 yrs, median=68.5 yrs) and age-specific incidence.

ICD-10 C06: Malignant neoplasm of other and unspecified parts of mouth

Age-specific incidence rates: international comparison

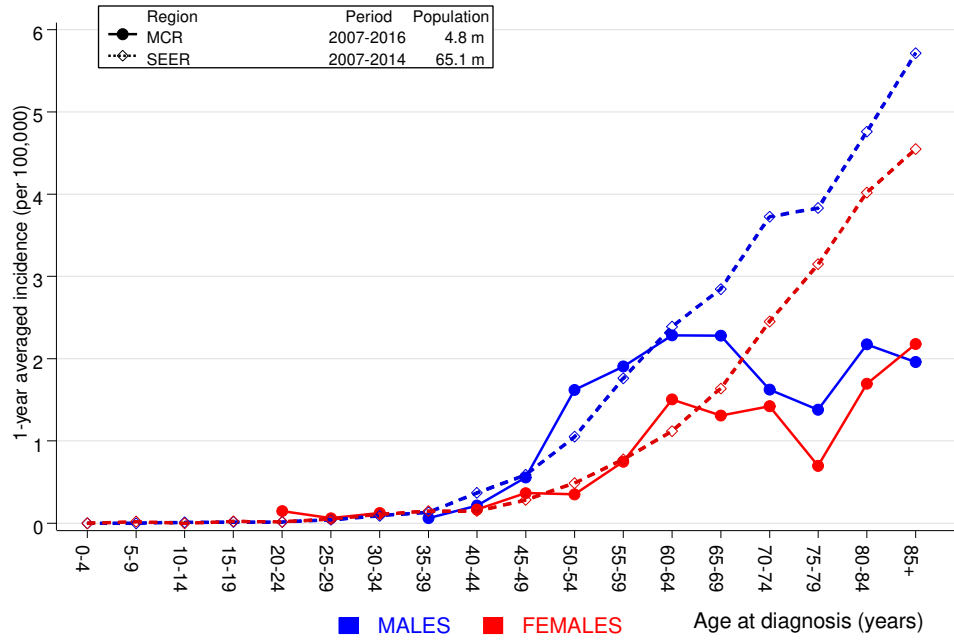


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 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 1998-2016

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03-C06 Oral cavity	2	0.1	16.5	2.0	59.4 #	21.7	
C09-C10 Oropharynx	5	0.2	32.7	10.6	76.3 #	56.1	
C12-C13 Hypopharynx	4	0.1	48.8	13.3	124.9 #	45.3	
C15 Oesophagus	4	0.3	15.8	4.3	40.6 #	43.3	
C16 Stomach	2	0.5	4.1	0.5	14.9	17.5	
C18 Colon	3	1.1	2.6	0.5	7.7	21.5	33.3
C19-C20 Rectum	2	0.7	3.0	0.4	10.7	15.3	
C22 Liver	2	0.4	5.6	0.7	20.2	19.0	
C32 Larynx	2	0.1	14.8	1.8	53.6 #	21.6	
C33-C34 Lung	10	1.5	6.8	3.3	12.5 #	98.6	
C43 Malign. melanoma	3	0.6	5.3	1.1	15.6 #	28.2	33.3
C61 Prostate	6	3.5	1.7	0.6	3.7	28.6	16.7
C64 Kidney	3	0.4	6.8	1.4	19.8 #	29.6	
C82-C85 NHL	3	0.5	6.2	1.3	18.0 #	29.1	
Others, specified	6	0.8	7.8	2.9	17.0 #	60.5	16.7
Not observed	0	1.8	0.0	0.0	2.0	-21.1	
All further malignancies	57	12.5	4.6	3.5	5.9 #	514.8	7.0
Patients		238					
Median age at next malignancy (years)		67.6					
Person-years		865					
Mean observation time (years)		3.6					
Median observation time (years)		1.8					

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998–2016

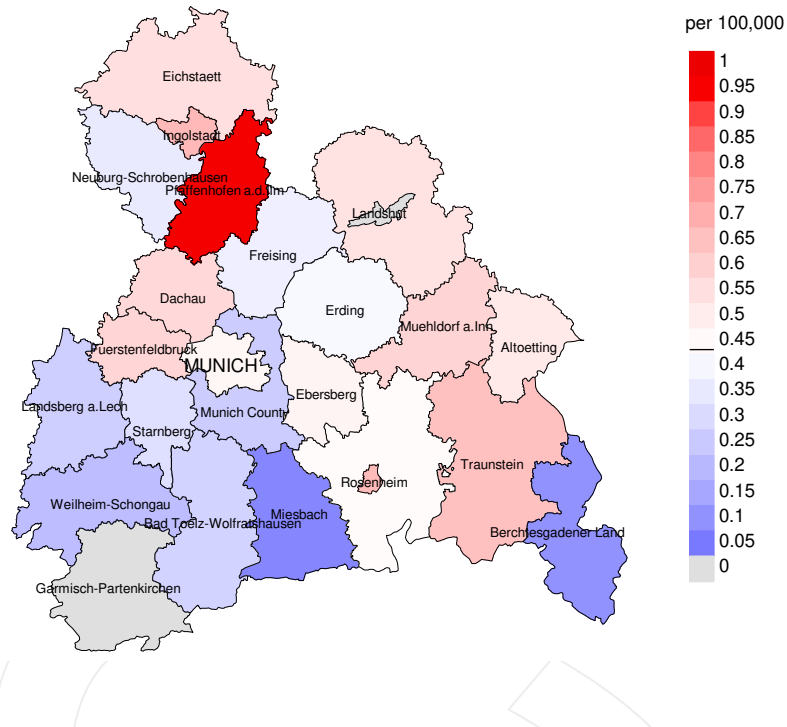
FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03–C06 Oral cavity	4	0.0	85.7	23.4	219.4 #	57.9	
C07–C08 Salivary gland	2	0.0	158.4	19.2	572.2 #	29.1	
C09–C10 Oropharynx	4	0.0	126.8	34.6	324.7 #	58.1	
C16 Stomach	2	0.3	7.4	0.9	26.9	25.4	50.0
C33–C34 Lung	7	0.6	11.7	4.7	24.0 #	93.7	14.3
C43 Malign. melanoma	2	0.3	6.9	0.8	24.9	25.1	50.0
C50 Breast	3	2.4	1.3	0.3	3.7	9.4	
Others, specified	10	1.7	5.7	2.8	10.6 #	120.9	20.0
Not observed	0	2.5	0.0	0.0	1.5	-36.7	
All further malignancies	34	7.9	4.3	3.0	6.0 #	382.9	14.7
Patients		176					
Median age at next malignancy (years)		69.2					
Person-years		683					
Mean observation time (years)		3.9					
Median observation time (years)		2.5					

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Average incidence (world standard population) 2007 - 2016: Males



Average incidence (world standard population) 2007 - 2016: Females

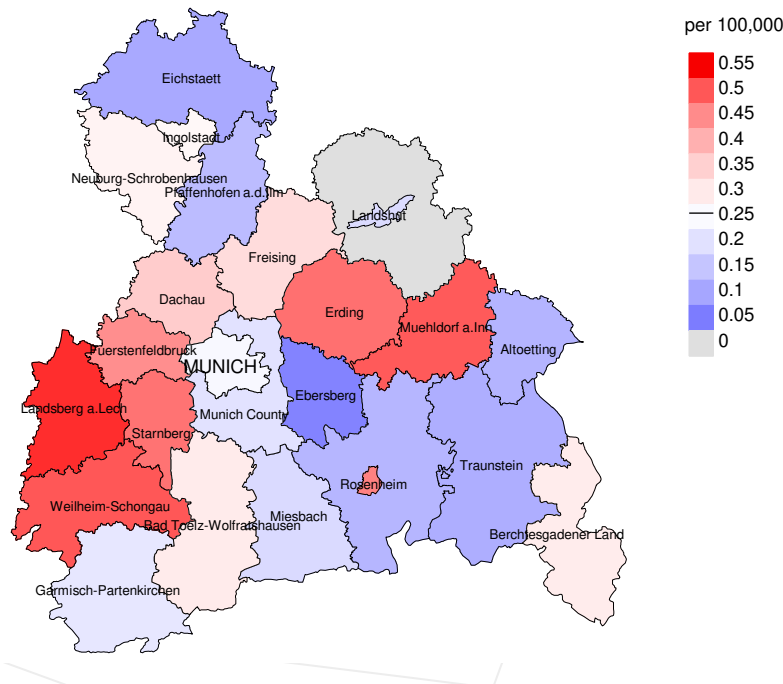
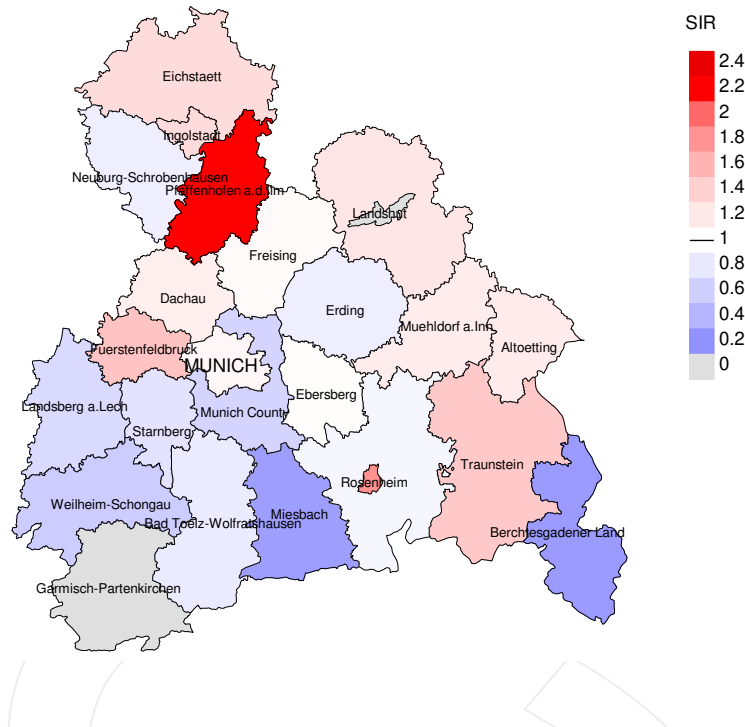


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.4/100,000 WS N=171, females 0.3/100,000 WS N=122).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 1 women were identified with newly diagnosed mouth cancer NOS. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.1/100,000 (world 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 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

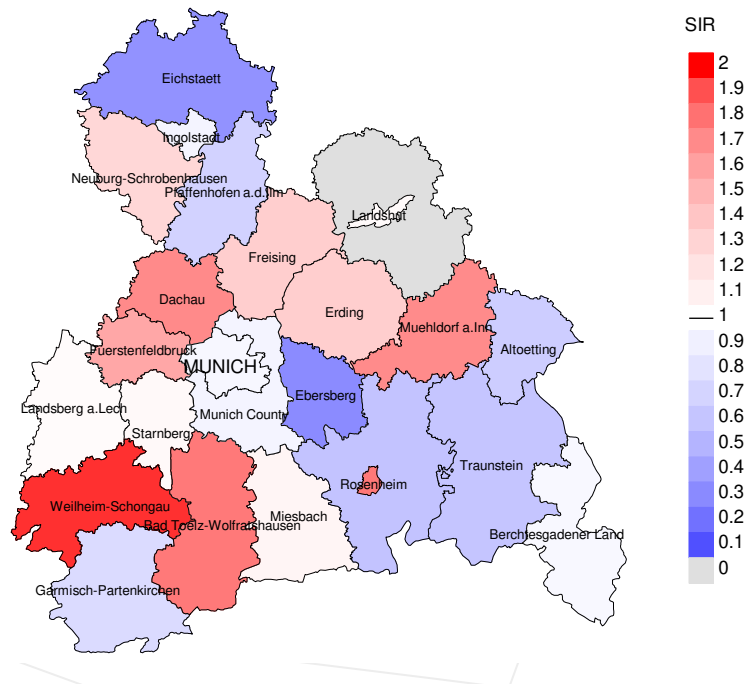


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=171, females N=122).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 1 women were identified with newly diagnosed mouth cancer NOS. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.30. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 2.25, 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 4.81 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	13	100.0		9	69.2	100.0
1999	16	100.0		13	81.3	69.2
2000	18	100.0	5.6	16	88.9	100.0
2001	11	100.0	18.2	9	81.8	66.7
2002	29	96.6	34.5	25	86.2	96.0
2003	17	100.0	11.8	11	64.7	100.0
2004	22	100.0	9.1	16	72.7	81.3
2005	11	100.0	9.1	9	81.8	100.0
2006	21	100.0		12	57.1	100.0
2007	27	88.9		16	59.3	100.0
2008	24	79.2		15	62.5	100.0
2009	34	70.6		18	52.9	94.4
2010	31	80.6	12.9	21	67.7	100.0
2011	27	85.2		15	55.6	100.0
2012	29	79.3		10	34.5	100.0
2013	55	74.5	1.8	23	41.8	95.7
2014	34	82.4	2.9	18	52.9	94.4
2015	16	93.8		4	25.0	100.0
2016	16	68.8	6.3	4	25.0	75.0
1998-2016	451	86.5	5.5	264	58.5	94.3

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 4.81 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	13	8	100.0	2	15.4
1999	16	6	83.3		
2000	18	14	92.9	5	27.8
2001	11	16	81.3	3	27.3
2002	29	21	95.2	14	48.3
2003	17	12	100.0	1	5.9
2004	22	18	100.0	5	22.7
2005	11	15	93.3	1	9.1
2006	21	12	91.7	1	4.8
2007	27	10	90.0	2	7.4
2008	24	12	100.0	1	4.2
2009	34	22	90.9	5	14.7
2010	31	16	100.0	6	19.4
2011	27	16	100.0	3	11.1
2012	29	23	100.0	1	3.4
2013	55	24	100.0	12	21.8
2014	34	33	87.9	9	26.5
2015	16	36	97.2	3	18.8
2016	16	22	100.0	3	18.8
1998-2016	451	336	95.2	77	17.1

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates
(incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	8	100.0		100.0
1999	6	50.0	50.0	80.0
2000	14	35.7	64.3	84.6
2001	16	75.0	25.0	92.3
2002	21	71.4	28.6	90.0
2003	12	83.3	16.7	83.3
2004	18	77.8	22.2	88.9
2005	15	80.0	20.0	85.7
2006	12	66.7	33.3	81.8
2007	10	60.0	40.0	66.7
2008	12	83.3	16.7	91.7
2009	22	77.3	22.7	80.0
2010	16	75.0	25.0	87.5
2011	16	56.3	43.8	81.3
2012	23	78.3	21.7	82.6
2013	24	75.0	25.0	79.2
2014	33	72.7	27.3	86.2
2015	36	72.2	27.8	91.4
2016	22	63.6	36.4	81.8
1998-2016	336	71.7	28.3	85.3

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	5	73.9	73.9		73.9
1999	4	62.0	62.0	65.2	56.0
2000	12	65.8	66.1	65.6	67.4
2001	13	69.1	56.6	75.4	69.1
2002	12	62.0	62.8	57.9	61.9
2003	9	63.1	65.9	62.5	65.9
2004	9	73.1	67.5	79.2	70.3
2005	10	69.3	65.2	74.4	65.2
2006	8	70.3	63.7	94.0	64.9
2007	7	69.6	66.8	74.0	66.8
2008	5	82.6	82.6		82.6
2009	10	64.9	64.4	65.4	63.5
2010	9	72.5	62.7	81.7	64.5
2011	10	77.8	77.8	74.3	74.2
2012	14	73.0	73.8	71.6	73.8
2013	12	67.1	68.4	53.1	68.4
2014	19	68.3	68.3	87.2	69.3
2015	23	69.6	69.2	72.8	68.7
2016	15	76.8	74.2	76.9	73.2
1998-2016	206	69.2	68.3	74.0	68.6

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	3	60.6	60.6		60.6
1999	2	70.8	61.0	80.6	61.0
2000	2	89.6		89.6	91.0
2001	3	82.8	82.8		82.8
2002	9	81.8	82.4	76.3	81.8
2003	3	55.8	50.5	91.9	50.5
2004	9	73.7	81.4	67.2	77.6
2005	5	78.8	78.8		78.8
2006	4	73.6	69.8	81.4	69.8
2007	3	84.4	69.4	85.7	69.4
2008	7	81.2	81.2	84.2	81.6
2009	12	78.8	71.8	85.6	71.8
2010	7	73.0	69.9	88.6	73.0
2011	6	74.0	88.2	73.4	73.4
2012	9	80.1	80.1	76.7	77.1
2013	12	75.8	70.3	91.2	72.2
2014	14	82.3	66.5	87.3	66.6
2015	13	73.2	72.2	75.4	72.2
2016	7	72.9	67.9	79.0	72.9
1998–2016	130	77.1	73.7	84.4	73.9

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 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	5	0.5	0.83	0.3	0.73	0.4	0.80	0.6	0.98
1999	2	0.2	0.25	0.1	0.25	0.2	0.23	0.2	0.18
2000	5	0.4	0.36	0.3	0.32	0.4	0.36	0.5	0.40
2001	9	0.8	1.29	0.5	1.35	0.7	1.34	0.9	1.21
2002	7	0.4	0.41	0.2	0.39	0.3	0.41	0.4	0.42
2003	8	0.4	0.89	0.3	0.88	0.4	0.95	0.4	0.93
2004	7	0.4	0.47	0.2	0.42	0.3	0.43	0.4	0.48
2005	7	0.4	1.40	0.2	1.45	0.3	1.58	0.4	1.30
2006	5	0.3	0.56	0.2	0.62	0.2	0.56	0.2	0.49
2007	5	0.2	0.56	0.1	0.51	0.2	0.47	0.2	0.48
2008	5	0.2	0.33	0.1	0.22	0.1	0.25	0.2	0.34
2009	9	0.4	0.43	0.2	0.45	0.3	0.44	0.4	0.44
2010	6	0.3	0.33	0.2	0.31	0.2	0.32	0.3	0.36
2011	6	0.3	0.46	0.1	0.33	0.2	0.40	0.3	0.52
2012	11	0.5	0.73	0.2	0.53	0.3	0.60	0.4	0.69
2013	9	0.4	0.27	0.2	0.24	0.3	0.25	0.4	0.29
2014	16	0.7	0.62	0.4	0.57	0.5	0.58	0.6	0.59
2015	16	0.7	1.45	0.3	1.15	0.5	1.28	0.6	1.38
2016	8	0.3	0.80	0.1	0.66	0.2	0.72	0.3	0.76
1998-2016	146	0.4	0.56	0.2	0.51	0.3	0.53	0.4	0.57

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	3	0.3	0.43	0.1	0.35	0.2	0.38	0.2	0.38
1999	1	0.1	0.13	0.1	0.15	0.1	0.13	0.1	0.13
2000									
2001	3	0.2	0.75	0.1	0.51	0.1	0.55	0.2	0.61
2002	8	0.4	0.67	0.1	0.59	0.2	0.60	0.3	0.60
2003	2	0.1	0.25	0.1	0.33	0.1	0.33	0.1	0.31
2004	7	0.4	1.00	0.1	0.89	0.2	0.89	0.3	0.95
2005	5	0.3	0.83	0.1	0.56	0.1	0.65	0.2	0.81
2006	3	0.1	0.25	0.1	0.22	0.1	0.25	0.1	0.27
2007	1	0.0	0.06	0.0	0.06	0.0	0.06	0.0	0.05
2008	5	0.2	0.56	0.1	0.34	0.1	0.39	0.2	0.48
2009	8	0.3	0.62	0.1	0.44	0.2	0.50	0.2	0.49
2010	6	0.3	0.46	0.1	0.51	0.2	0.53	0.2	0.49
2011	3	0.1	0.21	0.0	0.14	0.1	0.15	0.1	0.16
2012	7	0.3	0.50	0.1	0.23	0.1	0.29	0.2	0.34
2013	9	0.4	0.41	0.2	0.32	0.2	0.34	0.3	0.39
2014	8	0.3	1.00	0.2	1.32	0.2	1.10	0.3	1.02
2015	10	0.4	2.00	0.2	1.61	0.2	1.62	0.3	1.88
2016	6	0.2	1.00	0.1	0.80	0.2	0.89	0.2	0.91
1998-2016	95	0.2	0.50	0.1	0.42	0.1	0.44	0.2	0.46

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016
(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	1	0.6	0.6			0.0	1	1.6	1.6
25-29	0	0.0	0.6			0.0			1.6
30-34	0	0.0	0.6			0.0			1.6
35-39	0	0.0	0.6			0.0			1.6
40-44	1	0.6	1.3			0.0	1	1.6	3.2
45-49	2	1.3	2.6	1	1.1	1.1	1	1.6	4.8
50-54	9	5.8	8.4	4	4.4	5.5	5	7.9	12.7
55-59	13	8.4	16.9	12	13.2	18.7	1	1.6	14.3
60-64	19	12.3	29.2	14	15.4	34.1	5	7.9	22.2
65-69	29	18.8	48.1	16	17.6	51.6	13	20.6	42.9
70-74	27	17.5	65.6	16	17.6	69.2	11	17.5	60.3
75-79	14	9.1	74.7	12	13.2	82.4	2	3.2	63.5
80-84	15	9.7	84.4	8	8.8	91.2	7	11.1	74.6
85+	24	15.6	100.0	8	8.8	100.0	16	25.4	100.0
All ages	154	100.0		91	100.0		63	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(incl. multiple malignancies)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24		1			0.1	0.50		3.0
25-29								
30-34								
35-39								
40-44		1			0.1	0.33		0.1
45-49	1	1	0.1	0.09	0.1	0.14	0.1	0.1
50-54	4	5	0.2	0.14	0.3	0.83	0.2	0.3
55-59	12	1	0.8	0.44	0.1	0.09	0.4	0.0
60-64	14	5	1.1	0.50	0.4	0.25	0.3	0.1
65-69	16	13	1.4	0.59	1.0	0.76	0.2	0.2
70-74	16	11	1.4	0.89	0.9	0.61	0.2	0.2
75-79	12	2	1.5	1.09	0.2	0.29	0.1	0.0
80-84	8	7	1.7	0.80	1.0	0.58	0.1	0.1
85+	8	16	2.6	1.33	2.2	1.00	0.1	0.2
All ages	91	63					0.2	0.1
Mortality								
Raw			0.4	0.53	0.3	0.52		
WS			0.2	0.46	0.1	0.43		
ES			0.3	0.49	0.2	0.45		
BRD-S			0.4	0.54	0.2	0.46		
PYLL-70								
per 100,000			1.9		1.3			
ES			1.7		1.2			
AYLL-70			8.2		9.9			

Table 14a

Further malignancies in deaths in period 1998-2016
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	2	2.2	1	50.0	1	50.0		
C03-C06 Oral cavity	7	7.5					7	100.0
C09-C10 Oropharynx	3	3.2	2	66.7			1	33.3
C12-C13 Hypopharynx	4	4.3	1	25.0	1	25.0	2	50.0
C15 Oesophagus	4	4.3	2	50.0			2	50.0
C16 Stomach	3	3.2					3	100.0
C17 Small intestine	1	1.1	1	100.0				
C18 Colon	4	4.3					4	100.0
C19-C20 Rectum	3	3.2	1	33.3	1	33.3	1	33.3
C22 Liver	6	6.5	1	16.7			5	83.3
C25 Pancreas	2	2.2	1	50.0			1	50.0
C30-C31 Sinuses	1	1.1					1	100.0
C32 Larynx	5	5.4	3	60.0	1	20.0	1	20.0
C33-C34 Lung	17	18.3	2	11.8			15	88.2
C43 Malign. melanoma	4	4.3	2	50.0			2	50.0
C44 Skin others	10	10.8	4	40.0	1	10.0	5	50.0
C61 Prostate	6	6.5	3	50.0			3	50.0
C62 Testis	1	1.1	1	100.0				
C63 Male urogen.	1	1.1	1	100.0				
C64 Kidney	3	3.2	1	33.3	2	66.7		
C65 Renal pelvis	1	1.1					1	100.0
C67 Bladder	1	1.1					1	100.0
C76-C79 CUP	1	1.1					1	100.0
C82-C85 NHL	3	3.2	2	66.7	1	33.3		
All further malignancies	93	100.0	29	31.2	8	8.6	56	60.2

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 1998-2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	8	16.3			1	12.5	7	87.5
C09-C10 Oropharynx	2	4.1			1	50.0	1	50.0
C11 Nasopharynx	1	2.0					1	100.0
C12-C13 Hypopharynx	1	2.0					1	100.0
C14 ENT cancer	1	2.0					1	100.0
C15 Oesophagus	1	2.0					1	100.0
C16 Stomach	2	4.1			1	50.0	1	50.0
C22 Liver	1	2.0					1	100.0
C25 Pancreas	1	2.0					1	100.0
C32 Larynx	1	2.0					1	100.0
C33-C34 Lung	12	24.5	1	8.3	3	25.0	8	66.7
C43 Malign. melanoma	1	2.0					1	100.0
C44 Skin others	2	4.1			1	50.0	1	50.0
C50 Breast	7	14.3	5	71.4			2	28.6
C52 Vagina	1	2.0	1	100.0				
C53 Cervix uteri	3	6.1	2	66.7			1	33.3
C56 Ovary	1	2.0	1	100.0				
C82-C85 NHL	2	4.1					2	100.0
C90 Mult. myeloma	1	2.0					1	100.0
All further malignancies	49	100.0	10	20.4	7	14.3	32	65.3

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 2007-2016
(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		1		0.1	0.50	3.2
25-29						
30-34						
35-39						
40-44		1		0.1	0.33	0.2
45-49	1		0.1	0.11	0.1	
50-54	3	3	0.2	0.14	0.2	0.2
55-59	8	1	0.6	0.42	0.1	0.0
60-64	10	5	0.8	0.45	0.4	0.2
65-69	13	9	1.1	0.62	0.7	0.2
70-74	13	9	1.2	1.08	0.7	0.2
75-79	11	2	1.4	1.37	0.2	0.0
80-84	6	6	1.3	1.00	0.8	0.1
85+	4	14	1.3	2.00	1.9	0.2
All ages	69	51			0.2	0.1
Mortality						
Raw			0.3	0.55	0.2	0.52
WS			0.2	0.46	0.1	0.42
ES			0.2	0.50	0.1	0.45
BRD-S			0.3	0.56	0.2	0.46
PYLL-70						
per 100,000			1.4		1.0	
ES			1.2		0.9	
AYLL-70			8.1		10.0	

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age- spec. mortal. MI-index	Females Age- spec. mortal. MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4						
5- 9						
10-14						
15-19						
20-24		1		0.1	0.50	3.2
25-29						
30-34						
35-39						
40-44		1		0.1	0.50	0.2
45-49	1		0.1	0.11	0.1	
50-54	2	2	0.1	0.12	0.1	0.1
55-59	7	1	0.5	0.44	0.2	0.0
60-64	6	3	0.5	0.32	0.1	0.1
65-69	12	8	1.0	0.67	0.2	0.2
70-74	9	5	0.8	0.90	0.1	0.1
75-79	5	1	0.6	0.63	0.1	0.0
80-84	3	4	0.7	0.60	0.1	0.1
85+	3	9	1.0	1.50	0.1	0.1
All ages	48	35			0.1	0.1
Mortality						
Raw			0.2	0.44	0.1	0.41
WS			0.1	0.39	0.1	0.36
ES			0.2	0.41	0.1	0.37
BRD-S			0.2	0.44	0.1	0.37
PYLL-70						
per 100,000			1.1		0.8	
ES			0.9		0.7	
AYLL-70			7.9		10.3	

* See corresponding tables with multiple malignancies.

ICD-10 C06: Malignant neoplasm of other and unspecified parts of mouth

Age distribution and age-specific mortality 2007 - 2016 (Males: 91, Females: 63)

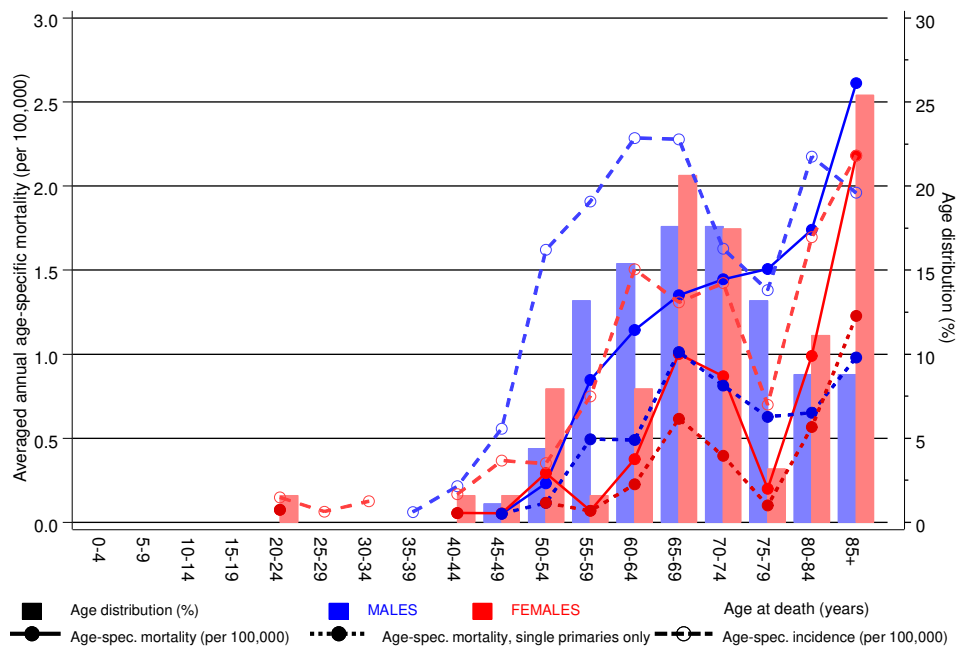
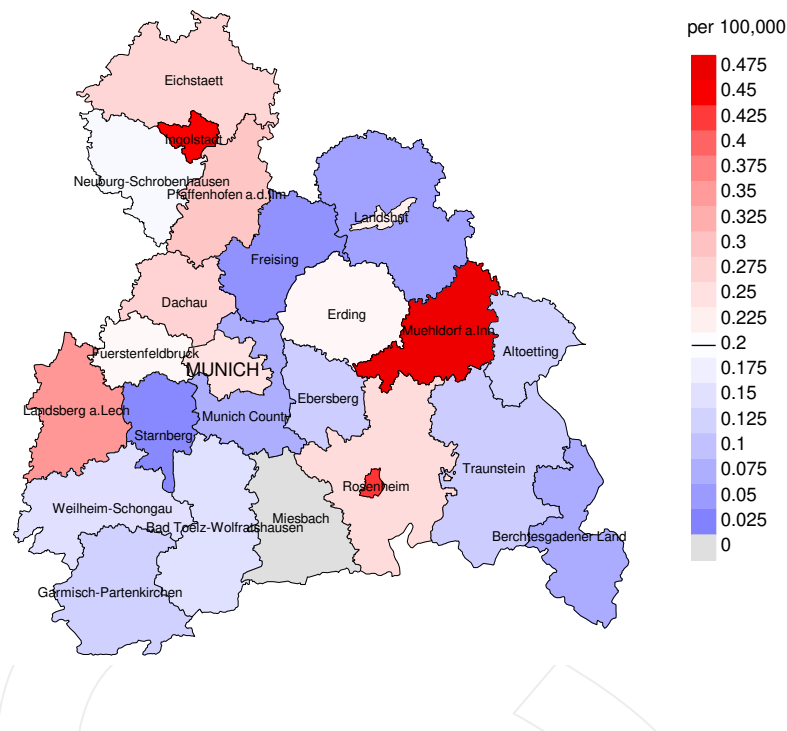


Figure 17. Distribution of age at death (bars; males: mean=65.0 yrs, median=64.9 yrs; females: mean=68.0 yrs, median=68.8 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2016: Males



Average mortality (world standard population) 2007 - 2016: Females

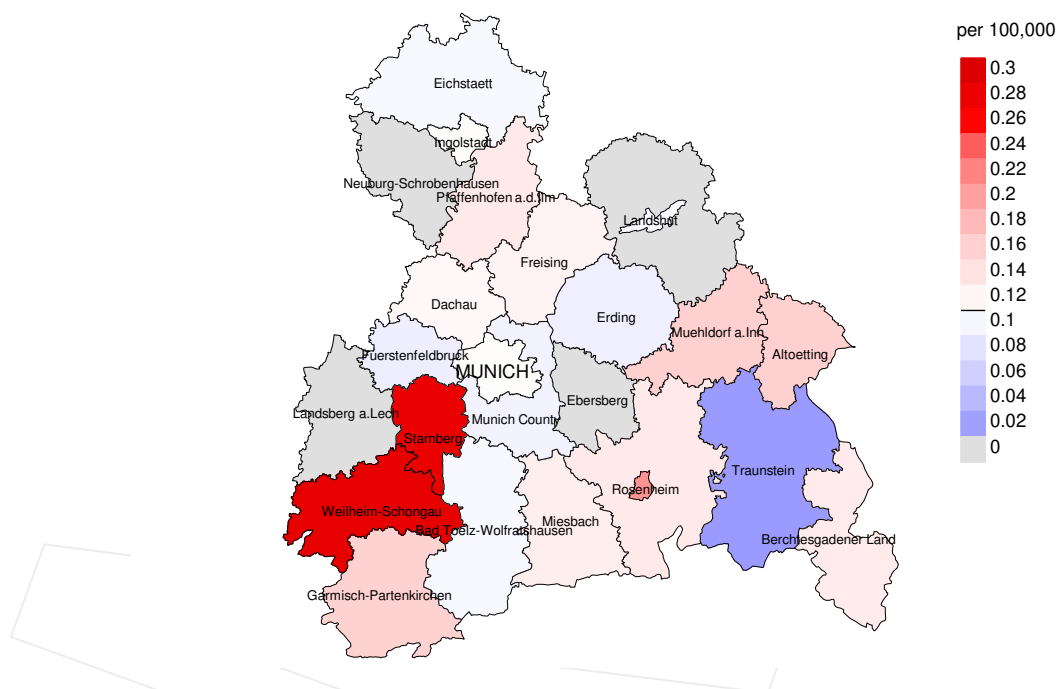
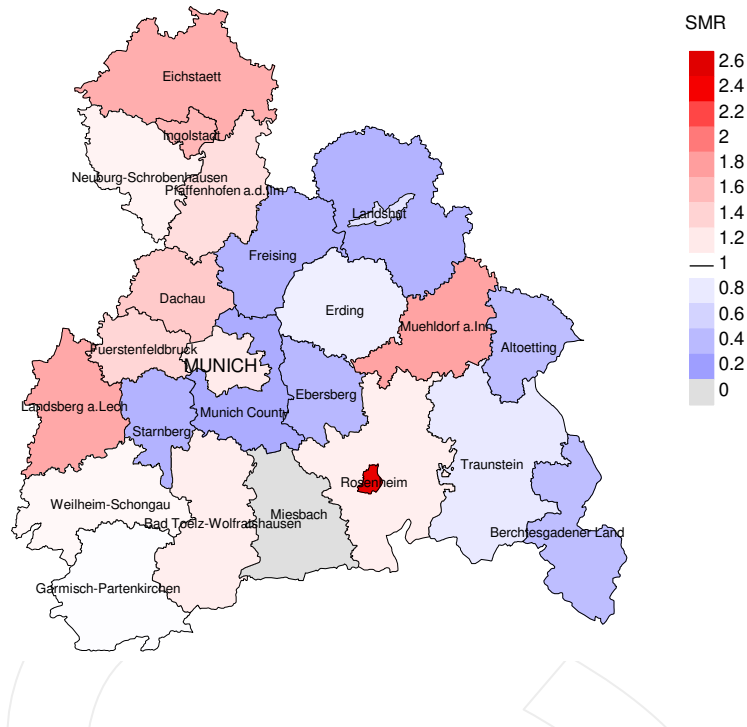


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.2/100,000 WS N=91, females 0.1/100,000 WS N=63).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 0 women died from mouth cancer NOS. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.0/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

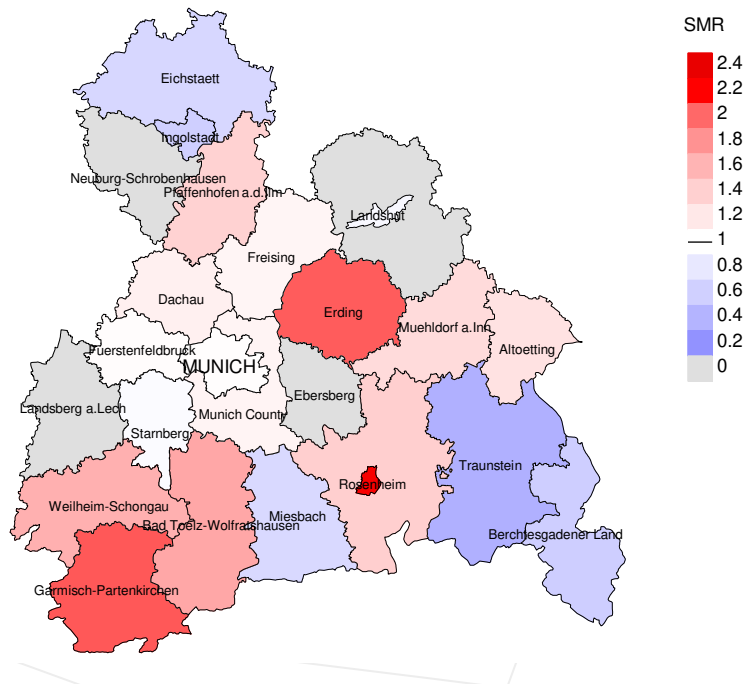


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=91, females N=63).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 0 women died from mouth cancer NOS. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.00. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 3.16, 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 index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic 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 MI- index. 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 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 between mortality and incidence
FRG	Federal Republic of Germany

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