

Munich Cancer Registry



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

ICD-10 C15: Oesophagus cancer

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	4,552
Diseases	4,553
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/bC15__E-ICD-10-C15-Oesophagus-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, 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.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C15.-	Malignant neoplasm of oesophagus
	<i>Note: Two alternative subclassifications are given: .0-.2 by anatomical description .3-.5 by thirds</i>
	<i>This departure from the principle that categories should be mutually exclusive is deliberate, since both forms of terminology are in use but the resulting anatomical divisions are not analogous.</i>
C15.0	Cervical part of oesophagus
C15.1	Thoracic part of oesophagus
C15.2	Abdominal part of oesophagus
C15.3	Upper third of oesophagus
C15.4	Middle third of oesophagus
C15.5	Lower third of oesophagus
C15.8	Overlapping lesion of oesophagus
C15.9	Oesophagus, 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	140	17	12.1	12.1	7.0	97.9	99.3
1999	133	10	7.5	12.5	7.0	94.0	100.0
2000	132	12	9.1	13.6	7.0	93.9	98.5
2001	148	8	5.4	14.6	6.9	94.6	99.3
2002	269	31	11.5	15.6	6.8	91.8	100.0 #
2003	220	24	10.9	15.6	6.9	90.5	98.6
2004	221	19	8.6	16.1	6.8	89.1	98.2
2005	266	21	7.9	17.5	6.7	91.7	99.2
2006	231	7	3.0	17.8	6.5	87.9	97.8
2007	293	9	3.1	18.1	6.4	86.7	93.2 #
2008	283	11	3.9	18.4	6.1	84.5	89.4
2009	303	15	5.0	18.5	5.9	79.9	88.8
2010	296	16	5.4	18.3	6.0	81.1	87.2
2011	303	19	6.3	18.8	6.2	82.5	92.1
2012	300	18	6.0	18.9	5.6	78.3	88.0
2013	261	10	3.8	19.1	5.3	74.7	87.7
2014	278	20	7.2	19.4	5.3	71.2	92.4
2015	262	12	4.6	20.0	4.3	61.1	98.9
2016	214	16	7.5	20.3	5.3	44.9	68.2 ##
1998-2016	4553	295	6.5	20.3	7.0	81.8	92.9

4,553 cases diagnosed 1998-2016 are related to a total of 4,552 patients. Currently, in 1,284 (28.2 %) of these 4,552 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,003 / 214 / 67 (22.0 % / 4.7 % / 1.5 %) 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 278 cases has been diagnosed, of which 19.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.3 % 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	108	77.1	11	10.2	11.1	7.2	97.2	99.1
1999	112	84.2	9	8.0	10.0	7.2	93.8	100.0
2000	103	78.0	9	8.7	11.5	7.3	93.2	98.1
2001	116	78.4	5	4.3	13.7	7.1	94.0	100.0
2002	212	78.8	25	11.8	14.9	7.0	92.5	100.0 #
2003	178	80.9	19	10.7	15.2	7.1	91.0	98.9
2004	177	80.1	9	5.1	15.6	7.0	89.3	98.9
2005	219	82.3	16	7.3	17.1	6.9	90.0	99.1
2006	178	77.1	6	3.4	17.3	6.7	89.9	98.3
2007	238	81.2	7	2.9	17.2	6.5	85.7	92.4 #
2008	228	80.6	9	3.9	17.5	6.1	83.3	87.7
2009	237	78.2	8	3.4	17.7	5.8	80.2	88.6
2010	218	73.6	11	5.0	17.6	6.0	79.8	85.3
2011	247	81.5	16	6.5	18.0	6.2	84.2	92.7
2012	224	74.7	12	5.4	18.1	5.6	75.9	85.7
2013	190	72.8	5	2.6	18.3	5.3	71.6	85.8
2014	217	78.1	15	6.9	18.7	5.1	71.4	92.2
2015	199	76.0	7	3.5	19.3	4.5	62.3	99.0
2016	164	76.6	11	6.7	19.6	5.6	43.9	67.7 ##
1998-2016	3565	78.3	210	5.9	19.6	7.2	81.7	92.5

3,565 cases diagnosed 1998-2016 are related to a total of 3,564 patients. Currently, in 988 (27.7 %) of these 3,564 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 771 / 164 / 53 (21.6 % / 4.6 % / 1.5 %) 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 217 cases has been diagnosed, of which 18.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	32	22.9	6	18.8	15.6	6.1	100.0	100.0
1999	21	15.8	1	4.8	22.6	6.1	95.2	100.0
2000	29	22.0	3	10.3	22.0	6.0	96.6	100.0
2001	32	21.6	3	9.4	18.4	6.1	96.9	96.9
2002	57	21.2	6	10.5	18.1	6.1	89.5	100.0 #
2003	42	19.1	5	11.9	17.4	6.0	88.1	97.6
2004	44	19.9	10	22.7	17.9	6.2	88.6	95.5
2005	47	17.7	5	10.6	19.4	5.9	100.0	100.0
2006	53	22.9	1	1.9	19.9	6.0	81.1	96.2
2007	55	18.8	2	3.6	21.4	5.9	90.9	96.4 #
2008	55	19.4	2	3.6	21.8	5.7	89.1	96.4
2009	66	21.8	7	10.6	21.6	6.1	78.8	89.4
2010	78	26.4	5	6.4	20.9	5.9	84.6	92.3
2011	56	18.5	3	5.4	21.7	6.0	75.0	89.3
2012	76	25.3	6	7.9	21.8	5.4	85.5	94.7
2013	71	27.2	5	7.0	22.1	5.0	83.1	93.0
2014	61	21.9	5	8.2	22.2	6.0	70.5	93.4
2015	63	24.0	5	7.9	22.4	3.6	57.1	98.4
2016	50	23.4	5	10.0	22.9	4.1	48.0	70.0 ##
1998-2016	988	21.7	85	8.6	22.9	6.1	82.4	94.1

988 cases diagnosed 1998-2016 are related to a total of 988 patients. Currently, in 296 (30.0 %) of these 988 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 232 / 50 / 14 (23.5 % / 5.1 % / 1.4 %) 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 2014, a subgroup of 61 cases has been diagnosed, of which 22.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.0 % 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	108	32	9.7	2.7	6.1	1.2	8.8	1.8	10.5	2.3
1999	112	21	10.0	1.8	6.1	1.0	8.8	1.4	10.3	1.6
2000	103	29	9.0	2.4	5.5	1.3	7.9	1.9	9.8	2.1
2001	116	32	10.0	2.6	6.1	1.2	8.9	1.8	10.7	2.2
2002	212	57	11.4	2.9	7.0	1.4	9.8	2.0	11.5	2.5
2003	178	42	9.5	2.1	5.6	1.1	8.0	1.6	9.6	1.8
2004	177	44	9.4	2.2	5.5	1.1	7.9	1.6	9.3	1.8
2005	219	47	11.6	2.4	6.5	1.0	9.4	1.5	11.4	1.9
2006	178	53	9.3	2.6	5.2	1.3	7.5	1.9	8.9	2.2
2007	238	55	10.7	2.4	6.0	1.2	8.7	1.7	10.5	2.0
2008	228	55	10.2	2.4	5.7	1.2	8.3	1.7	9.9	2.1
2009	237	66	10.6	2.8	5.6	1.4	8.2	2.0	10.0	2.3
2010	218	78	9.7	3.3	5.3	1.4	7.7	2.1	9.2	2.6
2011	247	56	11.0	2.4	5.7	1.1	8.3	1.6	10.2	2.0
2012	224	76	9.9	3.2	5.4	1.6	7.6	2.2	9.0	2.6
2013	190	71	8.3	3.0	4.3	1.3	6.2	1.9	7.4	2.3
2014	217	61	9.3	2.5	4.6	1.1	6.8	1.6	8.4	1.9
2015	199	63	8.4	2.6	4.3	1.1	6.2	1.6	7.7	1.9
2016	164	50	6.8	2.0	3.4	0.9	5.0	1.3	6.3	1.6
1998-2016	3565	988	9.7	2.6	5.4	1.2	7.7	1.7	9.3	2.1

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

Table 3

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	140	64.5	12.5	35.7	93.8	49.5	56.1	63.1	75.0	79.9
1999	133	63.5	10.4	37.6	89.6	52.6	56.7	61.7	71.6	77.2
2000	132	64.0	11.6	39.6	92.2	49.8	56.2	61.8	72.8	79.2
2001	148	65.4	11.1	38.9	97.2	52.6	57.4	63.7	73.0	82.1
2002	269	65.2	11.7	33.5	95.5	50.1	57.9	64.1	73.4	80.8
2003	220	65.5	11.1	39.0	92.5	50.9	57.7	64.8	73.3	81.3
2004	221	65.7	10.9	36.5	97.2	52.7	59.2	64.8	71.9	80.1
2005	266	66.6	10.7	34.8	96.0	54.1	58.7	66.1	74.8	80.6
2006	231	66.2	9.8	38.4	94.3	54.1	59.6	65.8	71.9	80.3
2007	293	66.1	10.5	33.4	89.9	52.8	59.6	65.9	73.2	80.2
2008	283	67.3	10.5	32.2	96.2	54.1	60.2	65.9	74.3	82.0
2009	303	67.1	10.8	35.6	94.4	52.0	59.2	68.0	74.1	80.7
2010	296	67.0	11.8	32.0	96.3	53.1	59.7	67.1	75.5	83.2
2011	303	68.6	10.4	44.0	94.6	55.0	61.1	68.7	75.8	83.0
2012	300	66.7	10.5	34.0	93.7	52.5	60.1	67.0	73.4	80.3
2013	261	68.0	10.6	35.6	99.8	54.2	60.0	69.5	74.9	80.6
2014	278	69.6	10.9	41.0	103	55.1	62.3	70.4	76.6	83.7
2015	262	69.4	11.0	40.8	95.5	55.9	61.4	69.5	77.3	82.9
2016	214	69.6	9.6	49.4	95.0	56.8	62.3	69.6	77.0	81.5
1998–2016	4553	66.9	10.9	32.0	103	52.9	59.3	66.8	74.5	81.5

Table 3a

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	108	62.5	12.1	35.7	93.8	47.9	53.4	60.4	71.0	78.2
1999	112	63.5	10.7	37.6	89.6	51.9	56.4	61.9	71.7	77.2
2000	103	64.1	10.9	39.6	92.2	49.8	56.8	62.5	72.6	78.1
2001	116	64.1	10.5	38.9	97.2	51.5	56.8	62.6	69.9	79.8
2002	212	63.8	11.0	33.5	92.4	50.1	57.3	63.4	71.4	77.5
2003	178	65.1	10.5	39.0	92.5	50.4	57.9	64.9	71.8	79.4
2004	177	64.9	10.5	36.5	94.7	52.3	58.6	64.1	71.4	79.7
2005	219	65.7	10.4	34.8	96.0	53.6	58.1	65.5	74.0	79.6
2006	178	66.0	9.1	38.4	94.3	54.4	59.7	65.9	71.7	77.8
2007	238	65.8	10.4	38.7	89.9	52.6	59.2	66.1	73.2	79.8
2008	228	66.8	10.4	32.2	91.6	53.3	60.0	65.7	73.7	81.9
2009	237	66.7	10.3	35.6	89.0	52.7	59.3	68.0	73.6	80.1
2010	218	65.7	11.6	32.0	91.0	50.5	57.6	65.7	73.8	81.7
2011	247	68.2	10.1	44.0	94.6	55.3	61.1	68.5	74.7	82.1
2012	224	66.4	9.7	39.2	90.1	53.2	59.5	66.4	73.1	78.7
2013	190	67.0	10.4	43.5	99.8	54.0	58.7	68.5	74.3	79.5
2014	217	68.9	10.8	41.0	91.2	54.9	61.1	69.7	76.4	83.1
2015	199	68.6	10.7	40.8	95.0	55.8	61.2	68.7	76.6	80.9
2016	164	69.4	9.3	49.4	91.1	56.8	61.9	69.6	76.5	81.2
1998–2016	3565	66.2	10.6	32.0	99.8	52.7	58.8	66.2	73.7	80.2

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		
				Min.	Max.	10%	25%	50%	75%	90%
1998	32	71.2	11.5	48.1	91.6	56.4	62.1	72.5	80.7	87.2
1999	21	63.9	8.4	52.6	80.1	54.0	58.7	61.5	70.5	74.8
2000	29	63.7	14.1	40.6	89.8	46.8	54.8	58.7	78.1	85.2
2001	32	69.9	12.1	52.6	91.4	54.3	60.4	68.5	81.0	86.3
2002	57	70.6	12.9	44.7	95.5	49.8	61.2	71.6	80.2	87.7
2003	42	67.2	13.5	42.8	92.4	52.6	56.9	63.7	78.8	84.4
2004	44	69.1	11.8	46.4	97.2	56.5	61.9	66.8	75.7	87.2
2005	47	70.8	11.4	40.6	91.4	55.9	62.2	71.3	79.2	85.9
2006	53	66.8	11.8	44.7	92.5	51.6	59.4	65.4	75.9	82.7
2007	55	67.4	11.1	33.4	85.5	52.9	61.6	65.8	78.2	83.6
2008	55	69.4	10.9	46.3	96.2	57.9	61.5	67.4	79.5	83.2
2009	66	68.5	12.5	44.1	94.4	51.4	59.2	68.2	77.9	86.1
2010	78	70.7	11.8	33.3	96.3	57.0	63.7	71.0	78.9	85.8
2011	56	70.1	11.6	47.1	91.5	53.8	61.3	70.0	79.9	83.9
2012	76	67.9	12.6	34.0	93.7	51.4	60.7	68.0	75.3	86.5
2013	71	70.6	10.8	35.6	90.3	56.8	64.5	71.6	78.3	84.1
2014	61	72.1	11.3	49.8	103	56.5	65.9	71.5	77.4	89.3
2015	63	72.1	11.8	44.2	95.5	57.0	64.4	71.4	79.9	88.9
2016	50	70.3	10.4	51.0	95.0	56.8	63.3	69.3	78.5	83.7
1998-2016	988	69.4	11.8	33.3	103	53.5	61.1	69.1	78.2	85.3

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									
25-29									
30-34	5	0.2	0.2	2	0.1	0.1	3	0.5	0.5
35-39	10	0.4	0.5	9	0.4	0.5	1	0.2	0.6
40-44	33	1.2	1.7	27	1.2	1.8	6	1.0	1.6
45-49	95	3.4	5.1	79	3.7	5.4	16	2.5	4.1
50-54	193	6.9	12.0	150	6.9	12.3	43	6.8	10.9
55-59	315	11.3	23.3	268	12.4	24.7	47	7.4	18.4
60-64	428	15.3	38.6	336	15.5	40.3	92	14.6	33.0
65-69	523	18.7	57.4	407	18.8	59.1	116	18.4	51.3
70-74	469	16.8	74.1	369	17.1	76.2	100	15.8	67.2
75-79	334	12.0	86.1	256	11.8	88.0	78	12.4	79.6
80-84	231	8.3	94.4	170	7.9	95.9	61	9.7	89.2
85+	157	5.6	100.0	89	4.1	100.0	68	10.8	100.0
All ages	2793	100.0		2162	100.0		631	100.0	

Table 5

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

Age at diagnosis Years	Males		Females		Males		Females		Males	Females
	n	n	Age- spec. incid.	Age- spec. incid.	DCO rate n=101 %	DCO rate n=45 %	Prop.all cancers %	Prop.all cancers %	Prop.all cancers %	Prop.all cancers %
0- 4										
5- 9										
10-14										
15-19										
20-24										
25-29										
30-34	2	3	0.1	0.2					0.2	0.2
35-39	9	1	0.6	0.1					0.7	0.0
40-44	27	6	1.4	0.3					1.2	0.1
45-49	79	16	4.0	0.8	2.5				2.0	0.2
50-54	150	43	8.7	2.5	3.3	4.7			2.4	0.5
55-59	268	47	18.9	3.2	1.9				2.9	0.5
60-64	336	92	27.4	6.9	2.7				2.6	0.8
65-69	407	116	34.3	8.9	3.2	4.3			2.2	0.8
70-74	369	100	33.4	7.9	6.0	6.0			1.8	0.7
75-79	256	78	32.1	7.8	3.5	3.8			1.5	0.6
80-84	170	61	37.0	8.6	12.4	19.7			1.5	0.6
85+	89	68	29.1	9.3	16.9	25.0			1.1	0.5
All ages	2162	631			4.7	7.1			1.9	0.6
Incidence										
Raw			9.5	2.7						
WS			5.0	1.2						
ES			7.2	1.7						
BRD-S			8.8	2.1						

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).

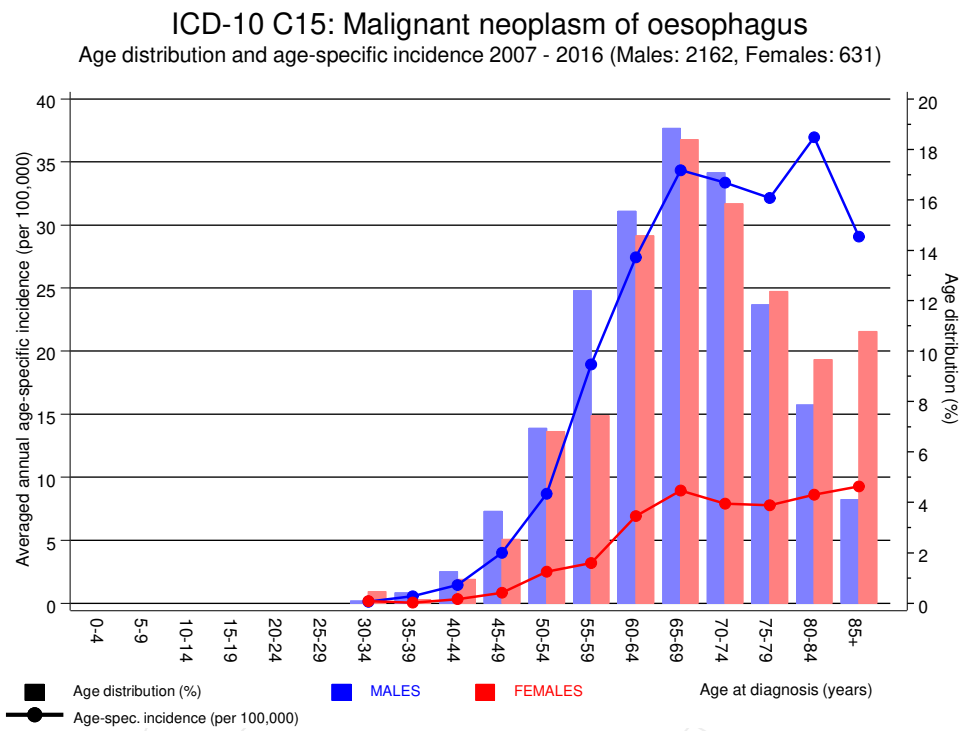


Figure 6. Age distribution (males: mean=67.3 yrs, median=67.5 yrs; females: mean=69.9 yrs, median=69.7 yrs) and age-specific incidence.

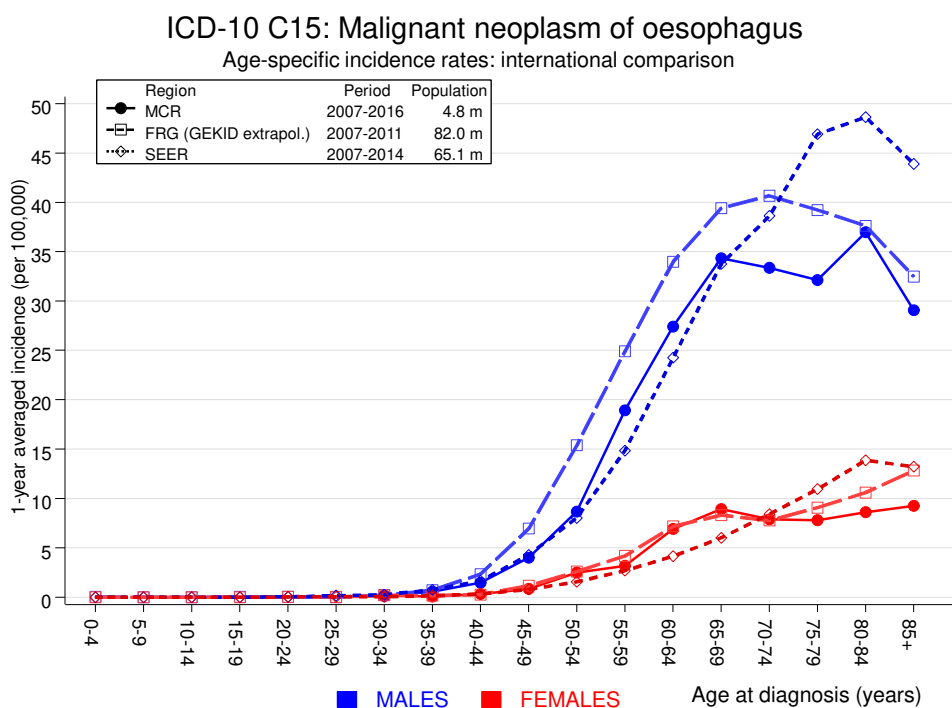


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. <http://www.gekid.de>. Last access: 02/11/2015
 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	21	0.8	25.0	15.5	38.3 #	35.5	4.8
C09-C10 Oropharynx	29	1.1	27.3	18.3	39.1 #	49.2	
C12-C13 Hypopharynx	19	0.6	32.7	19.7	51.0 #	32.4	
C14 ENT cancer	2	0.0	84.8	10.3	306.2 #	3.5	50.0
C16 Stomach	27	3.4	8.0	5.3	11.7 #	41.6	3.7
C17 Small intestine	6	0.5	12.3	4.5	26.8 #	9.7	
C18 Colon	25	8.1	3.1	2.0	4.6 #	29.8	12.0
C19-C20 Rectum	8	4.8	1.7	0.7	3.3	5.6	
C21 Anus/canal	3	0.2	14.6	3.0	42.8 #	4.9	
C22 Liver	23	2.5	9.1	5.7	13.6 #	36.0	26.1
C25 Pancreas	11	3.2	3.4	1.7	6.1 #	13.7	36.4
C32 Larynx	11	1.0	11.2	5.6	20.0 #	17.6	
C33-C34 Lung	59	10.6	5.6	4.3	7.2 #	85.2	13.6
C43 Malign. melanoma	4	3.9	1.0	0.3	2.6	0.2	25.0
C50 Breast	3	0.2	13.3	2.7	38.9 #	4.9	66.7
C61 Prostate	37	25.3	1.5	1.0	2.0 #	20.6	16.2
C62 Testis	2	0.2	8.5	1.0	30.5 #	3.1	
C64 Kidney	13	3.1	4.1	2.2	7.1 #	17.4	15.4
C67 Bladder	10	3.7	2.7	1.3	5.0 #	11.1	10.0
C73 Thyroid	5	0.6	7.9	2.5	18.3 #	7.7	
C76-C79 CUP	4	1.4	2.8	0.8	7.1	4.5	
C82-C85 NHL	7	3.5	2.0	0.8	4.1	6.2	42.9
C90 Mult. myeloma	4	1.1	3.6	1.0	9.3	5.1	25.0
C91-C96 Leukaemia	2	1.4	1.5	0.2	5.3	1.1	50.0
Others, specified	3	2.1	1.4	0.3	4.2	1.6	
Not observed	0	5.0	0.0	0.0	0.7 #	-8.8	
All further malignancies	338	88.4	3.8	3.4	4.3 #	439.3	12.1
Patients		3306					
Median age at next malignancy (years)		66.9					
Person-years		5683					
Mean observation time (years)		1.7					
Median observation time (years)		0.8					

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

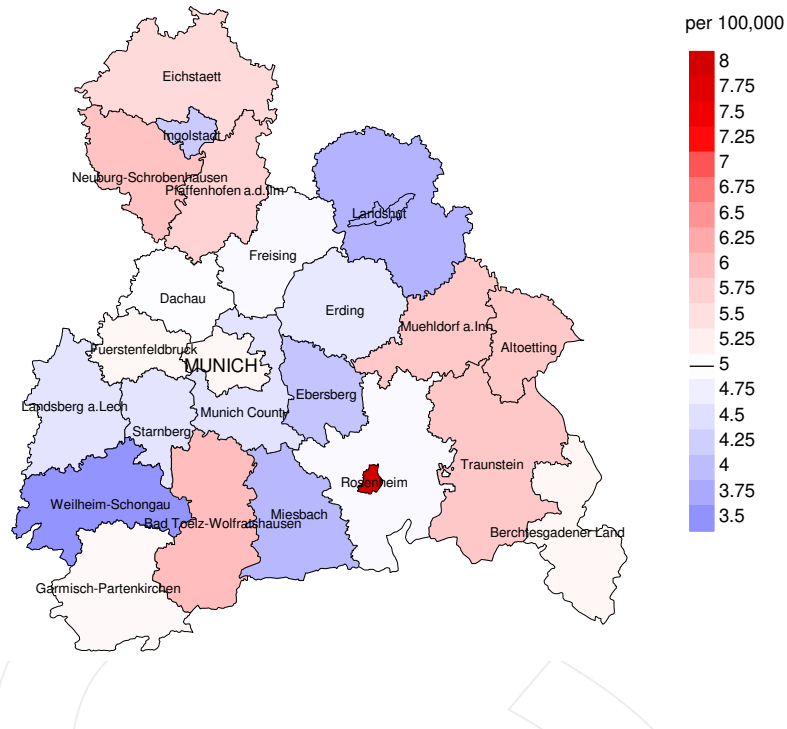
FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03–C06 Oral cavity	2	0.1	20.6	2.5	74.4 #	13.3	
C09–C10 Oropharynx	8	0.1	110.5	47.7	217.7 #	55.5	12.5
C12–C13 Hypopharynx	3	0.0	144.5	29.8	422.3 #	20.9	
C16 Stomach	4	0.5	8.1	2.2	20.6 #	24.5	
C18 Colon	9	1.4	6.3	2.9	11.9 #	53.0	22.2
C25 Pancreas	2	0.7	2.9	0.3	10.4	9.1	50.0
C32 Larynx	3	0.0	94.3	19.4	275.5 #	20.8	
C33–C34 Lung	17	1.3	13.6	7.9	21.8 #	110.3	23.5
C43 Malign. melanoma	3	0.6	4.9	1.0	14.4 #	16.7	
C50 Breast	16	5.0	3.2	1.8	5.2 #	76.9	6.3
C76–C79 CUP	4	0.3	15.0	4.1	38.5 #	26.1	
Others, specified	8	2.6	3.1	1.4	6.2 #	38.1	12.5
Not observed	0	3.4	0.0	0.0	1.1	-23.9	
All further malignancies	79	16.0	4.9	3.9	6.2 #	441.4	12.7
Patients		902					
Median age at next malignancy (years)		68.4					
Person-years		1428					
Mean observation time (years)		1.6					
Median observation time (years)		0.8					

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

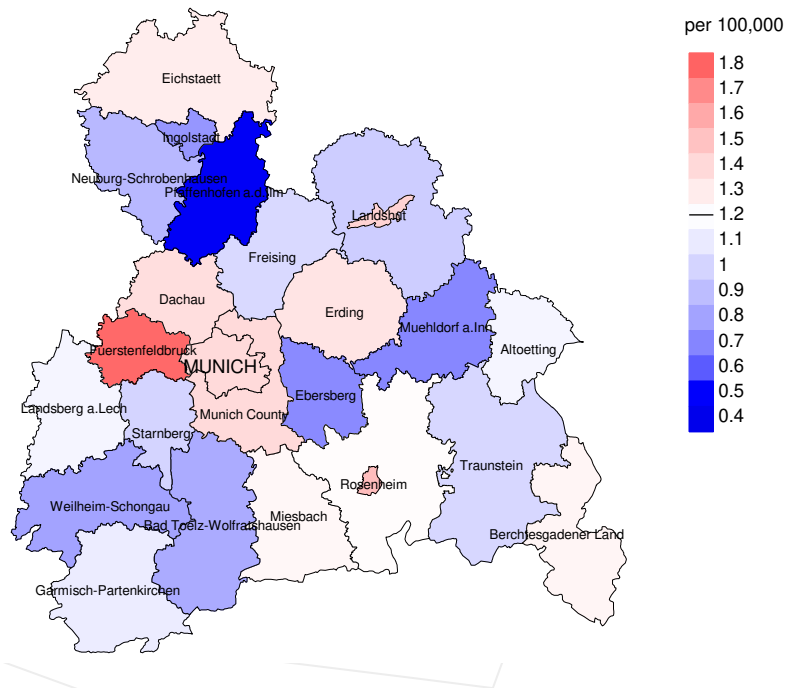
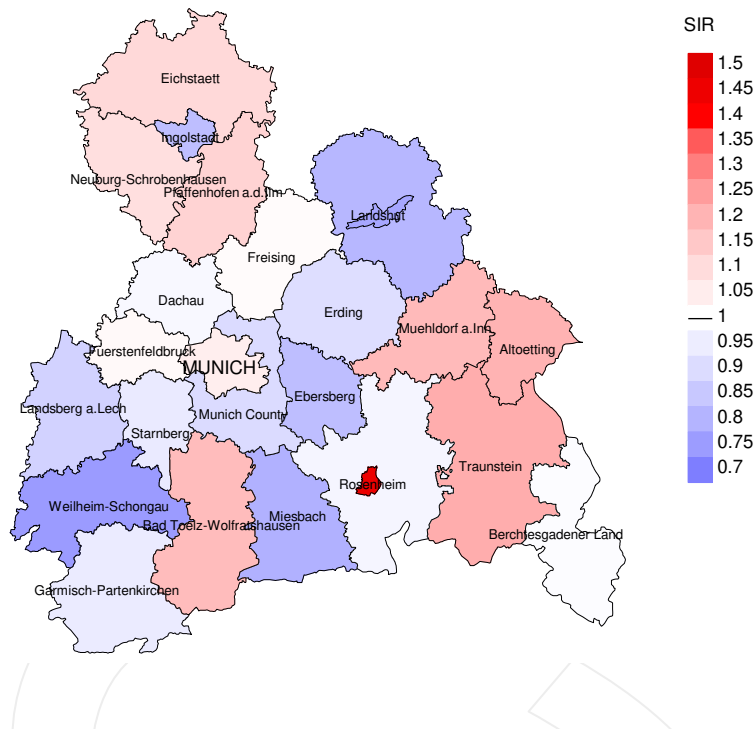


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 5.0/100,000 WS N=2,162, females 1.2/100,000 WS N=631).

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 10 women were identified with newly diagnosed oesophagus cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.2 and 1.9/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

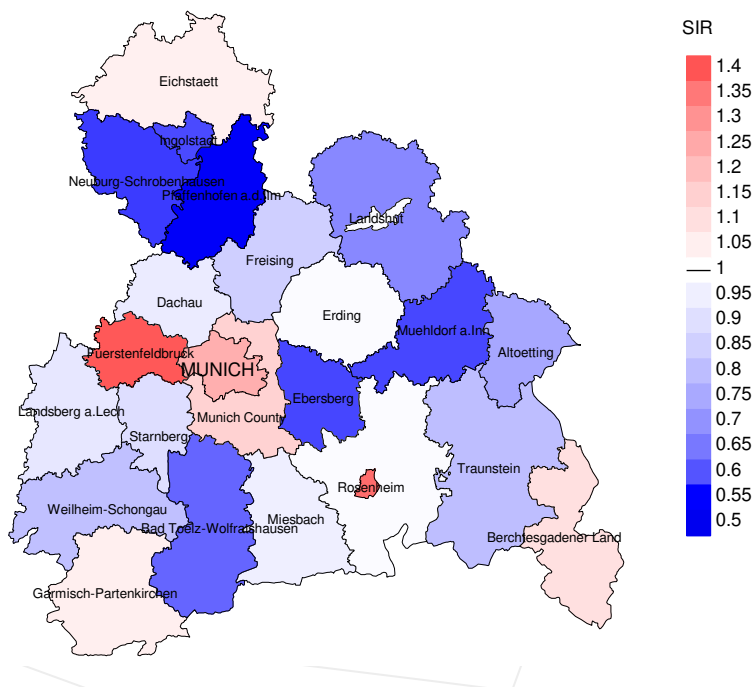


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,162, females N=631).

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 10 women were identified with newly diagnosed oesophagus cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.58. Though, the value of this parameter may vary with an underlying probability of 99% between 0.22 and 1.25, 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	140	99.3	12.1	137	97.9	92.0
1999	133	100.0	7.5	125	94.0	95.2
2000	132	98.5	9.1	124	93.9	96.0
2001	148	99.3	5.4	140	94.6	97.1
2002	269	100.0	11.5	247	91.8	98.0
2003	220	98.6	10.9	199	90.5	98.0
2004	221	98.2	8.6	197	89.1	98.0
2005	266	99.2	7.9	244	91.7	97.5
2006	231	97.8	3.0	203	87.9	98.5
2007	293	93.2	3.1	254	86.7	98.4
2008	283	89.4	3.9	239	84.5	99.6
2009	303	88.8	5.0	242	79.9	99.2
2010	296	87.2	5.4	240	81.1	97.1
2011	303	92.1	6.3	250	82.5	98.8
2012	300	88.0	6.0	235	78.3	96.2
2013	261	87.7	3.8	195	74.7	97.4
2014	278	92.4	7.2	198	71.2	97.5
2015	262	98.9	4.6	160	61.1	95.0
2016	214	68.2	7.5	96	44.9	80.2
1998-2016	4553	92.9	6.5	3725	81.8	97.0

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	140	110	91.8	62	44.3
1999	133	106	91.5	39	29.3
2000	132	99	97.0	31	23.5
2001	148	136	94.9	60	40.5
2002	269	219	98.6	112	41.6
2003	220	188	98.4	85	38.6
2004	221	189	97.4	71	32.1
2005	266	214	98.1	94	35.3
2006	231	199	97.0	77	33.3
2007	293	228	97.8	85	29.0
2008	283	217	98.6	78	27.6
2009	303	237	99.2	83	27.4
2010	296	238	98.7	76	25.7
2011	303	277	97.8	110	36.3
2012	300	242	97.5	91	30.3
2013	261	251	97.6	77	29.5
2014	278	264	98.9	95	34.2
2015	262	253	99.6	90	34.4
2016	214	218	97.2	80	37.4
1998-2016	4553	3885	97.7	1496	32.9

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	110	82.7	17.3	94.1
1999	106	90.6	9.4	97.9
2000	99	86.9	13.1	95.8
2001	136	80.9	19.1	96.9
2002	219	92.2	7.8	97.2
2003	188	90.4	9.6	95.7
2004	189	92.1	7.9	97.3
2005	214	95.8	4.2	98.6
2006	199	94.0	6.0	98.4
2007	228	87.7	12.3	94.2
2008	217	91.2	8.8	96.3
2009	237	88.2	11.8	93.2
2010	238	89.5	10.5	95.3
2011	277	86.6	13.4	94.1
2012	242	90.1	9.9	94.9
2013	251	86.9	13.1	94.7
2014	264	82.6	17.4	91.6
2015	253	85.8	14.2	91.7
2016	218	80.7	19.3	92.9
1998-2016	3885	88.2	11.8	95.0

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	79	60.6	60.5	72.7	60.7
1999	86	64.4	64.3	70.7	64.6
2000	83	61.9	60.8	74.5	61.2
2001	102	63.4	62.8	64.6	62.8
2002	169	65.8	65.3	73.5	65.5
2003	160	65.1	65.0	65.9	65.2
2004	148	64.6	64.6	65.4	64.5
2005	170	66.8	66.5	75.8	66.9
2006	159	66.8	66.9	66.7	67.0
2007	186	67.1	66.4	70.8	66.7
2008	166	68.2	68.0	72.1	68.0
2009	190	68.9	68.6	70.6	68.8
2010	181	68.5	68.5	70.5	68.5
2011	220	69.5	68.2	76.5	69.0
2012	183	68.9	68.8	75.9	68.4
2013	188	69.2	68.5	72.3	69.2
2014	200	71.6	71.1	74.5	71.6
2015	199	73.0	71.3	80.5	71.7
2016	175	72.7	71.0	77.3	72.1
1998–2016	3044	68.1	67.5	73.0	67.8

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	31	74.3	72.5	80.8	74.7
1999	20	73.1	68.2	82.6	68.2
2000	16	66.1	67.5	58.0	66.1
2001	34	73.9	72.7	78.5	74.4
2002	50	73.6	72.7	85.2	73.6
2003	28	65.2	62.8	78.5	62.8
2004	41	64.9	65.2	62.7	64.9
2005	44	67.5	67.1	70.2	67.5
2006	40	76.4	76.5	61.4	76.5
2007	42	65.9	65.8	83.4	65.9
2008	51	66.3	66.3	66.2	66.3
2009	47	67.3	67.2	69.5	67.9
2010	57	72.2	71.7	73.1	72.1
2011	57	71.0	71.3	68.3	71.0
2012	59	69.5	68.4	72.8	70.0
2013	63	72.1	70.0	79.9	71.0
2014	64	74.4	73.0	76.8	72.7
2015	54	73.1	73.1	73.4	73.0
2016	43	74.0	73.2	77.1	72.4
1998–2016	841	71.3	70.6	76.5	71.1

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	65	5.9	0.60	3.6	0.59	5.2	0.59	6.3	0.59
1999	78	7.0	0.70	4.2	0.69	6.1	0.70	7.4	0.72
2000	71	6.2	0.69	3.9	0.71	5.6	0.70	6.5	0.67
2001	86	7.4	0.74	4.5	0.73	6.5	0.74	7.9	0.74
2002	156	8.4	0.74	5.0	0.71	7.1	0.72	8.5	0.74
2003	144	7.7	0.81	4.5	0.80	6.5	0.81	7.9	0.83
2004	136	7.2	0.77	4.2	0.76	6.0	0.76	7.3	0.79
2005	162	8.6	0.74	4.8	0.75	7.0	0.74	8.5	0.74
2006	150	7.8	0.84	4.3	0.83	6.2	0.83	7.6	0.85
2007	162	7.3	0.68	4.1	0.68	5.8	0.67	7.2	0.68
2008	151	6.8	0.66	3.6	0.63	5.3	0.65	6.5	0.66
2009	170	7.6	0.72	4.0	0.71	5.8	0.70	7.1	0.71
2010	163	7.2	0.75	3.8	0.72	5.6	0.73	6.8	0.74
2011	191	8.5	0.77	4.4	0.77	6.4	0.77	7.9	0.78
2012	164	7.2	0.73	3.7	0.69	5.4	0.71	6.6	0.73
2013	162	7.0	0.85	3.6	0.85	5.3	0.85	6.3	0.86
2014	166	7.1	0.76	3.4	0.74	5.1	0.75	6.4	0.76
2015	172	7.2	0.86	3.4	0.80	5.1	0.82	6.5	0.85
2016	138	5.7	0.84	2.8	0.81	4.1	0.83	5.2	0.83
1998-2016	2687	7.3	0.75	3.9	0.74	5.7	0.74	7.0	0.76

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	26	2.2	0.81	1.0	0.84	1.5	0.84	2.0	0.84
1999	18	1.5	0.86	0.7	0.72	1.0	0.72	1.3	0.82
2000	15	1.2	0.52	0.6	0.45	0.9	0.47	1.1	0.53
2001	24	2.0	0.75	0.9	0.72	1.3	0.72	1.6	0.73
2002	46	2.3	0.81	1.1	0.78	1.6	0.81	2.0	0.81
2003	26	1.3	0.62	0.6	0.58	0.9	0.58	1.1	0.61
2004	38	1.9	0.86	0.9	0.85	1.3	0.86	1.6	0.89
2005	43	2.2	0.91	1.0	0.98	1.5	0.98	1.8	0.90
2006	37	1.8	0.70	0.7	0.53	1.1	0.58	1.5	0.66
2007	38	1.6	0.69	0.8	0.65	1.1	0.68	1.4	0.70
2008	47	2.0	0.85	1.0	0.86	1.4	0.84	1.7	0.83
2009	39	1.7	0.59	0.8	0.62	1.2	0.59	1.4	0.60
2010	50	2.1	0.64	0.9	0.62	1.3	0.63	1.6	0.62
2011	49	2.1	0.88	0.9	0.80	1.3	0.81	1.6	0.80
2012	54	2.3	0.71	1.1	0.66	1.5	0.68	1.8	0.69
2013	56	2.3	0.79	1.1	0.82	1.5	0.81	1.9	0.80
2014	52	2.2	0.85	0.9	0.82	1.3	0.81	1.6	0.83
2015	45	1.8	0.71	0.7	0.65	1.1	0.67	1.3	0.69
2016	38	1.5	0.76	0.6	0.63	0.9	0.66	1.2	0.74
1998-2016	741	1.9	0.75	0.9	0.71	1.2	0.72	1.6	0.74

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									
25-29									
30-34	3	0.1	0.1	1	0.1	0.1	2	0.4	0.4
35-39	0	0.0	0.1			0.1			0.4
40-44	18	0.9	1.0	17	1.0	1.1	1	0.2	0.6
45-49	65	3.1	4.1	53	3.2	4.3	12	2.6	3.2
50-54	112	5.3	9.4	84	5.1	9.5	28	6.0	9.2
55-59	231	11.0	20.4	205	12.5	22.0	26	5.6	14.7
60-64	298	14.1	34.5	222	13.5	35.5	76	16.2	31.0
65-69	392	18.6	53.1	320	19.5	55.0	72	15.4	46.4
70-74	381	18.1	71.2	297	18.1	73.2	84	17.9	64.3
75-79	253	12.0	83.2	203	12.4	85.5	50	10.7	75.0
80-84	204	9.7	92.9	148	9.0	94.6	56	12.0	87.0
85+	150	7.1	100.0	89	5.4	100.0	61	13.0	100.0
All ages	2107	100.0		1639	100.0		468	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.	Females Age- spec. mortal.	Males MI-index	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	1	2	0.1	0.50	0.1	0.67	1.0	1.7
35-39								
40-44	17	1	0.9	0.63	0.1	0.17	3.4	0.1
45-49	53	12	2.7	0.67	0.6	0.75	4.6	0.9
50-54	84	28	4.9	0.56	1.6	0.65	4.1	1.4
55-59	205	26	14.5	0.76	1.8	0.55	6.1	0.9
60-64	222	76	18.1	0.66	5.7	0.83	4.5	2.0
65-69	320	72	27.0	0.79	5.5	0.62	4.4	1.4
70-74	297	84	26.8	0.80	6.6	0.84	3.2	1.2
75-79	203	50	25.5	0.79	5.0	0.64	2.3	0.7
80-84	148	56	32.2	0.87	7.9	0.92	2.0	0.8
85+	89	61	29.1	1.00	8.3	0.90	1.4	0.7
All ages	1639	468					3.1	1.0
Mortality								
Raw			7.2	0.76	2.0	0.74		
WS			3.7	0.73	0.9	0.71		
ES			5.4	0.74	1.2	0.72		
BRD-S			6.7	0.76	1.5	0.73		
PYLL-70								
per 100,000			40.6		9.7			
ES			34.9		8.0			
AYLL-70			9.1		8.9			

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 ←%
C03–C06 Oral cavity	73	7.9	53	72.6	10	13.7	10	13.7
C09–C10 Oropharynx	99	10.7	60	60.6	20	20.2	19	19.2
C12–C13 Hypopharynx	60	6.5	40	66.7	11	18.3	9	15.0
C16 Stomach	37	4.0	13	35.1	18	48.6	6	16.2
C18 Colon	59	6.4	40	67.8	10	16.9	9	15.3
C19–C20 Rectum	34	3.7	24	70.6	5	14.7	5	14.7
C22 Liver	26	2.8	6	23.1	11	42.3	9	34.6
C25 Pancreas	14	1.5	3	21.4	4	28.6	7	50.0
C32 Larynx	45	4.9	32	71.1	8	17.8	5	11.1
C33–C34 Lung	109	11.8	36	33.0	28	25.7	45	41.3
C43 Malign. melanoma	12	1.3	10	83.3	1	8.3	1	8.3
C44 Skin others	53	5.7	31	58.5	3	5.7	19	35.8
C61 Prostate	136	14.7	106	77.9	7	5.1	23	16.9
C64 Kidney	29	3.1	18	62.1	1	3.4	10	34.5
C67 Bladder	27	2.9	17	63.0	1	3.7	9	33.3
C73 Thyroid	10	1.1	6	60.0	1	10.0	3	30.0
C76–C79 CUP	14	1.5	7	50.0	5	35.7	2	14.3
C82–C85 NHL	18	2.0	12	66.7	1	5.6	5	27.8
Others, specified	68	7.4	39	57.4	7	10.3	22	32.4
All further malignancies	923	100.0	553	59.9	152	16.5	218	23.6

Further malignancies with number of cases 1 to 8 are pooled in category “Others, specified”.

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	17	6.7	16	94.1			1	5.9
C09–C10 Oropharynx	27	10.6	17	63.0	5	18.5	5	18.5
C12–C13 Hypopharynx	8	3.1	4	50.0	4	50.0		
C16 Stomach	5	2.0			2	40.0	3	60.0
C18 Colon	19	7.5	11	57.9	3	15.8	5	26.3
C19–C20 Rectum	6	2.4	5	83.3	1	16.7		
C25 Pancreas	5	2.0	3	60.0			2	40.0
C32 Larynx	4	1.6	2	50.0			2	50.0
C33–C34 Lung	21	8.3	6	28.6	2	9.5	13	61.9
C43 Malign. melanoma	6	2.4	5	83.3			1	16.7
C44 Skin others	4	1.6	4	100.0				
C50 Breast	76	29.9	65	85.5	6	7.9	5	6.6
C53 Cervix uteri	7	2.8	6	85.7			1	14.3
C54 Corpus uteri	7	2.8	7	100.0				
C64 Kidney	3	1.2	2	66.7	1	33.3		
C67 Bladder	5	2.0	5	100.0				
C73 Thyroid	6	2.4	6	100.0				
C76–C79 CUP	3	1.2	1	33.3	1	33.3	1	33.3
C82–C85 NHL	6	2.4	5	83.3	1	16.7		
C91–C96 Leukaemia	3	1.2	3	100.0				
Others, specified	16	6.3	12	75.0	3	18.8	1	6.3
All further malignancies	254	100.0	185	72.8	29	11.4	40	15.7

Further malignancies with number of cases 1 to 2 are pooled in category "Others, specified".

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		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34	1	2	0.1	0.50	0.1	0.67	1.0	1.9
35-39								
40-44	17	1	0.9	0.63	0.1	0.25	3.7	0.2
45-49	46	9	2.3	0.65	0.5	0.64	4.4	0.8
50-54	67	21	3.9	0.55	1.2	0.60	3.7	1.3
55-59	159	22	11.2	0.74	1.5	0.59	5.4	0.9
60-64	178	55	14.5	0.67	4.1	0.82	4.3	1.8
65-69	252	46	21.3	0.79	3.5	0.63	4.3	1.1
70-74	223	62	20.2	0.83	4.9	0.86	3.1	1.2
75-79	144	34	18.1	0.78	3.4	0.56	2.2	0.6
80-84	102	41	22.2	0.98	5.8	0.89	1.9	0.8
85+	65	47	21.2	1.05	6.4	0.92	1.4	0.6
All ages	1254	340					3.1	0.9
Mortality								
Raw			5.5	0.76	1.4	0.73		
WS			2.9	0.73	0.6	0.71		
ES			4.2	0.74	0.9	0.71		
BRD-S			5.1	0.76	1.1	0.72		
PYLL-70								
per 100,000			33.0		7.4			
ES			28.3		6.1			
AYLL-70			9.3		9.5			

* 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.	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	1	2	0.1	0.50	0.1	1.00	1.0	1.9
35-39								
40-44	16	1	0.9	0.59	0.1	0.25	3.5	0.2
45-49	44	9	2.2	0.67	0.5	0.64	4.2	0.8
50-54	61	20	3.5	0.54	1.2	0.65	3.4	1.2
55-59	148	20	10.5	0.73	1.4	0.63	5.1	0.8
60-64	157	52	12.8	0.65	3.9	0.83	3.8	1.7
65-69	232	41	19.6	0.79	3.2	0.60	4.1	1.0
70-74	196	57	17.7	0.78	4.5	0.84	2.8	1.1
75-79	130	33	16.3	0.74	3.3	0.57	2.0	0.6
80-84	88	35	19.1	0.88	4.9	0.85	1.7	0.7
85+	58	45	18.9	0.98	6.1	0.92	1.3	0.6
All ages	1131	315					2.9	0.9
Mortality								
Raw			4.9	0.73	1.3	0.73		
WS			2.6	0.71	0.6	0.71		
ES			3.8	0.72	0.8	0.71		
BRD-S			4.6	0.73	1.0	0.72		
PYLL-70								
per 100,000			30.4		7.0			
ES			26.1		5.8			
AYLL-70			9.3		9.6			

* See corresponding tables with multiple malignancies.

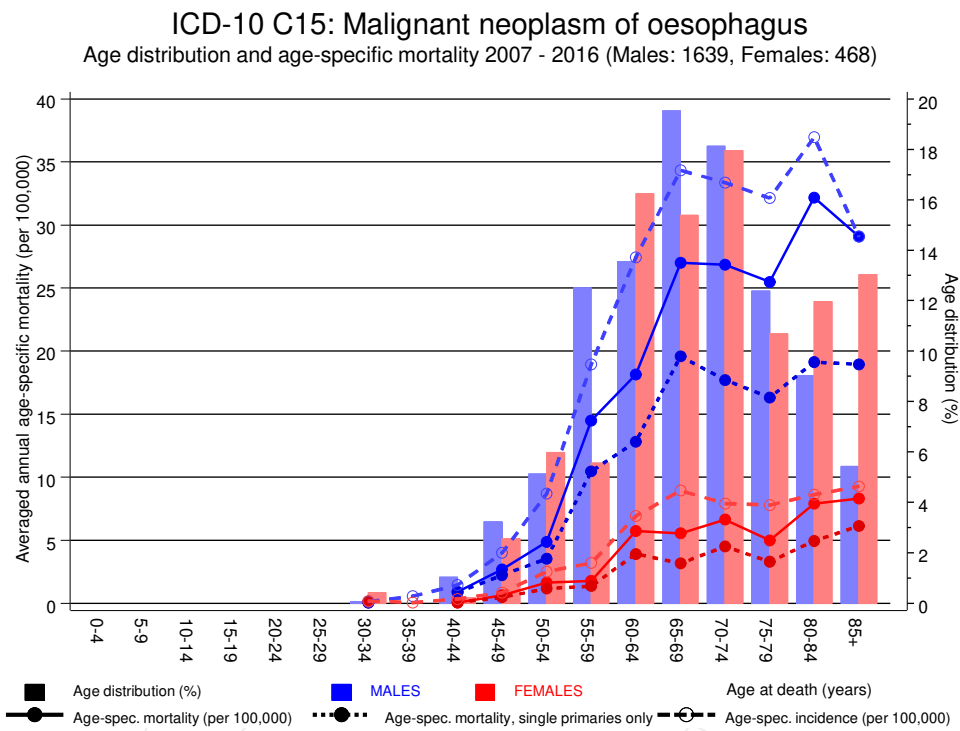
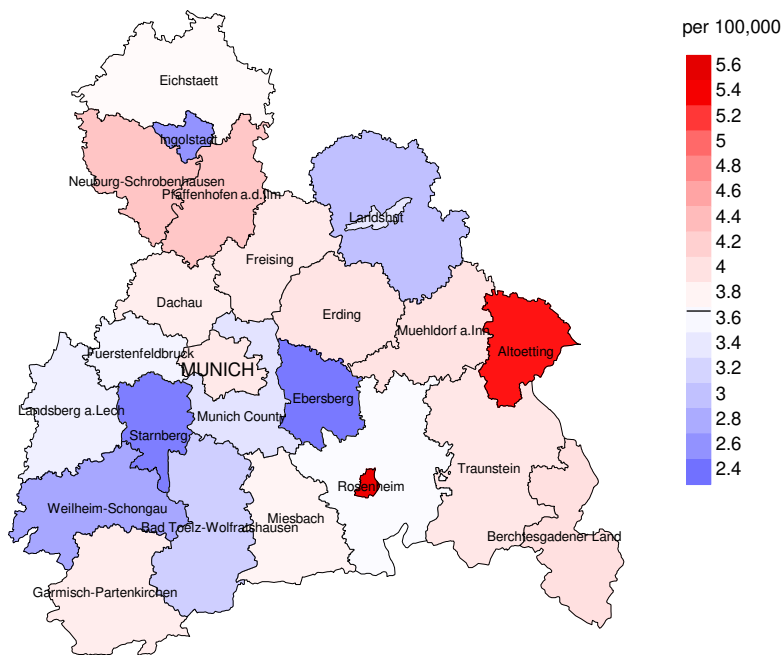


Figure 17. Distribution of age at death (bars; males: mean=66.8 yrs, median=66.9 yrs; females: mean=69.9 yrs, median=69.5 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

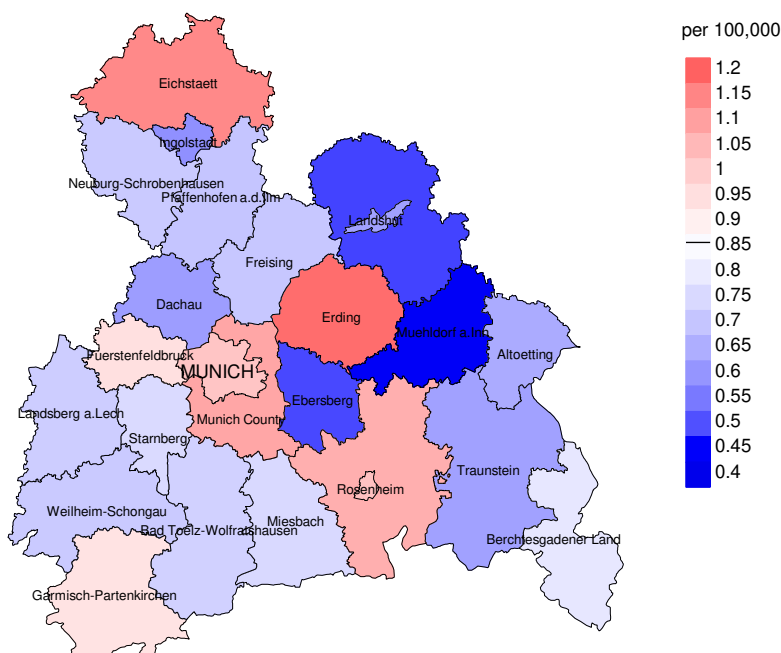
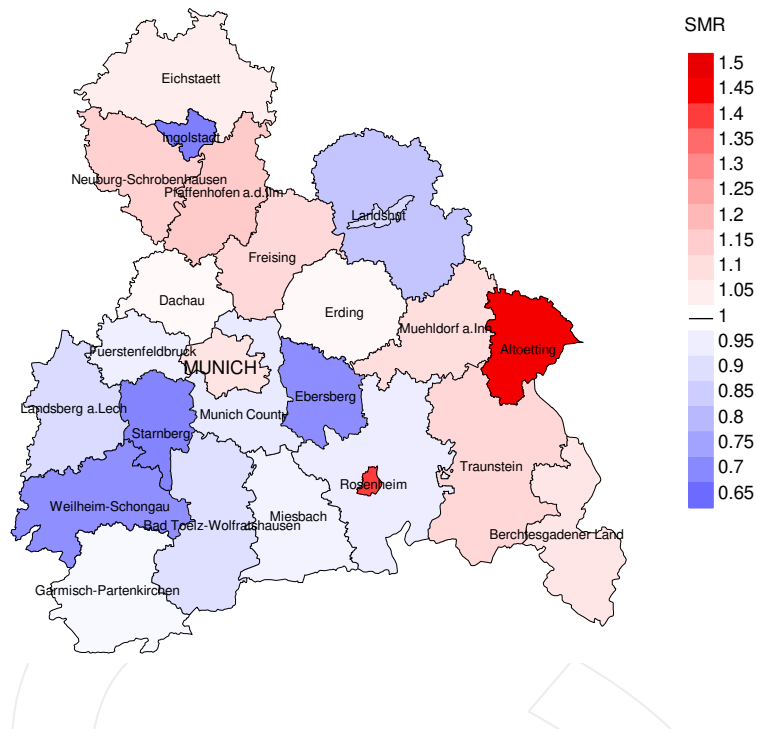


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 3.7/100,000 WS N=1,639, females 0.9/100,000 WS N=468).

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 7 women died from oesophagus cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 1.6/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

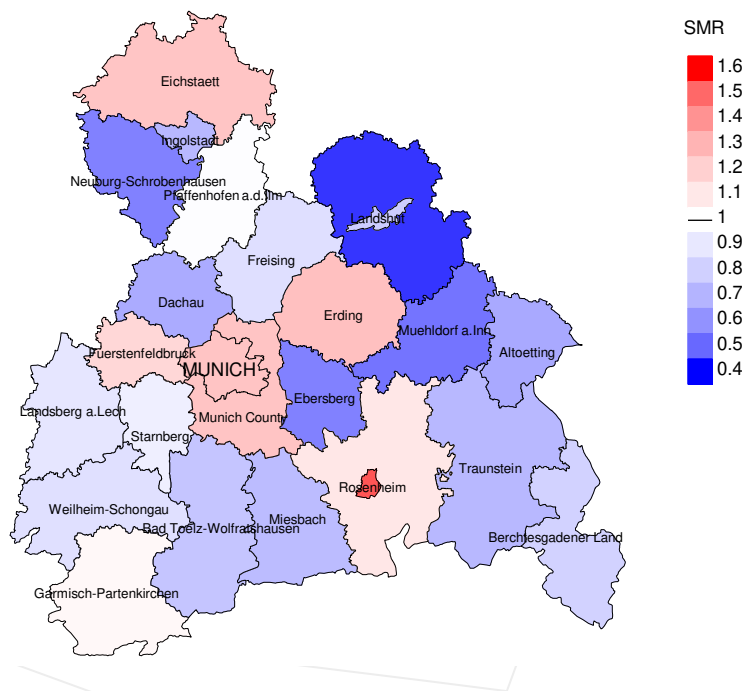


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,639, females N=468).

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 7 women died from oesophagus cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.55. Though, the value of this parameter may vary with an underlying probability of 99% between 0.16 and 1.36, 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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