Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C15: Oesophagus cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	5,623
Diseases	5,624
Creation date	12/20/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
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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

Index of figures and tables

Global Statements about the statistics on the Internet −
Baseline Statistics (grey button), **Survival** (red button)

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.69 million inhabitants, account for the frequency of cancer diseases[##] and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases[###] are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, December 2021

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

[##] Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

[###] DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

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

Code	Description
C15.-	Malignant neoplasm of oesophagus
	Note: Two alternative subclassifications are given: .0–.2 by anatomical description .3–.5 by thirds 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.
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	144	17	11.8	11.8	7.4	95.8	99.3
1999	136	10	7.4	12.1	7.4	94.1	100.0
2000	133	15	11.3	13.3	7.5	95.5	99.2
2001	149	10	6.7	14.4	7.4	97.3	100.0
2002	269	32	11.9	15.4	7.4	94.1	100.0 #
2003	220	25	11.4	15.5	7.4	91.4	99.1
2004	222	21	9.5	15.9	7.4	92.3	98.6
2005	267	23	8.6	17.4	7.3	94.0	100.0
2006	231	8	3.5	17.7	7.2	90.5	97.8
2007	293	11	3.8	18.0	7.1	91.8	99.7 #
2008	284	12	4.2	18.3	6.9	88.4	99.6
2009	305	15	4.9	18.4	6.8	82.3	98.0
2010	297	16	5.4	18.2	6.9	85.2	99.0
2011	305	20	6.6	18.7	6.9	88.5	99.7
2012	301	18	6.0	18.8	6.5	82.4	100.0
2013	264	12	4.5	19.0	6.3	83.7	99.2
2014	295	22	7.5	19.4	6.2	86.1	98.3
2015	316	13	4.1	20.0	5.6	76.6	98.4
2016	283	17	6.0	20.5	5.5	78.4	100.0
2017	263	14	5.3	20.8	5.0	68.1	100.0
2018	237	10	4.2	20.9	4.6	62.0	99.6
2019	203	2	1.0	21.2	4.1	61.1	100.0
2020	207	1	0.5	21.4	3.0	42.5	100.0 ##
1998-2020	5624	344	6.1	21.4	7.4	83.1	99.3

5,624 cases diagnosed 1998-2020 are related to a total of 5,623 patients. Currently, in 1,660 (29.5 %) of these 5,623 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,255 / 309 / 96 (22.3 % / 5.5 % / 1.7 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 237 cases has been diagnosed, of which 20.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.6 % 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	112	77.8	11	9.8	10.7	7.7	94.6	99.1
1999	115	84.6	9	7.8	9.7	7.6	93.0	100.0
2000	104	78.2	11	10.6	11.2	7.7	95.2	99.0
2001	117	78.5	7	6.0	13.4	7.6	97.4	100.0
2002	212	78.8	26	12.3	14.7	7.5	94.8	100.0 #
2003	178	80.9	20	11.2	15.0	7.6	92.1	99.4
2004	177	79.7	11	6.2	15.5	7.6	92.7	99.4
2005	220	82.4	18	8.2	16.9	7.5	92.7	100.0
2006	178	77.1	7	3.9	17.2	7.4	91.6	98.3
2007	238	81.2	8	3.4	17.1	7.2	91.6	99.6 #
2008	229	80.6	10	4.4	17.4	7.0	86.9	99.6
2009	238	78.0	8	3.4	17.6	6.8	83.2	98.3
2010	219	73.7	11	5.0	17.5	7.0	83.6	99.5
2011	248	81.3	17	6.9	17.9	7.0	89.1	99.6
2012	226	75.1	13	5.8	18.0	6.5	80.5	100.0
2013	192	72.7	7	3.6	18.1	6.3	81.8	99.5
2014	232	78.6	16	6.9	18.6	6.1	86.2	98.3
2015	241	76.3	7	2.9	19.4	5.6	77.2	98.8
2016	219	77.4	11	5.0	19.8	5.5	79.0	100.0
2017	195	74.1	7	3.6	20.0	5.0	68.7	100.0
2018	184	77.6	6	3.3	20.2	4.4	61.4	99.5
2019	153	75.4	1	0.7	20.6	4.1	60.8	100.0
2020	153	73.9			20.6	2.0	38.6	100.0 ##
1998-2020	4380	77.9	242	5.5	20.6	7.7	83.1	99.5

4,380 cases diagnosed 1998-2020 are related to a total of 4,379 patients. Currently, in 1,267 (28.9 %) of these 4,379 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 954 / 241 / 72 (21.8 % / 5.5 % / 1.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 184 cases has been diagnosed, of which 20.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.4 % 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	22.2	6	18.8	15.6	6.7	100.0	100.0	
1999	21	15.4	1	4.8	22.6	6.7	100.0	100.0	
2000	29	21.8	4	13.8	22.0	6.6	96.6	100.0	
2001	32	21.5	3	9.4	18.4	6.7	96.9	100.0	
2002	57	21.2	6	10.5	18.1	6.7	91.2	100.0	#
2003	42	19.1	5	11.9	17.4	6.7	88.1	97.6	
2004	45	20.3	10	22.2	17.8	6.9	91.1	95.6	
2005	47	17.6	5	10.6	19.3	6.6	100.0	100.0	
2006	53	22.9	1	1.9	19.8	6.7	86.8	96.2	
2007	55	18.8	3	5.5	21.3	6.6	92.7	100.0	#
2008	55	19.4	2	3.6	21.8	6.6	94.5	100.0	
2009	67	22.0	7	10.4	21.5	6.9	79.1	97.0	
2010	78	26.3	5	6.4	20.9	6.7	89.7	97.4	
2011	57	18.7	3	5.3	21.6	6.7	86.0	100.0	
2012	75	24.9	5	6.7	21.7	6.5	88.0	100.0	
2013	72	27.3	5	6.9	22.0	6.4	88.9	98.6	
2014	63	21.4	6	9.5	22.3	6.6	85.7	98.4	
2015	75	23.7	6	8.0	22.4	5.7	74.7	97.3	
2016	64	22.6	6	9.4	23.0	5.4	76.6	100.0	
2017	68	25.9	7	10.3	23.4	5.1	66.2	100.0	
2018	53	22.4	4	7.5	23.2	5.3	64.2	100.0	
2019	50	24.6	1	2.0	23.7	4.0	62.0	100.0	
2020	54	26.1	1	1.9	24.1	5.9	53.7	100.0	##
1998-2020	1244	22.1	102	8.2	24.1	6.7	83.4	99.0	

1,244 cases diagnosed 1998-2020 are related to a total of 1,244 patients. Currently, in 393 (31.6 %) of these 1,244 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 301 / 68 / 24 (24.2 % / 5.5 % / 1.9 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 53 cases has been diagnosed, of which 23.2 % 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 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	112	32	10.1	2.7	6.3	1.2	9.1	1.8	10.9	2.3
1999	115	21	10.3	1.8	6.3	1.0	9.0	1.4	10.5	1.6
2000	104	29	9.1	2.4	5.5	1.3	8.0	1.9	9.9	2.1
2001	117	32	10.1	2.6	6.2	1.2	9.0	1.8	10.8	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	45	9.4	2.3	5.5	1.1	7.9	1.6	9.3	1.9
2005	220	47	11.6	2.4	6.5	1.0	9.4	1.5	11.5	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	229	55	10.3	2.4	5.7	1.2	8.3	1.7	10.0	2.1
2009	238	67	10.7	2.9	5.7	1.4	8.2	2.0	10.0	2.4
2010	219	78	9.7	3.3	5.4	1.4	7.7	2.1	9.3	2.6
2011	248	57	11.1	2.4	5.8	1.1	8.4	1.6	10.3	2.0
2012	226	75	10.0	3.2	5.4	1.6	7.7	2.2	9.1	2.6
2013	192	72	8.3	3.0	4.3	1.3	6.2	1.9	7.5	2.4
2014	232	63	10.0	2.6	5.0	1.1	7.3	1.6	9.0	2.0
2015	241	75	10.1	3.1	5.2	1.3	7.5	1.9	9.3	2.4
2016	219	64	9.1	2.6	4.5	1.1	6.6	1.6	8.3	2.0
2017	195	68	8.1	2.8	4.2	1.3	6.0	1.8	7.3	2.2
2018	184	53	7.6	2.1	3.8	1.0	5.5	1.4	6.8	1.7
2019	153	50	6.3	2.0	3.2	0.9	4.6	1.3	5.6	1.6
2020	153	54	6.3	2.2	3.1	0.9	4.6	1.3	5.6	1.7
1998-2020	4380	1244	9.4	2.6	5.1	1.2	7.3	1.7	8.9	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	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	144	64.0	12.8	25.0	93.8	49.5	55.3	62.9	75.0	79.5
1999	136	63.4	10.4	37.6	89.6	51.9	56.4	61.7	71.0	77.2
2000	133	64.0	11.6	39.6	92.2	49.8	56.4	61.9	72.6	79.2
2001	149	65.3	11.0	38.9	97.2	52.6	57.4	63.6	72.7	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	222	65.8	10.9	36.5	97.2	52.7	59.2	64.9	71.9	80.1
2005	267	66.7	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	284	67.2	10.6	32.2	96.2	53.9	60.2	65.9	74.3	82.0
2009	305	67.0	10.8	35.6	94.4	52.0	59.2	68.0	73.9	80.7
2010	297	67.1	11.8	32.0	96.3	53.1	59.7	67.2	75.5	83.2
2011	305	68.6	10.4	44.0	94.6	55.0	61.1	68.7	75.8	83.0
2012	301	66.7	10.4	34.0	93.7	52.5	60.2	67.0	73.3	80.2
2013	264	68.0	10.6	35.6	99.8	54.1	59.9	69.5	75.0	80.6
2014	295	69.5	10.9	41.0	103	55.0	62.5	70.2	76.6	83.6
2015	316	69.0	10.7	40.8	95.5	55.7	61.3	69.4	76.6	82.0
2016	283	69.7	10.1	43.3	95.0	56.1	62.3	69.6	77.6	81.6
2017	263	67.9	10.9	30.3	94.6	53.7	60.9	68.4	75.8	80.7
2018	237	68.9	10.0	35.1	94.7	55.8	62.1	69.2	76.4	81.3
2019	203	67.9	10.5	40.9	93.7	54.0	60.6	68.1	76.0	80.9
2020	207	68.7	10.9	32.4	89.6	55.4	61.3	68.7	77.3	82.2
1998-2020	5624	67.2	10.9	25.0	103	53.1	59.6	67.2	75.0	81.3

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	112	62.0	12.5	25.0	93.8	47.9	53.3	59.9	70.9	78.1
1999	115	63.3	10.7	37.6	89.6	50.9	55.6	61.7	71.6	77.2
2000	104	64.1	10.9	39.6	92.2	49.8	56.9	62.3	72.5	78.1
2001	117	64.1	10.4	38.9	97.2	51.5	56.8	62.5	69.7	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	220	65.8	10.4	34.8	96.0	53.7	58.2	65.6	74.1	79.4
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	229	66.7	10.5	32.2	91.6	53.2	59.9	65.7	73.6	81.9
2009	238	66.7	10.3	35.6	89.0	52.7	59.3	68.0	73.6	80.1
2010	219	65.8	11.6	32.0	91.0	50.5	57.6	66.0	74.4	81.7
2011	248	68.2	10.1	44.0	94.6	55.3	61.1	68.5	74.6	82.1
2012	226	66.4	9.7	39.2	90.1	53.2	59.6	66.6	73.2	78.7
2013	192	67.1	10.4	43.5	99.8	54.0	58.8	68.5	74.3	79.3
2014	232	68.7	10.6	41.0	91.2	54.8	61.5	69.4	76.3	82.8
2015	241	68.2	10.5	40.8	95.0	55.0	61.0	67.8	76.1	80.8
2016	219	69.5	10.1	43.3	92.8	55.9	61.8	69.6	77.0	81.5
2017	195	67.8	10.2	30.3	94.6	53.8	61.1	69.1	75.1	80.0
2018	184	68.8	9.7	42.7	94.7	56.1	62.0	68.9	76.4	81.0
2019	153	67.5	10.8	40.9	93.7	53.8	59.6	67.4	76.0	81.0
2020	153	67.9	10.7	32.4	88.6	54.1	60.5	68.3	76.6	80.7
1998-2020	4380	66.5	10.6	25.0	99.8	52.9	59.2	66.7	74.2	80.3

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	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	45	69.3	11.7	46.4	97.2	56.5	61.9	67.8	76.0	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	67	68.3	12.4	44.1	94.4	51.4	58.9	67.9	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	57	70.3	11.6	47.1	91.5	53.8	62.4	70.2	80.0	83.9
2012	75	67.5	12.3	34.0	93.7	51.4	60.4	67.8	75.2	85.7
2013	72	70.4	10.9	35.6	90.3	54.3	64.0	71.5	78.0	84.1
2014	63	72.4	11.4	49.8	103	56.5	65.9	72.3	77.7	89.5
2015	75	71.8	11.0	48.7	95.5	57.9	63.5	71.4	79.2	88.5
2016	64	70.5	10.1	51.0	95.0	57.1	63.4	69.3	78.4	83.0
2017	68	68.0	12.8	36.4	92.5	53.5	57.6	66.9	77.0	86.0
2018	53	69.2	11.0	35.1	93.0	54.0	62.2	70.8	75.5	83.1
2019	50	68.9	9.5	41.9	82.6	56.7	65.0	69.2	76.0	79.1
2020	54	71.0	11.3	41.7	89.6	56.6	63.1	71.8	81.2	83.8
1998-2020	1244	69.4	11.7	33.3	103	53.9	61.3	69.2	78.0	84.8

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34	8	0.2	0.2	5	0.2	0.2	3	0.3	0.3
35-39	13	0.3	0.5	9	0.3	0.5	4	0.5	0.8
40-44	47	1.2	1.8	38	1.3	1.8	9	1.0	1.8
45-49	119	3.1	4.9	99	3.3	5.1	20	2.3	4.1
50-54	260	6.7	11.6	202	6.8	11.9	58	6.5	10.6
55-59	438	11.4	23.0	366	12.3	24.2	72	8.1	18.7
60-64	575	14.9	37.9	444	15.0	39.2	131	14.8	33.5
65-69	706	18.3	56.2	553	18.6	57.8	153	17.3	50.8
70-74	649	16.8	73.1	506	17.1	74.9	143	16.1	66.9
75-79	514	13.3	86.4	393	13.2	88.1	121	13.7	80.6
80-84	327	8.5	94.9	239	8.1	96.2	88	9.9	90.5
85+	197	5.1	100.0	113	3.8	100.0	84	9.5	100.0
All ages	3853	100.0		2967	100.0		886	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=122 %	Females DCO rate n=61 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34	5	3	0.2	0.1			0.4	0.1
35-39	9	4	0.4	0.2			0.5	0.1
40-44	38	9	1.5	0.4			1.4	0.1
45-49	99	20	3.7	0.8	2.0		2.0	0.2
50-54	202	58	7.9	2.3	3.0	3.4	2.4	0.5
55-59	366	72	17.2	3.3	2.2	1.4	2.9	0.5
60-64	444	131	25.1	6.9	2.0	1.5	2.5	0.8
65-69	553	153	33.9	8.4	2.9	3.9	2.3	0.8
70-74	506	143	33.7	8.3	4.5	6.3	1.8	0.7
75-79	393	121	32.5	8.1	5.1	4.1	1.6	0.6
80-84	239	88	33.0	8.3	9.2	15.9	1.6	0.6
85+	113	84	24.2	8.1	14.2	26.2	1.1	0.5
All ages	2967	886			4.1	6.9	1.9	0.6
Incidence								
Raw			9.1	2.6				
WS			4.7	1.2				
ES			6.8	1.7				
BRD-S			8.3	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).

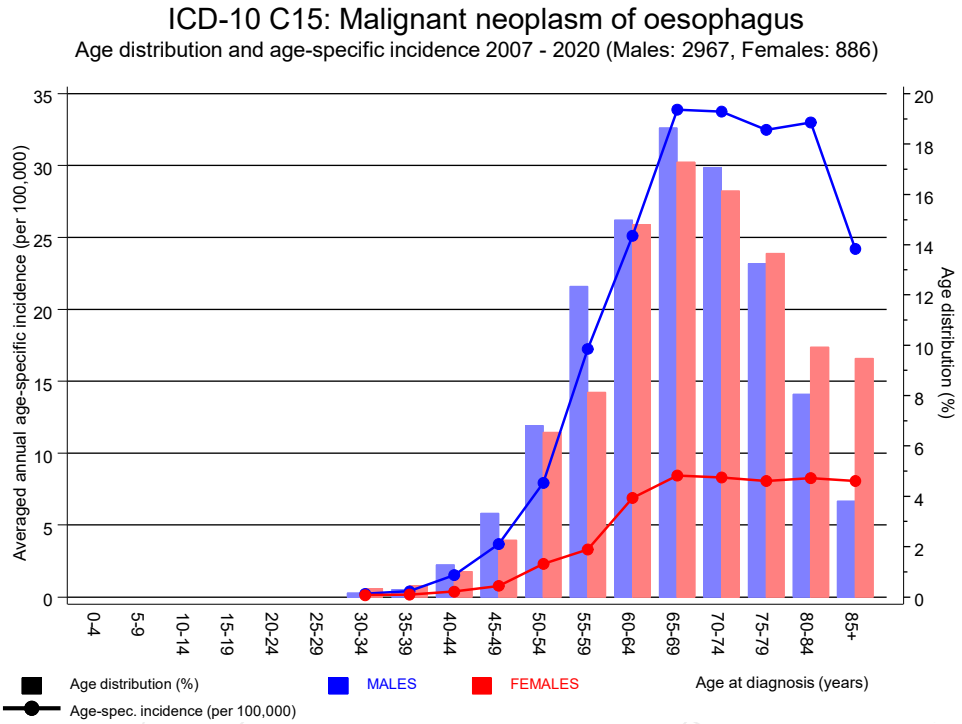


Figure 6. Age distribution (males: mean=67.5 yrs, median=67.8 yrs; females: mean=69.7 yrs, median=69.8 yrs) and age-specific incidence.

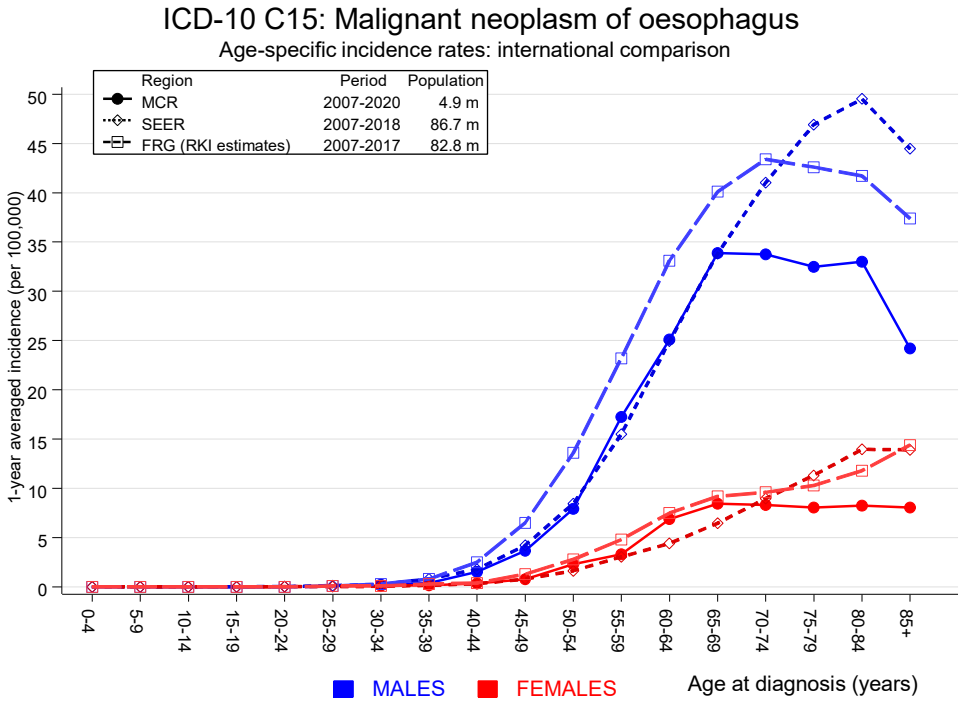


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

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

Table 7a

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

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C00	Lip	1	0.1	8.2	0.2	45.7		1.1	
C03–C06	Oral cavity	24	1.1	22.1	14.2	32.9	#	29.2	4.2
C09–C10	Oropharynx	36	1.4	26.3	18.4	36.4	#	44.1	
C11	Nasopharynx	1	0.1	10.9	0.3	60.7		1.2	
C12–C13	Hypopharynx	33	0.7	44.5	30.7	62.6	#	41.1	3.0
C14	ENT cancer	2	0.0	69.9	8.5	252.5	#	2.5	50.0
C15	Oesophagus	2	2.5	0.8	0.1	2.9		−0.6	
C16	Stomach	33	4.4	7.4	5.1	10.4	#	36.3	3.0
C17	Small intestine	6	0.7	8.3	3.1	18.1	#	6.7	
C18	Colon	41	11.0	3.7	2.7	5.1	#	38.2	4.9
C19–C20	Rectum	14	6.4	2.2	1.2	3.7	#	9.7	
C21	Anus/canal	3	0.3	10.1	2.1	29.6	#	3.4	
C22	Liver	27	3.5	7.8	5.1	11.4	#	30.0	18.5
C23–C24	Bile	1	1.2	0.8	0.0	4.6		−0.3	
C25	Pancreas	19	4.5	4.2	2.5	6.5	#	18.4	26.3
C32	Larynx	15	1.2	12.0	6.7	19.9	#	17.5	
C33–C34	Lung	80	14.0	5.7	4.5	7.1	#	84.0	11.3
C43	Malign. melanoma	8	5.4	1.5	0.6	2.9		3.3	12.5
C44	Skin others	1	0.0	34.3	0.9	191.1		1.2	
C50	Breast	4	0.3	12.3	3.4	31.5	#	4.7	50.0
C61	Prostate	49	33.4	1.5	1.1	1.9	#	19.8	16.3
C62	Testis	2	0.3	6.3	0.8	22.6		2.1	
C64	Kidney	17	4.1	4.1	2.4	6.6	#	16.4	11.8
C65	Renal pelvis	1	0.5	2.0	0.0	10.9		0.6	
C66	Ureter	1	0.3	3.3	0.1	18.3		0.9	
C67	Bladder	13	5.2	2.5	1.3	4.3	#	9.9	7.7
C68	Urethra	1	0.1	8.9	0.2	49.4		1.1	
C73	Thyroid	7	0.8	8.5	3.4	17.6	#	7.9	
C76–C79	CUP	7	1.9	3.6	1.5	7.5	#	6.4	
C82–C85	NHL	10	4.9	2.1	1.0	3.8		6.5	30.0
C90	Mult. myeloma	5	1.5	3.3	1.1	7.8	#	4.4	20.0
C91–C96	Leukaemia	4	1.7	2.4	0.6	6.0		2.9	25.0
Not observed		0	5.0	0.0	0.0	0.7	#	−6.3	
All further malignancies		468	118.8	3.9	3.6	4.3	#	444.4	9.4

Patients	4221
Median age at next malignancy (years)	68.1
Person-years	7858
Mean observation time (years)	1.9
Median observation time (years)	0.8

The occurrence of further specified malignancy is statistically significant.

Table 7b

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	4	0.1	30.9	8.4	79.0	#	19.3	
C09–C10	Oropharynx	10	0.1	98.9	47.4	181.8	#	49.3	10.0
C12–C13	Hypopharynx	4	0.0	150.6	41.0	385.5	#	19.8	
C16	Stomach	6	0.7	9.1	3.3	19.7	#	26.6	
C18	Colon	11	2.0	5.6	2.8	10.0	#	44.9	18.2
C19–C20	Rectum	2	0.8	2.4	0.3	8.8		5.9	
C22	Liver	2	0.3	7.4	0.9	26.9		8.6	
C23–C24	Bile	1	0.3	3.5	0.1	19.7		3.6	
C25	Pancreas	2	1.0	2.0	0.2	7.3		5.0	50.0
C32	Larynx	3	0.0	71.1	14.7	207.7	#	14.7	
C33–C34	Lung	23	1.8	13.1	8.3	19.6	#	105.7	17.4
C43	Malign. melanoma	3	0.8	3.5	0.7	10.4		10.7	
C50	Breast	19	7.0	2.7	1.6	4.2	#	59.7	5.3
C52	Vagina	2	0.0	50.0	6.1	180.7	#	9.8	
C53	Cervix uteri	1	0.3	3.6	0.1	20.3		3.6	100.0
C56	Ovary	2	0.9	2.3	0.3	8.3		5.6	
C64	Kidney	1	0.5	2.0	0.1	11.2		2.5	
C67	Bladder	1	0.4	2.5	0.1	14.1		3.0	
C76–C79	CUP	5	0.4	13.8	4.5	32.2	#	23.1	
C82–C85	NHL	1	0.8	1.2	0.0	6.7		0.8	
Not observed		0	3.8	0.0	0.0	1.0	#	-18.9	
All further malignancies		103	22.0	4.7	3.8	5.7	#	403.2	9.7

Patients	1182
Median age at next malignancy (years)	67.6
Person-years	2009
Mean observation time (years)	1.7
Median observation time (years)	0.7

The occurrence of further specified malignancy is statistically significant.

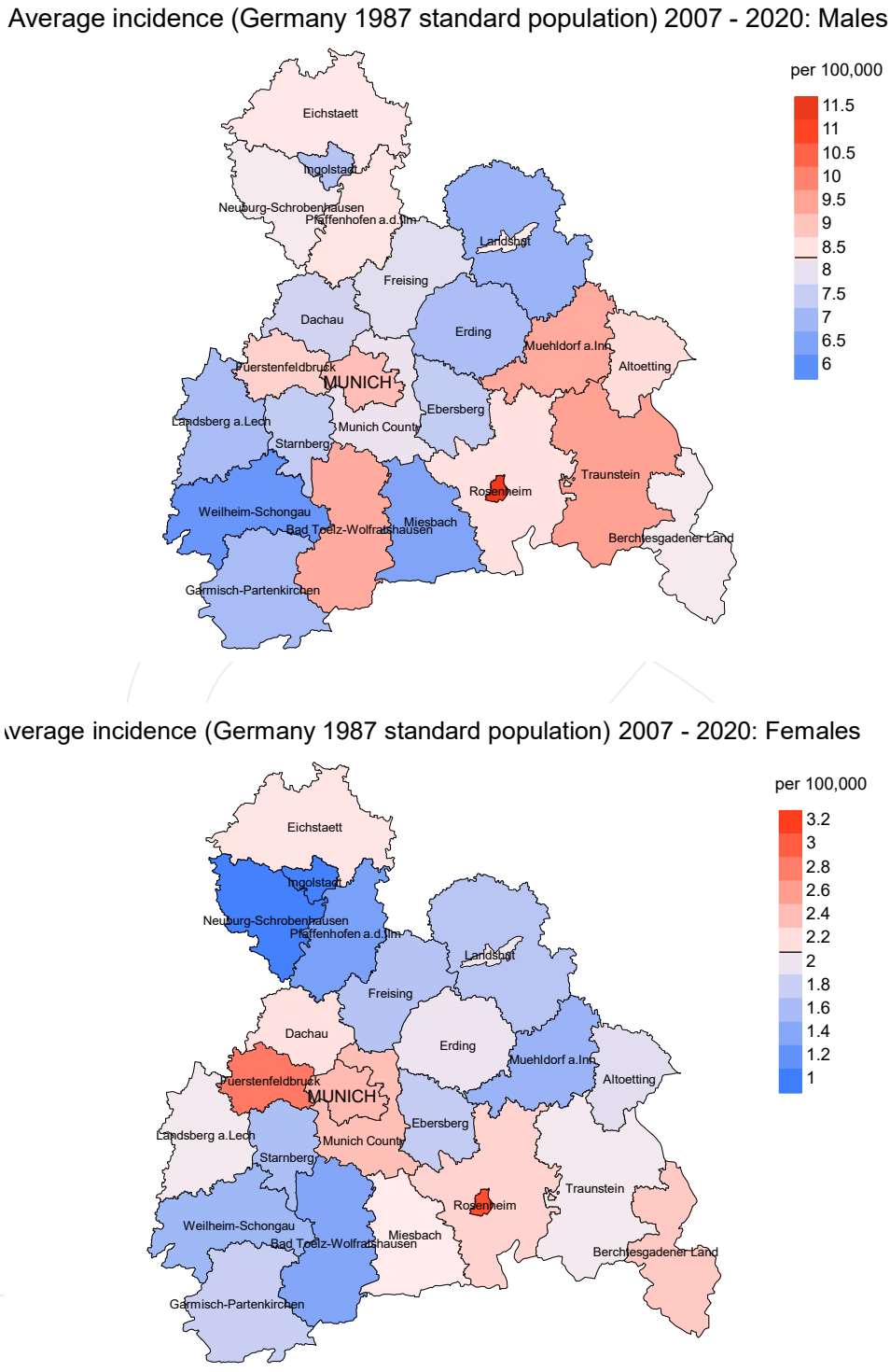
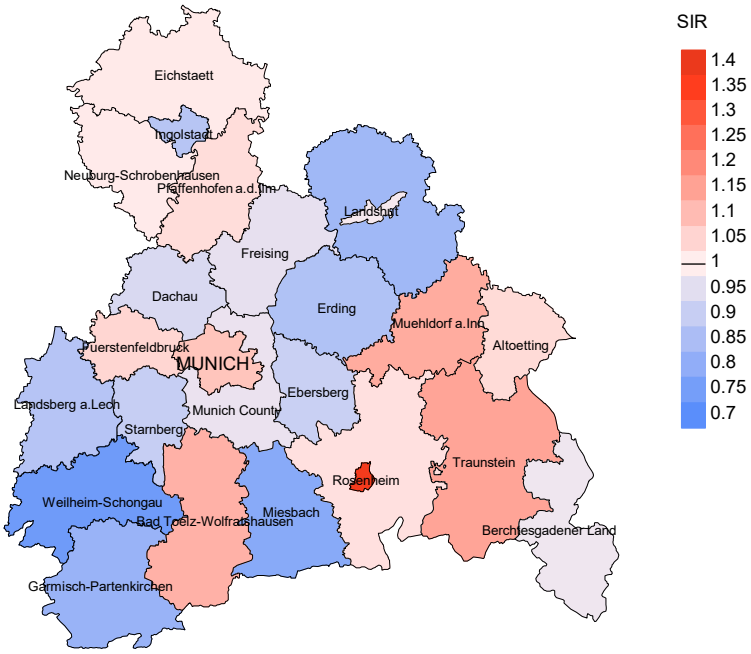


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 8.3/100,000 WS N=2,967, females 2.1/100,000 WS N=886).

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 20 women were identified with newly diagnosed oesophagus cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.8/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.9 and 3.1/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

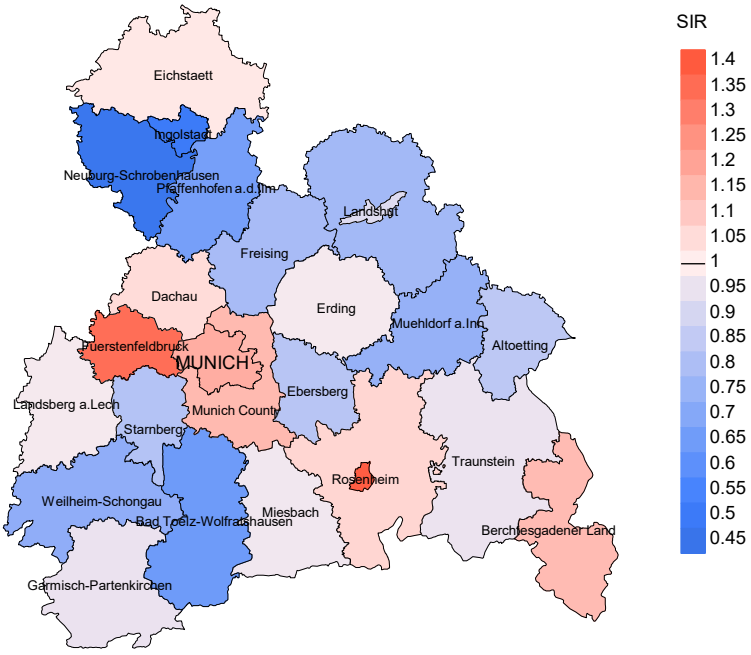


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,967, females N=886).

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 20 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 0.83. Though, the value of this parameter may vary with an underlying probability of 99% between 0.43 and 1.43, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	144	99.3	11.8	138	95.8	92.0
1999	136	100.0	7.4	128	94.1	95.3
2000	133	99.2	11.3	127	95.5	96.1
2001	149	100.0	6.7	145	97.3	96.6
2002	269	100.0	11.9	253	94.1	97.6
2003	220	99.1	11.4	201	91.4	98.0
2004	222	98.6	9.5	205	92.3	96.6
2005	267	100.0	8.6	251	94.0	96.4
2006	231	97.8	3.5	209	90.5	98.1
2007	293	99.7	3.8	269	91.8	95.9
2008	284	99.6	4.2	251	88.4	98.0
2009	305	98.0	4.9	251	82.3	98.8
2010	297	99.0	5.4	253	85.2	96.4
2011	305	99.7	6.6	270	88.5	96.7
2012	301	100.0	6.0	248	82.4	96.4
2013	264	99.2	4.5	221	83.7	95.5
2014	295	98.3	7.5	254	86.1	93.7
2015	316	98.4	4.1	242	76.6	94.6
2016	283	100.0	6.0	222	78.4	89.6
2017	263	100.0	5.3	179	68.1	78.8
2018	237	99.6	4.2	147	62.0	53.7
2019	203	100.0	1.0	124	61.1	82.3
2020	207	100.0	0.5	88	42.5	93.2
1998–2020	5624	99.3	6.1	4676	83.1	93.6

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	144	111	91.9	62	43.1
1999	136	107	91.6	40	29.4
2000	133	100	97.0	31	23.3
2001	149	138	94.9	61	40.9
2002	269	219	98.6	112	41.6
2003	220	188	98.4	85	38.6
2004	222	190	97.4	71	32.0
2005	267	215	98.1	95	35.6
2006	231	199	97.0	77	33.3
2007	293	228	97.8	85	29.0
2008	284	217	98.6	78	27.5
2009	305	238	99.2	83	27.2
2010	297	238	98.7	76	25.6
2011	305	277	97.8	110	36.1
2012	301	243	97.5	90	29.9
2013	264	251	97.6	77	29.2
2014	295	266	98.5	95	32.2
2015	316	257	99.6	91	28.8
2016	283	269	97.0	102	36.0
2017	263	238	98.3	72	27.4
2018	237	197	62.9	53	22.4
2019	203	200	38.5	53	26.1
2020	207	191	95.8	45	21.7
1998–2020	5624	4777	93.7	1744	31.0

Table 9c

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

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	111	82.9	17.1	94.1
1999	107	90.7	9.3	98.0
2000	100	87.0	13.0	95.9
2001	138	81.2	18.8	96.9
2002	219	92.2	7.8	97.2
2003	188	90.4	9.6	95.7
2004	190	92.1	7.9	97.3
2005	215	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	238	87.8	12.2	92.8
2010	238	89.5	10.5	95.3
2011	277	86.6	13.4	94.1
2012	243	90.1	9.9	94.9
2013	251	86.9	13.1	94.7
2014	266	83.1	16.9	91.6
2015	257	86.4	13.6	91.8
2016	269	85.1	14.9	93.5
2017	238	88.7	11.3	91.9
2018	197	62.4	37.6	81.5
2019	200	56.5	43.5	85.7
2020	191	77.5	22.5	88.5
1998-2020	4777	85.7	14.3	94.1

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	80	60.6	60.5	72.7	61.1
1999	87	64.3	64.3	70.7	64.4
2000	84	61.9	60.9	74.5	61.3
2001	104	62.8	62.7	64.6	62.7
2002	169	65.8	65.3	73.5	65.5
2003	160	65.1	65.0	65.9	65.2
2004	149	64.7	64.7	65.4	64.6
2005	171	66.9	66.6	75.8	67.1
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	191	68.9	68.6	70.5	68.8
2010	181	68.5	68.5	70.5	68.5
2011	220	69.5	68.2	76.5	69.0
2012	184	68.9	68.9	75.9	68.5
2013	188	69.2	68.5	72.3	69.2
2014	202	71.6	71.1	74.5	71.6
2015	201	72.5	71.0	80.5	71.3
2016	214	72.3	71.0	76.5	71.6
2017	186	73.4	73.3	75.9	73.1
2018	156	72.0	70.3	72.8	71.6
2019	149	72.3	72.0	73.3	72.0
2020	146	72.3	71.1	72.9	71.1
1998-2020	3733	68.8	68.1	72.8	68.3

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	72.7	76.9	72.7
2015	56	73.3	73.1	77.4	73.1
2016	55	73.2	72.4	78.0	72.8
2017	52	75.2	74.6	80.9	74.0
2018	41	73.0	72.9	73.2	72.8
2019	51	71.6	72.6	71.6	74.8
2020	45	73.4	71.4	83.0	73.0
1998–2020	1044	71.6	71.0	74.4	71.4

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
1998	66	6.0	0.59	3.7	0.58	5.2	0.58	6.3	0.58
1999	79	7.1	0.69	4.3	0.68	6.2	0.69	7.5	0.71
2000	72	6.3	0.69	3.9	0.71	5.6	0.71	6.6	0.67
2001	88	7.6	0.75	4.6	0.74	6.7	0.75	8.1	0.75
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	137	7.3	0.77	4.2	0.76	6.0	0.77	7.4	0.80
2005	163	8.6	0.74	4.9	0.75	7.0	0.74	8.6	0.75
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	0.64	6.5	0.66
2009	170	7.6	0.71	4.0	0.70	5.8	0.70	7.1	0.71
2010	163	7.2	0.74	3.8	0.72	5.6	0.73	6.8	0.74
2011	191	8.5	0.77	4.4	0.76	6.4	0.77	7.9	0.77
2012	165	7.3	0.73	3.7	0.69	5.5	0.71	6.7	0.73
2013	162	7.0	0.84	3.6	0.85	5.3	0.84	6.3	0.85
2014	168	7.2	0.72	3.4	0.69	5.1	0.70	6.5	0.72
2015	174	7.3	0.72	3.5	0.66	5.2	0.69	6.6	0.72
2016	178	7.4	0.81	3.5	0.79	5.3	0.80	6.7	0.81
2017	166	6.9	0.85	3.0	0.72	4.6	0.77	6.1	0.83
2018	93	3.8	0.51	1.9	0.49	2.7	0.49	3.4	0.51
2019	85	3.5	0.56	1.6	0.52	2.5	0.54	3.1	0.55
2020	112	4.6	0.73	2.2	0.69	3.2	0.71	4.1	0.72
1998-2020	3195	6.9	0.73	3.6	0.71	5.3	0.72	6.5	0.73

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	0.84	0.9	0.84	1.3	0.85	1.6	0.87
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	0.58	0.8	0.61	1.2	0.58	1.4	0.59
2010	50	2.1	0.64	0.9	0.62	1.3	0.63	1.6	0.62
2011	49	2.1	0.86	0.9	0.79	1.3	0.80	1.6	0.79
2012	54	2.3	0.72	1.1	0.66	1.5	0.68	1.8	0.70
2013	56	2.3	0.78	1.1	0.81	1.5	0.79	1.9	0.79
2014	53	2.2	0.84	0.9	0.82	1.3	0.81	1.6	0.82
2015	48	2.0	0.64	0.7	0.56	1.1	0.58	1.4	0.61
2016	51	2.1	0.80	0.8	0.71	1.2	0.73	1.6	0.79
2017	45	1.8	0.66	0.7	0.55	1.1	0.58	1.4	0.62
2018	30	1.2	0.57	0.5	0.50	0.7	0.51	0.9	0.51
2019	28	1.1	0.56	0.5	0.50	0.7	0.52	0.9	0.54
2020	36	1.5	0.67	0.6	0.68	0.9	0.66	1.1	0.65
1998-2020	897	1.9	0.72	0.8	0.68	1.2	0.69	1.5	0.71

Table 12

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34	4	0.1	0.1	2	0.1	0.1	2	0.3	0.3
35-39	0	0.0	0.1			0.1			0.3
40-44	23	0.8	1.0	21	1.0	1.1	2	0.3	0.6
45-49	73	2.6	3.6	59	2.8	3.8	14	2.2	2.9
50-54	140	5.1	8.7	107	5.0	8.8	33	5.3	8.2
55-59	296	10.7	19.4	257	12.0	20.8	39	6.3	14.4
60-64	386	14.0	33.4	285	13.3	34.2	101	16.2	30.6
65-69	479	17.3	50.7	388	18.1	52.3	91	14.6	45.2
70-74	499	18.1	68.7	390	18.2	70.5	109	17.5	62.7
75-79	374	13.5	82.3	299	14.0	84.5	75	12.0	74.7
80-84	286	10.3	92.6	209	9.8	94.3	77	12.3	87.0
85+	204	7.4	100.0	123	5.7	100.0	81	13.0	100.0
All ages	2764	100.0		2140	100.0		624	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	2	2	0.1	0.40	0.1	0.67	1.4	1.1
35-39								
40-44	21	2	0.8	0.55	0.1	0.22	3.5	0.2
45-49	59	14	2.2	0.60	0.5	0.70	4.2	0.8
50-54	107	33	4.2	0.53	1.3	0.57	4.0	1.2
55-59	257	39	12.1	0.70	1.8	0.54	5.8	1.0
60-64	285	101	16.1	0.64	5.3	0.77	4.4	2.0
65-69	388	91	23.8	0.70	5.0	0.59	4.2	1.3
70-74	390	109	26.0	0.77	6.3	0.76	3.3	1.2
75-79	299	75	24.7	0.76	5.0	0.62	2.4	0.8
80-84	209	77	28.9	0.87	7.2	0.88	2.0	0.8
85+	123	81	26.3	1.09	7.8	0.96	1.4	0.7
All ages	2140	624					3.1	1.0
Mortality								
Raw			6.6	0.72	1.9	0.70		
WS			3.3	0.69	0.8	0.67		
ES			4.8	0.70	1.2	0.67		
BRD-S			6.0	0.72	1.4	0.69		
PYLL-70								
per 100,000			35.5		8.8			
ES			30.1		7.2			
AYLL-70			9.1		8.8			

Table 14a

Further malignancies in deaths in period 1998–2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	2	0.2	1	50.0			1	50.0
C03–C06	Oral cavity	85	7.5	62	72.9	10	11.8	13	15.3
C09–C10	Oropharynx	108	9.6	67	62.0	21	19.4	20	18.5
C12–C13	Hypopharynx	72	6.4	46	63.9	13	18.1	13	18.1
C14	ENT cancer	3	0.3	1	33.3			2	66.7
C15	Oesophagus	10	0.9			2	20.0	8	80.0
C16	Stomach	44	3.9	15	34.1	19	43.2	10	22.7
C17	Small intestine	8	0.7	2	25.0	1	12.5	5	62.5
C18	Colon	74	6.6	50	67.6	13	17.6	11	14.9
C19–C20	Rectum	42	3.7	32	76.2	5	11.9	5	11.9
C21	Anus/canal	7	0.6	5	71.4			2	28.6
C22	Liver	35	3.1	13	37.1	12	34.3	10	28.6
C23–C24	Bile	4	0.4	1	25.0	1	25.0	2	50.0
C25	Pancreas	16	1.4	3	18.8	5	31.3	8	50.0
C30–C31	Sinuses	3	0.3	3	100.0				
C32	Larynx	58	5.1	40	69.0	11	19.0	7	12.1
C33–C34	Lung	123	10.9	40	32.5	34	27.6	49	39.8
C37	Thymus	1	0.1	1	100.0				
C43	Malign. melanoma	18	1.6	15	83.3	1	5.6	2	11.1
C44	Skin others	71	6.3	46	64.8	4	5.6	21	29.6
C46,C49	Soft tissue	6	0.5	5	83.3			1	16.7
C50	Breast	4	0.4	1	25.0			3	75.0
C60	Penis	1	0.1	1	100.0				
C61	Prostate	172	15.3	134	77.9	9	5.2	29	16.9
C62	Testis	4	0.4	2	50.0	1	25.0	1	25.0
C64	Kidney	35	3.1	24	68.6	1	2.9	10	28.6
C65	Renal pelvis	3	0.3	1	33.3			2	66.7
C66	Ureter	4	0.4	3	75.0			1	25.0
C67	Bladder	33	2.9	21	63.6	1	3.0	11	33.3
C69	Eye carcinoma	1	0.1	1	100.0				
C70–C72	CNS cancer	1	0.1	1	100.0				
C73	Thyroid	15	1.3	8	53.3	3	20.0	4	26.7
C76–C79	CUP	20	1.8	9	45.0	7	35.0	4	20.0
C81	Hodgkin lymphoma	9	0.8	9	100.0				
C82–C85	NHL	19	1.7	12	63.2	2	10.5	5	26.3
C90	Mult. myeloma	7	0.6	2	28.6	2	28.6	3	42.9
C91–C96	Leukaemia	9	0.8	5	55.6	1	11.1	3	33.3
All further malignancies		1127	100.0	682	60.5	179	15.9	266	23.6

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

Table 14b

Further malignancies in deaths in period 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	18	5.8	17	94.4			1	5.6
C07–C08	Salivary gland	2	0.6	2	100.0				
C09–C10	Oropharynx	28	9.0	17	60.7	5	17.9	6	21.4
C12–C13	Hypopharynx	10	3.2	5	50.0	5	50.0		
C15	Oesophagus	2	0.6					2	100.0
C16	Stomach	5	1.6			2	40.0	3	60.0
C17	Small intestine	1	0.3	1	100.0				
C18	Colon	22	7.1	14	63.6	3	13.6	5	22.7
C19–C20	Rectum	7	2.2	5	71.4	2	28.6		
C21	Anus/canal	2	0.6	1	50.0	1	50.0		
C22	Liver	1	0.3					1	100.0
C23–C24	Bile	2	0.6	1	50.0	1	50.0		
C25	Pancreas	5	1.6	3	60.0			2	40.0
C32	Larynx	4	1.3	2	50.0			2	50.0
C33–C34	Lung	28	9.0	11	39.3	2	7.1	15	53.6
C43	Malign. melanoma	8	2.6	6	75.0			2	25.0
C44	Skin others	9	2.9	9	100.0				
C50	Breast	97	31.1	85	87.6	6	6.2	6	6.2
C51	Vulva	1	0.3	1	100.0				
C52	Vagina	2	0.6	1	50.0	1	50.0		
C53	Cervix uteri	11	3.5	10	90.9			1	9.1
C54	Corpus uteri	9	2.9	9	100.0				
C55,C57	Fem. genitals un	1	0.3					1	100.0
C56	Ovary	3	1.0	3	100.0				
C64	Kidney	5	1.6	3	60.0	1	20.0	1	20.0
C65	Renal pelvis	1	0.3	1	100.0				
C66	Ureter	1	0.3	1	100.0				
C67	Bladder	5	1.6	5	100.0				
C70–C72	CNS cancer	1	0.3	1	100.0				
C73	Thyroid	6	1.9	6	100.0				
C76–C79	CUP	4	1.3	1	25.0	1	25.0	2	50.0
C81	Hodgkin lymphoma	1	0.3	1	100.0				
C82–C85	NHL	6	1.9	5	83.3	1	16.7		
C90	Mult. myeloma	1	0.3	1	100.0				
C91–C96	Leukaemia	3	1.0	3	100.0				
All further malignancies		312	100.0	231	74.0	31	9.9	50	16.0

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

Table 15

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34	2	2	0.1	0.40	0.1	0.67	1.4	1.3
35-39								
40-44	20	2	0.8	0.54	0.1	0.25	3.6	0.3
45-49	52	11	1.9	0.58	0.4	0.61	4.0	0.8
50-54	86	25	3.4	0.52	1.0	0.53	3.7	1.1
55-59	202	32	9.5	0.69	1.5	0.57	5.2	1.0
60-64	230	73	13.0	0.64	3.8	0.78	4.3	1.8
65-69	300	61	18.4	0.71	3.4	0.63	4.1	1.1
70-74	294	83	19.6	0.81	4.8	0.85	3.2	1.2
75-79	209	48	17.3	0.77	3.2	0.54	2.3	0.6
80-84	143	56	19.7	1.05	5.3	0.88	1.9	0.8
85+	84	59	18.0	1.15	5.7	0.98	1.3	0.6
All ages	1622	452					3.0	0.9
Mortality								
Raw			5.0	0.73	1.3	0.71		
WS			2.5	0.69	0.6	0.68		
ES			3.7	0.71	0.8	0.68		
BRD-S			4.6	0.73	1.0	0.69		
PYLL-70								
per 100,000			29.0		6.8			
ES			24.5		5.5			
AYLL-70			9.3		9.3			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34	2	2	0.1	0.40	0.1	1.00	1.5	1.3
35-39								
40-44	19	2	0.8	0.54	0.1	0.25	3.4	0.3
45-49	50	11	1.9	0.60	0.4	0.61	3.9	0.8
50-54	80	24	3.1	0.52	1.0	0.57	3.5	1.1
55-59	190	30	9.0	0.69	1.4	0.61	5.0	1.0
60-64	207	69	11.7	0.63	3.6	0.79	3.9	1.7
65-69	279	55	17.1	0.72	3.0	0.61	3.9	1.0
70-74	260	78	17.3	0.77	4.5	0.86	3.0	1.2
75-79	190	46	15.7	0.74	3.1	0.55	2.2	0.6
80-84	123	50	17.0	0.96	4.7	0.86	1.8	0.7
85+	74	55	15.8	1.06	5.3	0.95	1.2	0.6
All ages	1474	422					2.9	0.9
Mortality								
Raw			4.5	0.71	1.3	0.72		
WS			2.3	0.68	0.5	0.69		
ES			3.4	0.69	0.8	0.69		
BRD-S			4.1	0.71	1.0	0.70		
PYLL-70								
per 100,000			27.0		6.5			
ES			22.9		5.3			
AYLL-70			9.4		9.5			

* See corresponding tables with multiple malignancies.

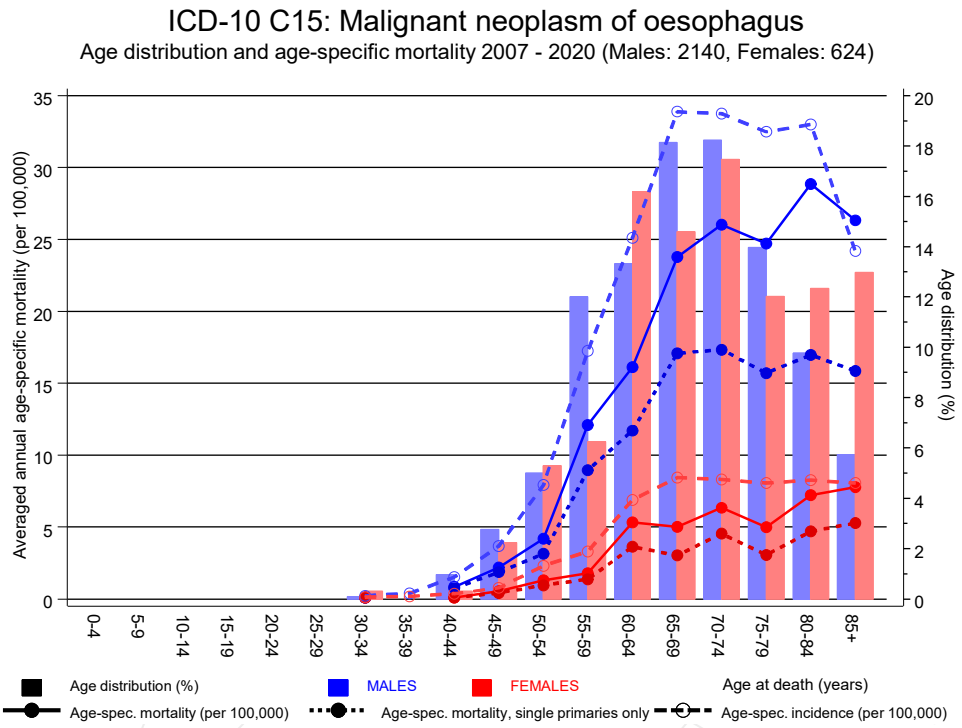


Figure 17. Distribution of age at death (bars; males: mean=67.2 yrs, median=67.4 yrs; females: mean=70.0 yrs, median=69.7 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

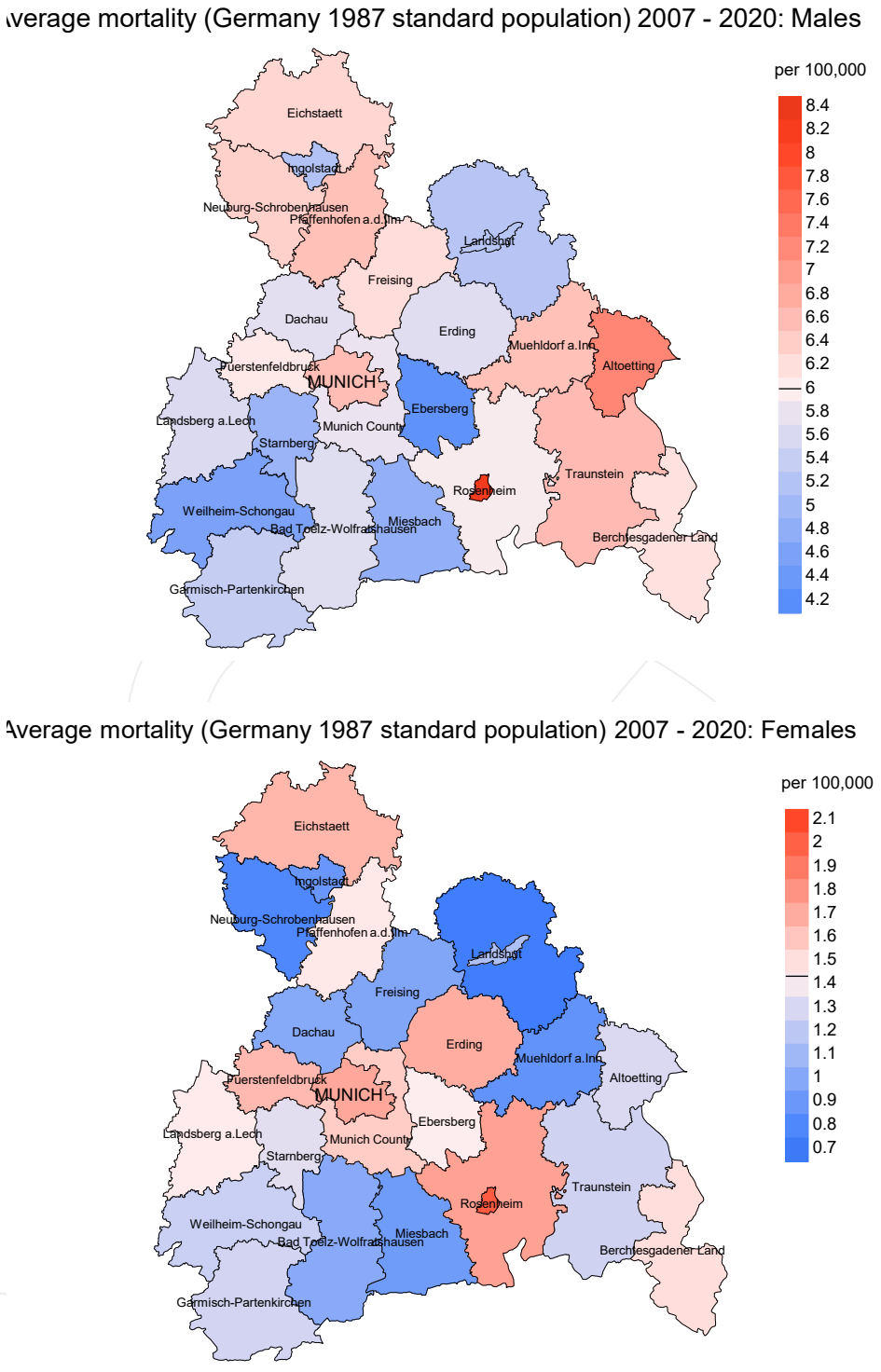
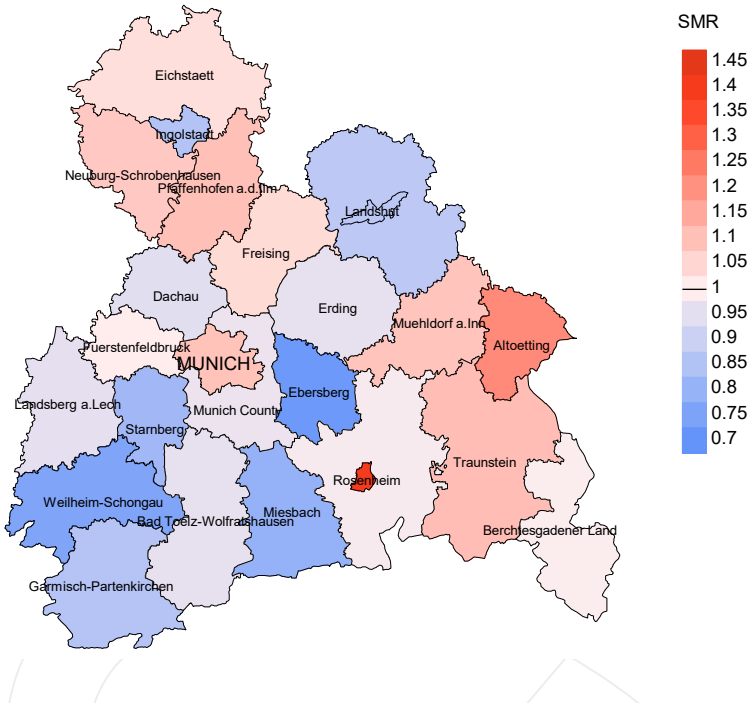


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.0/100,000 WS N=2,140, females 1.4/100,000 WS N=624).

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 17 women died from oesophagus cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.7 and 2.7/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

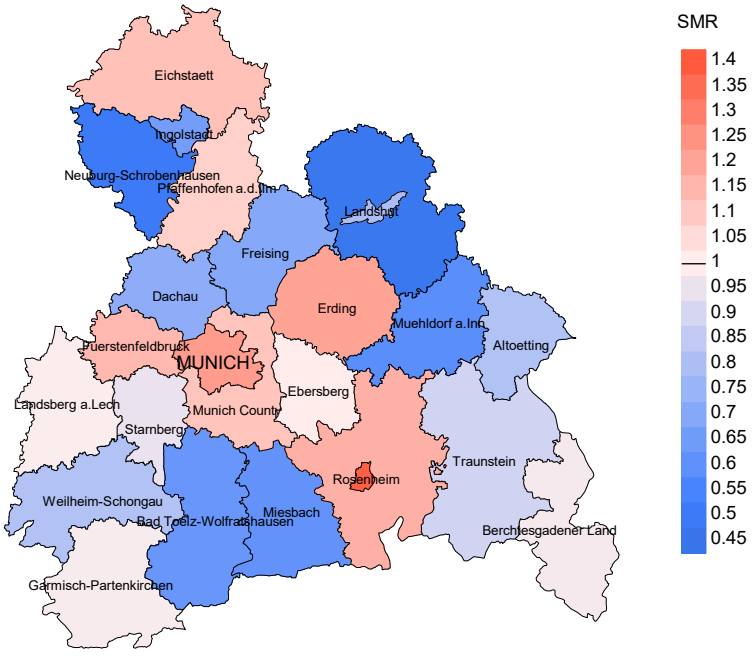


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,140, females N=624).

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 17 women died from oesophagus cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.01. Though, the value of this parameter may vary with an underlying probability of 99% between 0.49 and 1.82, 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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