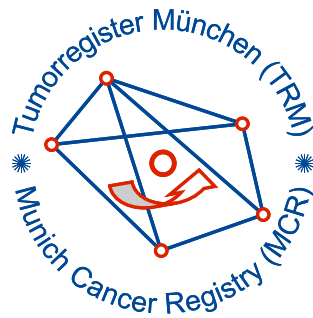


Munich Cancer Registry



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

P-NET: Pancr. neuroend. tumor

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	474
Diseases	474
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m





Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninstr. 15
Munich, 81377
Germany

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

<https://www.tumorregister-muenchen.de/en/facts/base/bhPNETE-P-NET-Pancr.-neuroend.-tumor-incidence-and-mortality.pdf>

Index of figures and tables

Fig./Tbl.		Page
1	Annual cases, mult. malignancies, follow-up / yr	5
2	Incidence by year of diagnosis	8
3	Age distribution parameters by year of diagnosis	9
4	Age distribution by 5-year age group and sex	10
5	Age-specific incidence, proportion malignancies	11
6	Age distribution and age-specific incidence (chart)	12
6a	Age-specific incidence internationally (chart)	13
7	Standardized incidence ratio of further malignancies	14
8a	Map of cancer incidence (WS) by county (chart)	15
8b	Standardized incidence ratio (SIR) by county (chart)	16
9a	Pts incident cohorts and mortality / yr	17
9b	Incidence and mortality by year of diagnosis	18
9c	Cancer-related deaths, death certification available / yr	19
10	Medians of age at death / yr	20
11	Mortality by year of death	22
12	Distribution of age at death	23
13	Age-specific mortality	24
14	Further malignancies in deaths	25
15	Age-specific mortality (first primaries)	27
16	Age-specific mortality (single primaries)	28
17	Age distribution and age-specific mortality (chart)	29
18a	Map of cancer mortality (WS) by county (chart)	30
18b	Standardized mortality ratio (SMR) by county (chart)	31

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.

Topography codes (ICD-O-3 2000) used for specifying cancer site

Code	Description
C25.-	Malignant neoplasm of pancreas
C25.0	Head of pancreas
C25.1	Body of pancreas
C25.2	Tail of pancreas
C25.3	Pancreatic duct
C25.4	Endocrine pancreas
C25.7	Other parts of pancreas
C25.8	Overlapping lesion of pancreas
C25.9	Pancreas, unspecified

... if additionally existing any of ...

Morphology codes (ICD-O-3 2011) used for specifying cancer site

Code	Description
8013/3	Large cell neuroendocrine carcinoma
8041/3	Small cell carcinoma, NOS
8150/3	Pancreatic endocrine tumor, malignant
8151/3	Insulinoma, malignant
8152/3	Glucagonoma, malignant
8153/3	Gastrinoma, malignant
8155/3	Vipoma, malignant
8156/3	Somatostatinoma, malignant
8240/3	Carcinoid tumor, NOS
8241/3	Enterochromaffin cell carcinoid
8246/3	Neuroendocrine carcinoma, NOS
8249/3	Atypical carcinoid tumor

Reference:

Bosman FT, Carneiro F, Hruban RH, Theise ND, editors. WHO Classification of Tumours of the Digestive System 4th edition, IARC, Lyon (2010).

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	9	11.1	8.4	88.9	100.0
1999	6	13.3	8.3	66.7	100.0
2000	5	10.0	8.2	80.0	100.0
2001	4	12.5	8.3	75.0	100.0
2002	13	10.8	7.7	76.9	100.0 #
2003	14	13.7	7.7	71.4	100.0
2004	11	14.5	7.7	72.7	100.0
2005	18	15.0	7.7	61.1	94.4
2006	14	16.0	7.0	64.3	100.0
2007	27	17.4	7.0	51.9	74.1 #
2008	18	15.8	6.9	44.4	83.3
2009	26	15.2	6.0	80.8	100.0
2010	39	18.1	6.2	56.4	79.5
2011	43	17.8	6.0	46.5	74.4
2012	53	19.3	5.8	32.1	60.4
2013	51	19.7	6.4	33.3	70.6
2014	37	19.3	5.8	45.9	78.4
2015	40	19.2	5.9	22.5	100.0
2016	46	21.1	4.4	17.4	73.9 ##
1998-2016	474	21.1	8.4	46.4	81.9

474 cases diagnosed 1998-2016 are related to a total of 474 patients. Currently, in 138 (29.1 %) of these 474 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 106 / 26 / 6 (22.4 % / 5.5 % / 1.3 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2014, a subgroup of 37 cases has been diagnosed, of which 19.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

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

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	6	66.7	16.7	8.7	100.0	100.0
1999	6	100.0	16.7	8.5	66.7	100.0
2000	3	60.0	13.3	8.3	66.7	100.0
2001	2	50.0	17.6	8.4	100.0	100.0
2002	10	76.9	14.8	8.1	70.0	100.0 #
2003	6	42.9	15.2	8.4	83.3	100.0
2004	9	81.8	16.7	8.2	77.8	100.0
2005	10	55.6	17.3	8.1	80.0	90.0
2006	12	85.7	18.8	7.0	66.7	100.0
2007	18	66.7	19.5	7.3	44.4	77.8 #
2008	7	38.9	19.1	6.9	57.1	85.7
2009	14	53.8	18.4	7.1	78.6	100.0
2010	22	56.4	21.6	7.1	59.1	81.8
2011	23	53.5	20.9	6.8	56.5	78.3
2012	28	52.8	22.2	7.3	35.7	64.3
2013	22	43.1	22.2	7.3	45.5	72.7
2014	16	43.2	21.5	6.7	43.8	75.0
2015	23	57.5	20.7	6.8	26.1	100.0
2016	22	47.8	20.8	9.5	22.7	77.3 ##
1998-2016	259	54.6	20.8	8.7	52.5	84.6

259 cases diagnosed 1998-2016 are related to a total of 259 patients. Currently, in 75 (29.0 %) of these 259 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 55 / 17 / 3 (21.2 % / 6.6 % / 1.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2014, a subgroup of 16 cases has been diagnosed, of which 21.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 6.7 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

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

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	3	33.3	0.0	8.0	66.7	100.0
1999	0					
2000	2	40.0	0.0	8.1	100.0	100.0
2001	2	50.0	0.0	8.2	50.0	100.0
2002	3	23.1	0.0	7.3	100.0	100.0 #
2003	8	57.1	11.1	6.9	62.5	100.0
2004	2	18.2	10.0	7.2	50.0	100.0
2005	8	44.4	10.7	7.3	37.5	100.0
2006	2	14.3	10.0	7.0	50.0	100.0
2007	9	33.3	12.8	6.6	66.7	66.7 #
2008	11	61.1	10.0	6.9	36.4	81.8
2009	12	46.2	9.7	4.9	83.3	100.0
2010	17	43.6	12.7	5.3	52.9	76.5
2011	20	46.5	13.1	5.2	35.0	70.0
2012	25	47.2	15.3	4.3	28.0	56.0
2013	29	56.9	16.3	5.6	24.1	69.0
2014	21	56.8	16.7	4.9	47.6	81.0
2015	17	42.5	17.3	4.9	17.6	100.0
2016	24	52.2	21.4	0.0	12.5	70.8 ##
1998-2016	215	45.4	21.4	8.0	39.1	78.6

215 cases diagnosed 1998-2016 are related to a total of 215 patients. Currently, in 63 (29.3 %) of these 215 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 51 / 9 / 3 (23.7 % / 4.2 % / 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 21 cases has been diagnosed, of which 16.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 4.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

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

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	6	3	0.5	0.3	0.3	0.2	0.5	0.2	0.6	0.3
1999	6		0.5		0.4		0.5		0.5	
2000	3	2	0.3	0.2	0.2	0.1	0.2	0.1	0.3	0.1
2001	2	2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
2002	10	3	0.5	0.2	0.4	0.0	0.5	0.1	0.5	0.1
2003	6	8	0.3	0.4	0.2	0.3	0.3	0.4	0.3	0.4
2004	9	2	0.5	0.1	0.3	0.1	0.4	0.1	0.5	0.1
2005	10	8	0.5	0.4	0.3	0.2	0.4	0.3	0.5	0.3
2006	12	2	0.6	0.1	0.4	0.0	0.5	0.1	0.6	0.1
2007	18	9	0.8	0.4	0.5	0.2	0.7	0.3	0.7	0.4
2008	7	11	0.3	0.5	0.2	0.3	0.3	0.3	0.3	0.4
2009	14	12	0.6	0.5	0.4	0.2	0.5	0.4	0.6	0.4
2010	22	17	1.0	0.7	0.5	0.4	0.8	0.6	0.9	0.7
2011	23	20	1.0	0.9	0.6	0.5	0.8	0.6	0.9	0.7
2012	28	25	1.2	1.1	0.7	0.6	0.9	0.8	1.1	0.9
2013	22	29	1.0	1.2	0.5	0.7	0.7	0.9	0.9	1.0
2014	16	21	0.7	0.9	0.4	0.4	0.5	0.6	0.6	0.7
2015	23	17	1.0	0.7	0.6	0.3	0.8	0.4	0.9	0.5
2016	22	24	0.9	1.0	0.6	0.6	0.7	0.8	0.9	0.9
1998-2016	259	215	0.7	0.6	0.4	0.3	0.6	0.4	0.7	0.5

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

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	9	59.0	14.1	28.2	77.8	28.2	57.0	62.0	63.4	77.8
1999	6	58.5	16.4	27.6	72.2	27.6	53.5	64.9	67.7	72.2
2000	5	57.9	17.5	33.1	74.8	33.1	50.0	57.5	73.9	74.8
2001	4	56.6	12.2	38.6	65.1	38.6	49.3	61.3	63.8	65.1
2002	13	59.9	15.2	36.0	87.6	42.3	49.0	64.3	66.3	83.5
2003	14	58.2	11.1	37.1	77.0	46.6	50.2	56.5	67.3	74.6
2004	11	60.7	12.2	40.8	77.5	46.1	48.3	62.3	74.1	76.2
2005	18	62.8	13.2	36.2	83.5	42.1	55.6	66.4	70.4	77.5
2006	14	58.6	19.3	16.8	78.1	29.1	42.3	64.8	73.1	76.8
2007	27	58.9	11.7	35.3	82.3	44.9	51.2	57.6	69.1	71.5
2008	18	57.6	18.3	23.8	81.2	28.0	47.1	56.8	74.8	79.4
2009	26	66.2	13.2	27.9	85.0	50.2	59.9	67.6	75.3	84.3
2010	39	63.0	12.5	37.5	83.6	46.3	52.5	62.4	74.6	79.0
2011	43	62.1	12.2	34.6	80.5	43.7	52.0	65.0	71.1	74.4
2012	53	62.9	14.2	27.6	101	42.8	57.0	65.6	71.2	76.5
2013	51	66.1	12.5	14.2	86.3	51.5	58.6	68.5	74.7	77.3
2014	37	65.0	10.8	45.2	82.2	47.8	56.5	67.4	73.3	77.6
2015	40	66.0	13.5	23.4	90.2	50.2	57.8	68.3	75.8	79.5
2016	46	59.4	15.3	18.8	82.9	40.6	46.0	59.2	74.3	78.5
1998-2016	474	62.4	13.7	14.2	101	43.8	52.5	64.8	72.4	77.6

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	6	66.0	7.1	58.9	77.8	58.9	62.0	63.0	71.5	77.8
1999	6	58.5	16.4	27.6	72.2	27.6	53.5	64.9	67.7	72.2
2000	3	60.5	12.2	50.0	73.9	50.0	50.0	57.5	73.9	73.9
2001	2	61.3	1.7	60.1	62.5	60.1	60.1	61.3	62.5	62.5
2002	10	54.2	11.0	36.0	66.8	39.2	46.4	53.1	65.1	66.2
2003	6	63.2	10.4	48.1	77.0	48.1	55.1	64.9	69.2	77.0
2004	9	62.7	12.4	40.8	77.5	40.8	58.7	63.0	74.1	77.5
2005	10	65.3	14.4	36.2	83.5	41.2	62.8	67.8	74.9	80.5
2006	12	56.9	20.5	16.8	78.1	29.1	40.4	60.8	73.9	76.8
2007	18	57.5	9.5	35.3	71.0	44.9	51.4	56.8	64.9	69.8
2008	7	51.0	17.7	28.0	79.4	28.0	35.4	49.3	67.5	79.4
2009	14	65.4	10.7	46.7	84.3	50.2	60.3	67.2	68.9	78.7
2010	22	65.6	11.0	44.6	83.6	52.8	58.0	64.4	74.6	79.0
2011	23	62.6	10.0	43.8	80.5	48.4	52.0	64.2	70.0	73.1
2012	28	63.5	13.9	27.6	84.2	42.1	59.5	68.4	71.4	76.8
2013	22	68.1	9.4	46.3	81.8	52.2	63.9	70.1	75.4	77.0
2014	16	64.3	11.1	45.2	81.6	47.8	53.4	67.3	70.6	77.5
2015	23	62.0	14.4	23.4	79.7	47.7	53.9	65.1	74.1	78.7
2016	22	60.0	16.5	18.8	82.9	43.1	47.7	61.3	74.3	78.5
1998-2016	259	62.2	13.1	16.8	84.3	45.2	53.3	64.8	71.6	77.4

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median				
						10%	25%	50%	75%	90%
1998	3	45.0	15.0	28.2	57.0	28.2	28.2	49.7	57.0	57.0
2000	2	54.0	29.5	33.1	74.8	33.1	33.1	54.0	74.8	74.8
2001	2	51.8	18.8	38.6	65.1	38.6	38.6	51.8	65.1	65.1
2002	3	79.1	11.3	66.3	87.6	66.3	66.3	83.5	87.6	87.6
2003	8	54.5	10.8	37.1	74.6	37.1	48.4	55.6	58.0	74.6
2004	2	52.0	8.3	46.1	57.8	46.1	46.1	52.0	57.8	57.8
2005	8	59.6	11.7	42.1	69.6	42.1	49.1	64.5	68.9	69.6
2006	2	68.7	0.2	68.5	68.8	68.5	68.5	68.7	68.8	68.8
2007	9	61.6	15.5	37.8	82.3	37.8	48.9	63.5	71.5	82.3
2008	11	61.8	18.2	23.8	81.2	43.7	48.8	66.9	76.0	78.8
2009	12	67.2	16.0	27.9	85.0	52.2	58.7	72.3	76.9	84.9
2010	17	59.7	13.9	37.5	80.2	43.9	49.2	53.6	72.4	78.4
2011	20	61.5	14.5	34.6	79.2	39.8	45.3	67.2	71.7	76.0
2012	25	62.3	14.7	36.9	101	43.3	56.2	62.2	70.5	76.5
2013	29	64.6	14.5	14.2	86.3	50.9	58.3	66.7	74.6	78.7
2014	21	65.5	10.9	46.0	82.2	49.6	60.2	67.4	74.7	77.6
2015	17	71.4	10.4	52.0	90.2	53.0	64.6	72.4	77.2	85.4
2016	24	58.9	14.5	37.0	82.3	40.6	45.6	57.1	72.7	77.4
1998-2016	215	62.6	14.4	14.2	101	42.5	52.0	65.1	74.4	78.6

Table 4

Age distribution by 5-year age group and sex for period 2007-2016

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14	1	0.3	0.3		0.0		1	0.5	0.5
15-19	1	0.3	0.5	1	0.5	0.5			0.5
20-24	2	0.5	1.1	1	0.5	1.0	1	0.5	1.1
25-29	3	0.8	1.8	2	1.0	2.1	1	0.5	1.6
30-34	3	0.8	2.6	2	1.0	3.1	1	0.5	2.2
35-39	9	2.4	5.0	3	1.5	4.6	6	3.2	5.4
40-44	19	5.0	10.0	7	3.6	8.2	12	6.5	11.9
45-49	33	8.7	18.7	16	8.2	16.4	17	9.2	21.1
50-54	35	9.2	27.9	21	10.8	27.2	14	7.6	28.6
55-59	32	8.4	36.3	16	8.2	35.4	16	8.6	37.3
60-64	46	12.1	48.4	26	13.3	48.7	20	10.8	48.1
65-69	62	16.3	64.7	41	21.0	69.7	21	11.4	59.5
70-74	60	15.8	80.5	27	13.8	83.6	33	17.8	77.3
75-79	51	13.4	93.9	23	11.8	95.4	28	15.1	92.4
80-84	17	4.5	98.4	9	4.6	100.0	8	4.3	96.8
85+	6	1.6	100.0			100.0	6	3.2	100.0
All ages	380	100.0		195	100.0		185	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males Prop.all cancers n=113978 %	Females Prop.all cancers n=112253 %
0- 4						
5- 9						
10-14		1		0.1		1.0
15-19	1		0.1		0.4	
20-24	1	1	0.1	0.1	0.2	0.3
25-29	2	1	0.1	0.1	0.3	0.1
30-34	2	1	0.1	0.1	0.2	0.1
35-39	3	6	0.2	0.4	0.2	0.2
40-44	7	12	0.4	0.7	0.3	0.3
45-49	16	17	0.8	0.9	0.4	0.2
50-54	21	14	1.2	0.8	0.3	0.2
55-59	16	16	1.1	1.1	0.2	0.2
60-64	26	20	2.1	1.5	0.2	0.2
65-69	41	21	3.5	1.6	0.2	0.1
70-74	27	33	2.4	2.6	0.1	0.2
75-79	23	28	2.9	2.8	0.1	0.2
80-84	9	8	2.0	1.1	0.1	0.1
85+		6		0.8		0.0
All ages	195	185			0.2	0.2
Incidence						
Raw			0.9	0.8		
WS			0.5	0.4		
ES			0.7	0.6		
BRD-S			0.8	0.7		

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).

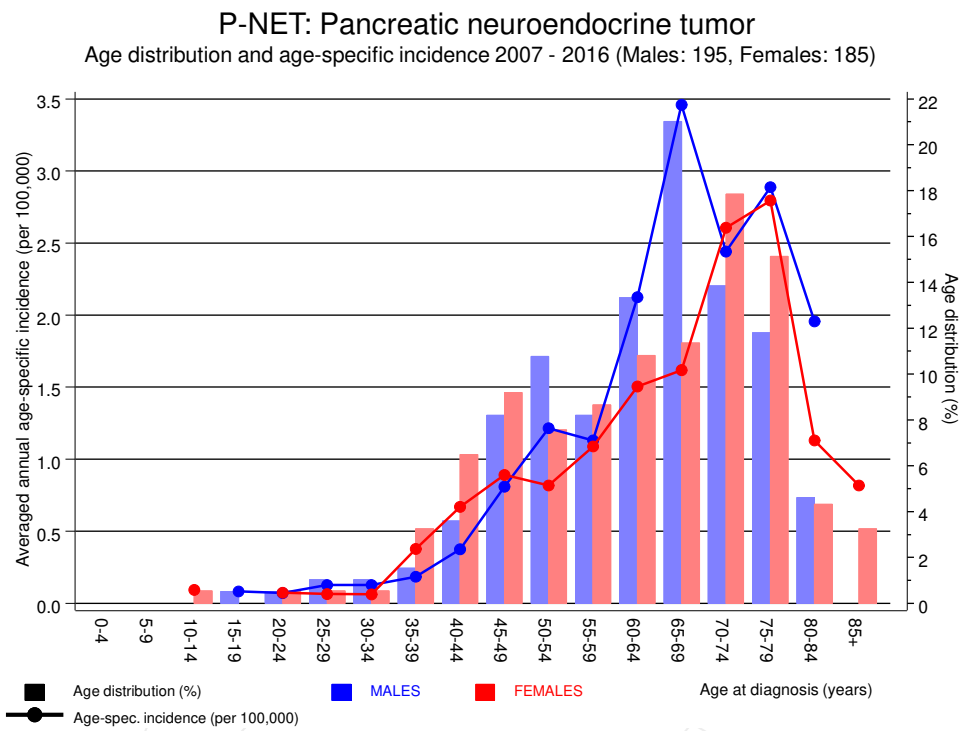


Figure 6. Age distribution (males: mean=62.8 yrs, median=65.4 yrs; females: mean=63.4 yrs, median=65.6 yrs) and age-specific incidence.

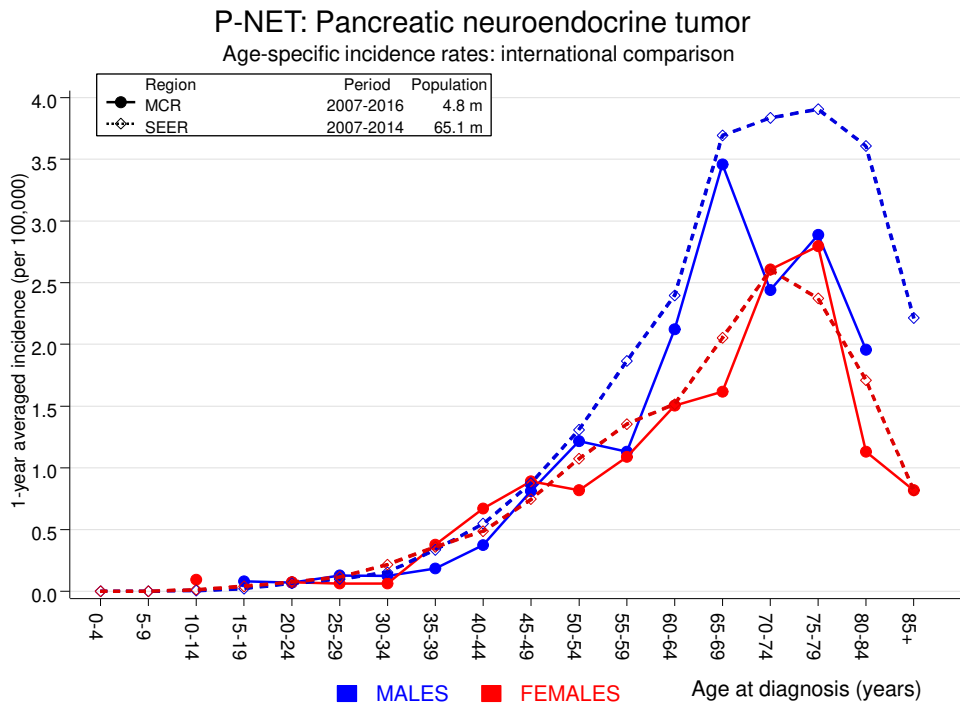


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
 Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 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 %
C18 Colon	2	0.9	2.3	0.3	8.2	15.3	
C33–C34 Lung	4	1.2	3.4	0.9	8.7	38.5	25.0
C61 Prostate	8	2.7	2.9	1.3	5.8 #	71.7	
C64 Kidney	2	0.4	5.7	0.7	20.6	22.5	
Others, specified	5	1.2	4.2	1.4	9.9 #	52.0	20.0
Not observed	0	3.5	0.0	0.0	1.1	-47.1	
All further malignancies	21	9.8	2.1	1.3	3.3 #	152.8	9.5
Patients		242					
Median age at next malignancy (years)		69.8					
Person-years		734					
Mean observation time (years)		3.0					
Median observation time (years)		1.7					

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

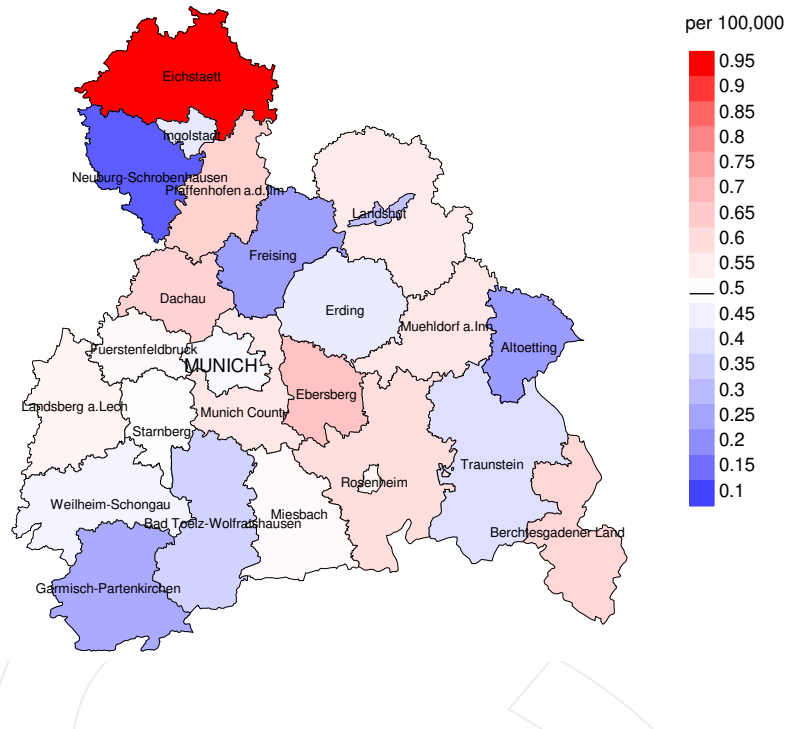
FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C33–C34 Lung	3	0.4	8.5	1.8	24.8 #	51.1	100.0
C50 Breast	7	1.5	4.7	1.9	9.7 #	106.5	
Others, specified	6	0.5	12.0	4.4	26.2 #	106.2	16.7
Not observed	0	2.2	0.0	0.0	1.7	-41.9	
All further malignancies	16	4.5	3.6	2.0	5.8 #	221.8	25.0
Patients		198					
Median age at next malignancy (years)		65.4					
Person-years		518					
Mean observation time (years)		2.6					
Median observation time (years)		1.7					

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

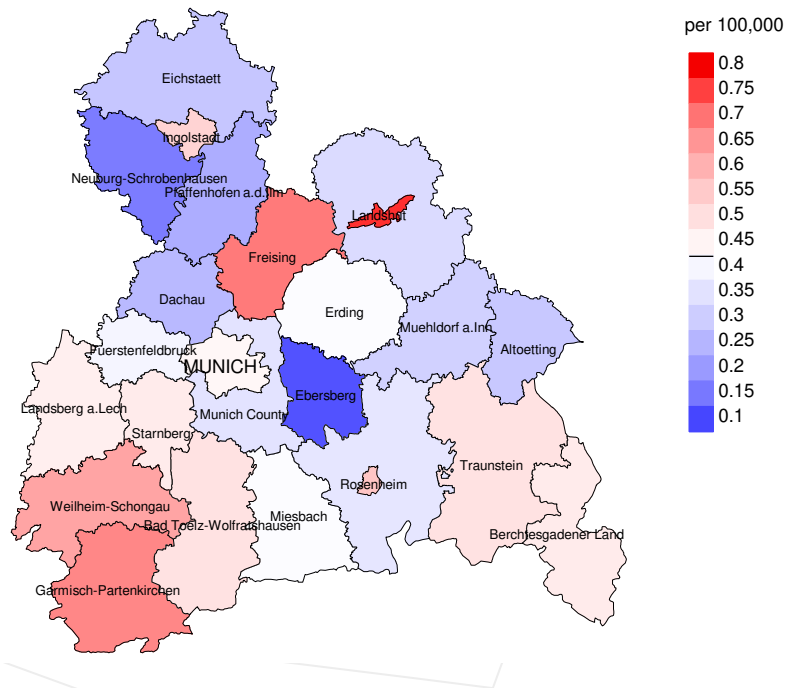
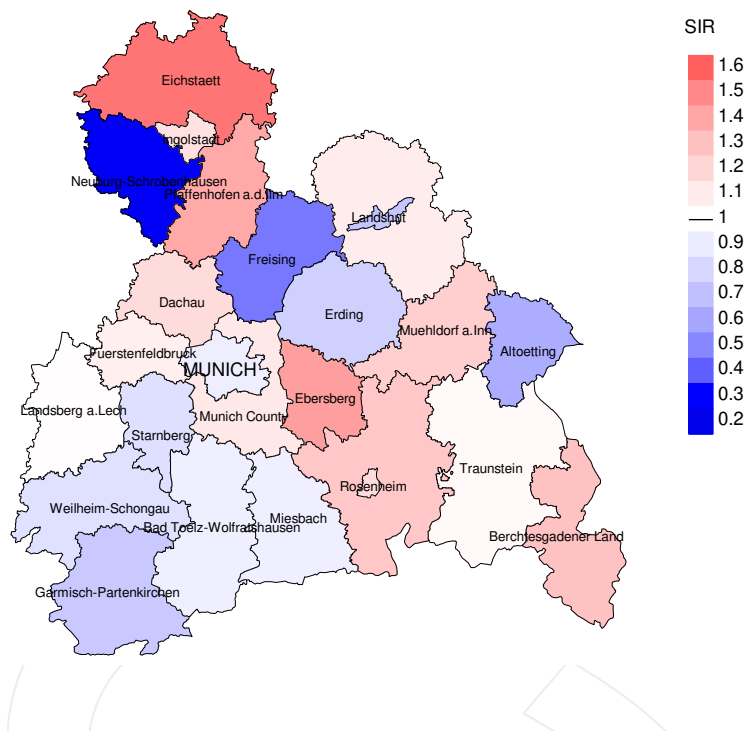


Figure 8a. Map of cancer incidence (world standard population) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.5/100,000 WS N=195, females 0.4/100,000 WS N=185).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 1 women were identified with newly diagnosed pancr. neuroend. tumor. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.1/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.1/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

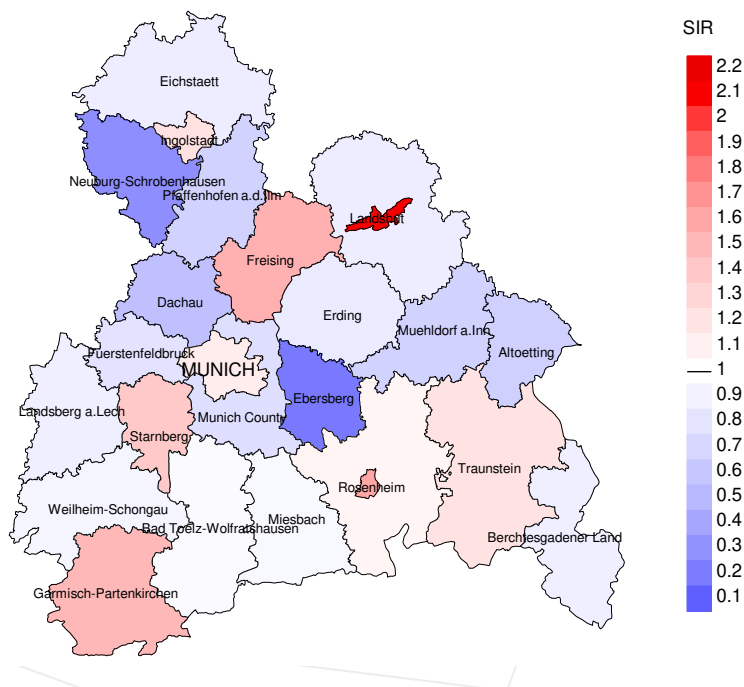


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=195, females N=185).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 1 women were identified with newly diagnosed pancr. neuroend. tumor. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.19. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 1.44, and is therefore not statistically striking.

MORTALITY

Table 9a

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

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

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	9	100.0	8	88.9	87.5
1999	6	100.0	4	66.7	75.0
2000	5	100.0	4	80.0	100.0
2001	4	100.0	3	75.0	100.0
2002	13	100.0	10	76.9	90.0
2003	14	100.0	10	71.4	100.0
2004	11	100.0	8	72.7	87.5
2005	18	94.4	11	61.1	100.0
2006	14	100.0	9	64.3	100.0
2007	27	74.1	14	51.9	100.0
2008	18	83.3	8	44.4	100.0
2009	26	100.0	21	80.8	95.2
2010	39	79.5	22	56.4	90.9
2011	43	74.4	20	46.5	100.0
2012	53	60.4	17	32.1	82.4
2013	51	70.6	17	33.3	100.0
2014	37	78.4	17	45.9	82.4
2015	40	100.0	9	22.5	100.0
2016	46	73.9	8	17.4	50.0
1998-2016	474	81.9	220	46.4	92.3

Table 9b

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

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

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	9	2	1	11.1
1999	6	6	2	33.3
2000	5	3	1	20.0
2001	4	3		
2002	13	6	1	7.7
2003	14	7	2	14.3
2004	11	6	1	9.1
2005	18	6	3	16.7
2006	14	7	2	14.3
2007	27	14	4	14.8
2008	18	9	1	5.6
2009	26	12	7	26.9
2010	39	17	3	7.7
2011	43	17	5	11.6
2012	53	16	5	9.4
2013	51	27	7	13.7
2014	37	26	4	10.8
2015	40	27	4	10.0
2016	46	22	4	8.7
1998-2016	474	233	57	12.0

Table 9c

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

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

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	2	100.0		100.0
1999	6	100.0		100.0
2000	3	100.0		100.0
2001	3	100.0		100.0
2002	6	100.0		83.3
2003	7	100.0		100.0
2004	6	83.3	16.7	83.3
2005	6	100.0		100.0
2006	7	100.0		100.0
2007	14	92.9	7.1	92.9
2008	9	88.9	11.1	88.9
2009	12	83.3	16.7	90.9
2010	17	88.2	11.8	81.3
2011	17	82.4	17.6	94.1
2012	16	93.8	6.3	87.5
2013	27	92.6	7.4	92.3
2014	26	88.5	11.5	92.3
2015	27	85.2	14.8	80.0
2016	22	90.9	9.1	86.4
1998-2016	233	90.6	9.4	89.9

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	2	71.9	71.9		65.7
1999	6	64.3	64.3		64.3
2000	2	59.5	59.5		59.5
2001	1	64.6	64.6		64.6
2002	5	65.1	65.1		64.7
2003	4	63.9	63.9		63.9
2004	3	67.8	67.8		67.8
2005	5	70.5	70.5		70.5
2006	7	66.5	66.5		66.5
2007	6	61.5	61.5		61.5
2008	6	58.1	58.1		58.1
2009	5	54.4	58.3	43.5	58.3
2010	10	74.1	74.1	75.1	72.9
2011	8	68.4	68.4		68.4
2012	11	64.7	65.2	59.7	64.7
2013	19	72.6	72.4	81.4	72.4
2014	15	71.7	71.9	69.4	71.9
2015	16	69.0	68.8	74.6	69.1
2016	13	76.9	76.9	69.9	77.1
1998–2016	144	68.7	68.3	72.0	68.1

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					
1999					
2000	1	54.7	54.7		54.7
2001	2	69.9	69.9		69.9
2002	1	66.4	66.4		66.4
2003	3	36.4	36.4		36.4
2004	3	62.5	54.8	65.9	54.8
2005	1	90.8	90.8		90.8
2006					
2007	8	70.2	71.0	48.9	71.0
2008	3	78.9	71.5	81.8	71.5
2009	7	72.2	62.6	86.8	62.6
2010	7	68.2	68.2		68.8
2011	9	72.4	67.7	74.4	73.4
2012	5	58.5	58.5		58.5
2013	8	65.4	65.4		66.1
2014	11	68.2	68.2	67.8	66.9
2015	11	73.2	72.3	81.7	73.2
2016	9	77.7	77.7		77.7
1998–2016	89	68.2	68.2	76.0	69.4

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	2	0.2	0.33	0.1	0.34	0.2	0.38	0.2	0.44
1999	6	0.5	1.00	0.3	0.87	0.4	0.88	0.5	0.86
2000	2	0.2	0.67	0.1	0.75	0.2	0.71	0.2	0.67
2001	1	0.1	0.50	0.0	0.50	0.1	0.50	0.1	0.50
2002	5	0.3	0.50	0.2	0.43	0.2	0.44	0.2	0.45
2003	4	0.2	0.67	0.1	0.63	0.2	0.65	0.2	0.69
2004	3	0.2	0.33	0.1	0.30	0.1	0.33	0.2	0.35
2005	5	0.3	0.50	0.1	0.43	0.2	0.47	0.3	0.53
2006	7	0.4	0.58	0.2	0.40	0.3	0.48	0.3	0.53
2007	6	0.3	0.33	0.2	0.30	0.2	0.32	0.3	0.39
2008	6	0.3	0.86	0.2	0.95	0.3	0.94	0.3	0.90
2009	4	0.2	0.29	0.1	0.34	0.2	0.33	0.2	0.28
2010	8	0.4	0.36	0.2	0.30	0.3	0.34	0.4	0.39
2011	8	0.4	0.35	0.2	0.30	0.3	0.31	0.3	0.34
2012	10	0.4	0.36	0.3	0.36	0.3	0.37	0.4	0.36
2013	17	0.7	0.77	0.3	0.70	0.5	0.73	0.7	0.77
2014	14	0.6	0.88	0.3	0.73	0.4	0.80	0.5	0.83
2015	13	0.5	0.57	0.3	0.55	0.4	0.57	0.5	0.56
2016	11	0.5	0.50	0.2	0.28	0.3	0.37	0.4	0.47
1998-2016	132	0.4	0.51	0.2	0.46	0.3	0.49	0.3	0.52

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									
1999									
2000	1	0.1	0.50	0.1	0.63	0.1	0.68	0.1	0.57
2001	2	0.2	1.00	0.1	0.87	0.1	0.98	0.2	1.11
2002	1	0.1	0.33	0.0	0.62	0.0	0.52	0.0	0.41
2003	3	0.2	0.38	0.1	0.47	0.1	0.38	0.2	0.38
2004	2	0.1	1.00	0.1	0.96	0.1	0.88	0.1	0.92
2005	1	0.1	0.13	0.0	0.04	0.0	0.06	0.0	0.08
2006									
2007	7	0.3	0.78	0.2	0.72	0.2	0.75	0.3	0.75
2008	2	0.1	0.18	0.0	0.16	0.1	0.18	0.1	0.20
2009	6	0.3	0.50	0.1	0.55	0.2	0.54	0.2	0.47
2010	7	0.3	0.41	0.2	0.43	0.2	0.40	0.3	0.41
2011	6	0.3	0.30	0.1	0.26	0.2	0.27	0.2	0.31
2012	5	0.2	0.20	0.1	0.17	0.2	0.18	0.2	0.19
2013	8	0.3	0.28	0.2	0.25	0.2	0.26	0.3	0.25
2014	9	0.4	0.43	0.2	0.41	0.3	0.44	0.3	0.41
2015	10	0.4	0.59	0.2	0.62	0.3	0.61	0.3	0.61
2016	9	0.4	0.38	0.1	0.22	0.2	0.26	0.3	0.31
1998-2016	79	0.2	0.37	0.1	0.34	0.1	0.35	0.2	0.36

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	1	0.6	0.6	1	1.0	1.0			0.0
20-24	0	0.0	0.6			1.0			0.0
25-29	1	0.6	1.2			1.0	1	1.4	1.4
30-34	1	0.6	1.8			1.0	1	1.4	2.9
35-39	1	0.6	2.4	1	1.0	2.1			2.9
40-44	5	3.0	5.4	2	2.1	4.1	3	4.3	7.2
45-49	5	3.0	8.4	1	1.0	5.2	4	5.8	13.0
50-54	15	9.0	17.5	8	8.2	13.4	7	10.1	23.2
55-59	17	10.2	27.7	10	10.3	23.7	7	10.1	33.3
60-64	15	9.0	36.7	10	10.3	34.0	5	7.2	40.6
65-69	23	13.9	50.6	16	16.5	50.5	7	10.1	50.7
70-74	36	21.7	72.3	23	23.7	74.2	13	18.8	69.6
75-79	24	14.5	86.7	14	14.4	88.7	10	14.5	84.1
80-84	13	7.8	94.6	8	8.2	96.9	5	7.2	91.3
85+	9	5.4	100.0	3	3.1	100.0	6	8.7	100.0
All ages	166	100.0		97	100.0		69	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	1.00			2.3	
20-24								
25-29		1			0.1	1.00		1.4
30-34		1			0.1	1.00		0.8
35-39	1		0.1	0.33			0.5	
40-44	2	3	0.1	0.29	0.2	0.25	0.4	0.4
45-49	1	4	0.1	0.06	0.2	0.24	0.1	0.3
50-54	8	7	0.5	0.38	0.4	0.50	0.4	0.4
55-59	10	7	0.7	0.63	0.5	0.44	0.3	0.2
60-64	10	5	0.8	0.38	0.4	0.25	0.2	0.1
65-69	16	7	1.4	0.39	0.5	0.33	0.2	0.1
70-74	23	13	2.1	0.85	1.0	0.39	0.2	0.2
75-79	14	10	1.8	0.61	1.0	0.36	0.2	0.1
80-84	8	5	1.7	0.89	0.7	0.63	0.1	0.1
85+	3	6	1.0	1.00	0.8	1.00	0.0	0.1
All ages	97	69					0.2	0.1
Mortality								
Raw			0.4	0.50	0.3	0.37		
WS			0.2	0.44	0.1	0.33		
ES			0.3	0.47	0.2	0.35		
BRD-S			0.4	0.50	0.2	0.36		
PYLL-70								
per 100,000			2.7		2.6			
ES			2.4		2.2			
AYLL-70			11.1		14.8			

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 ←%
C07–C08 Salivary gland	1	1.9	1	100.0				
C12–C13 Hypopharynx	1	1.9	1	100.0				
C15 Oesophagus	1	1.9					1	100.0
C16 Stomach	6	11.3	5	83.3			1	16.7
C17 Small intestine	2	3.8	1	50.0			1	50.0
C18 Colon	2	3.8	1	50.0	1	50.0		
C19–C20 Rectum	2	3.8			1	50.0	1	50.0
C23–C24 Bile	1	1.9	1	100.0				
C25 Pancreas	2	3.8			2	100.0		
C33–C34 Lung	4	7.5	2	50.0			2	50.0
C43 Malign. melanoma	3	5.7	2	66.7	1	33.3		
C44 Skin others	6	11.3	4	66.7			2	33.3
C61 Prostate	13	24.5	10	76.9			3	23.1
C62 Testis	1	1.9					1	100.0
C64 Kidney	3	5.7	2	66.7	1	33.3		
C67 Bladder	1	1.9	1	100.0				
C73 Thyroid	2	3.8	2	100.0				
C76–C79 CUP	1	1.9	1	100.0				
C91–C96 Leukaemia	1	1.9	1	100.0				
All further malignancies	53	100.0	35	66.0	6	11.3	12	22.6

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 1998-2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C16 Stomach	1	4.8					1	100.0
C17 Small intestine	1	4.8	1	100.0				
C23-C24 Bile	1	4.8			1	100.0		
C25 Pancreas	1	4.8			1	100.0		
C33-C34 Lung	4	19.0	1	25.0			3	75.0
C50 Breast	5	23.8	2	40.0	1	20.0	2	40.0
C54 Corpus uteri	1	4.8	1	100.0				
C55,C57 Fem. genitals un	1	4.8	1	100.0				
C66 Ureter	1	4.8					1	100.0
C67 Bladder	2	9.5	1	50.0			1	50.0
C73 Thyroid	3	14.3	2	66.7			1	33.3
All further malignancies	21	100.0	9	42.9	3	14.3	9	42.9

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

Table 15

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	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	1		0.1	1.00			2.4	
20-24								
25-29		1			0.1	1.00		1.5
30-34		1			0.1	1.00		0.9
35-39	1		0.1	0.33			0.5	
40-44	2	3	0.1	0.33	0.2	0.30	0.4	0.5
45-49	1	3	0.1	0.07	0.2	0.20	0.1	0.3
50-54	8	6	0.5	0.40	0.4	0.55	0.4	0.4
55-59	7	6	0.5	0.54	0.4	0.55	0.2	0.3
60-64	8	4	0.7	0.42	0.3	0.27	0.2	0.1
65-69	11	6	0.9	0.37	0.5	0.38	0.2	0.1
70-74	17	12	1.5	0.94	0.9	0.48	0.2	0.2
75-79	4	7	0.5	0.27	0.7	0.35	0.1	0.1
80-84	7	5	1.5	1.17	0.7	1.00	0.1	0.1
85+	2	3	0.7	1.00	0.4	1.00	0.0	0.0
All ages	69	57					0.2	0.2
Mortality								
Raw			0.3	0.46	0.2	0.41		
WS			0.2	0.42	0.1	0.37		
ES			0.2	0.44	0.2	0.38		
BRD-S			0.3	0.46	0.2	0.39		
PYLL-70								
per 100,000			2.4		2.3			
ES			2.2		2.0			
AYLL-70			12.2		15.2			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age- spec. mortal. MI-index	Females Age- spec. mortal. MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4						
5- 9						
10-14						
15-19	1		0.1	1.00	2.4	
20-24						
25-29		1		0.1	1.00	1.5
30-34		1		0.1	1.00	1.0
35-39	1		0.1	0.33	0.5	
40-44	2	2	0.1	0.33	0.4	0.3
45-49	1	2	0.1	0.08	0.1	0.2
50-54	8	6	0.5	0.42	0.4	0.4
55-59	6	6	0.4	0.55	0.2	0.3
60-64	7	4	0.6	0.41	0.3	0.1
65-69	9	5	0.8	0.33	0.4	0.1
70-74	16	11	1.4	0.94	0.9	0.2
75-79	4	6	0.5	0.29	0.6	0.1
80-84	5	5	1.1	1.00	0.7	0.1
85+	2	1	0.7	1.00	0.1	0.0
All ages	62	50			0.2	0.1
Mortality						
Raw			0.3	0.45	0.2	0.38
WS			0.1	0.41	0.1	0.35
ES			0.2	0.43	0.1	0.37
BRD-S			0.2	0.44	0.2	0.38
PYLL-70						
per 100,000			2.2		2.0	
ES			2.0		1.7	
AYLL-70			12.9		14.9	

* See corresponding tables with multiple malignancies.

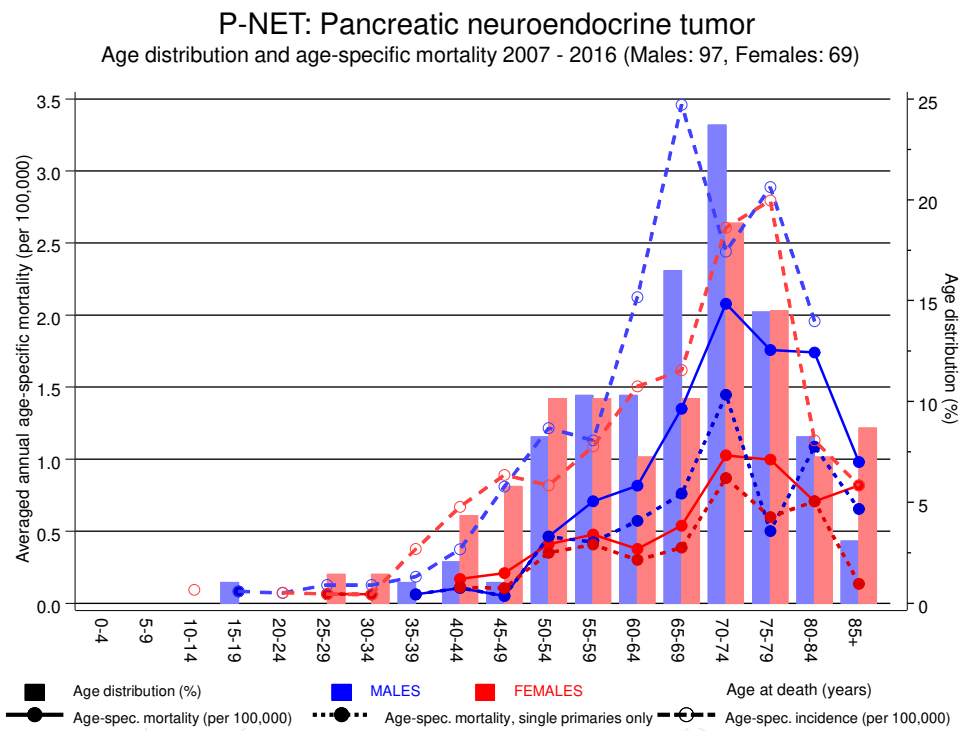
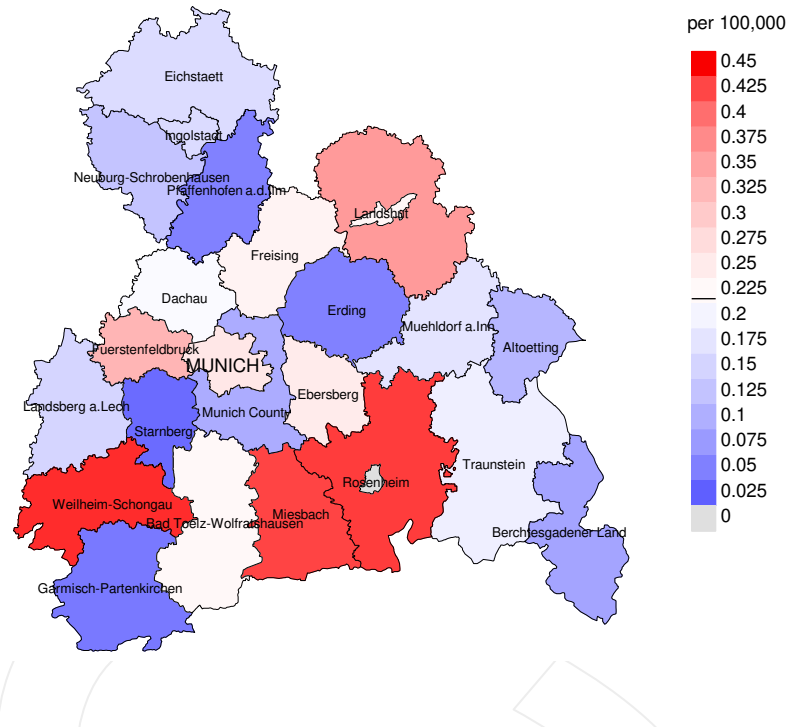


Figure 17. Distribution of age at death (bars; males: mean=64.8 yrs, median=67.3 yrs; females: mean=64.1 yrs, median=66.3 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

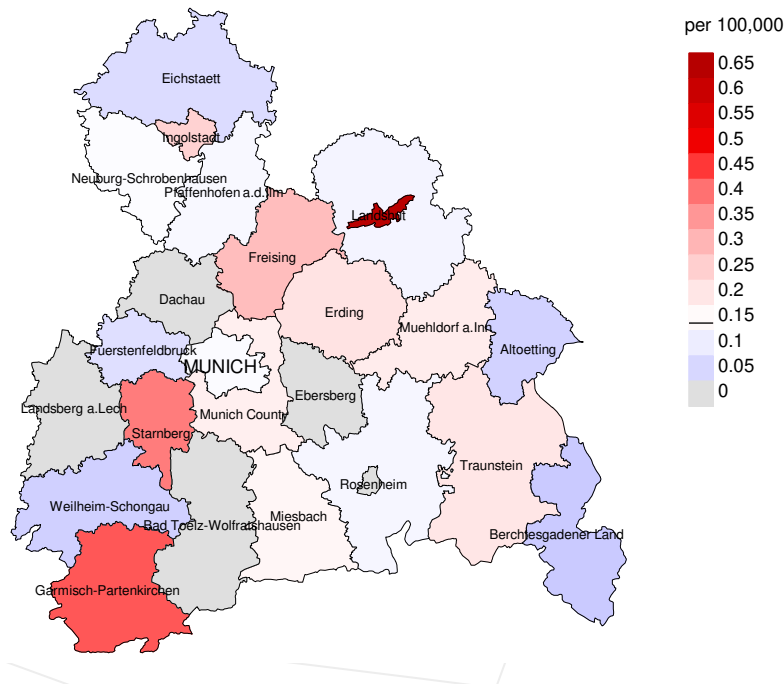
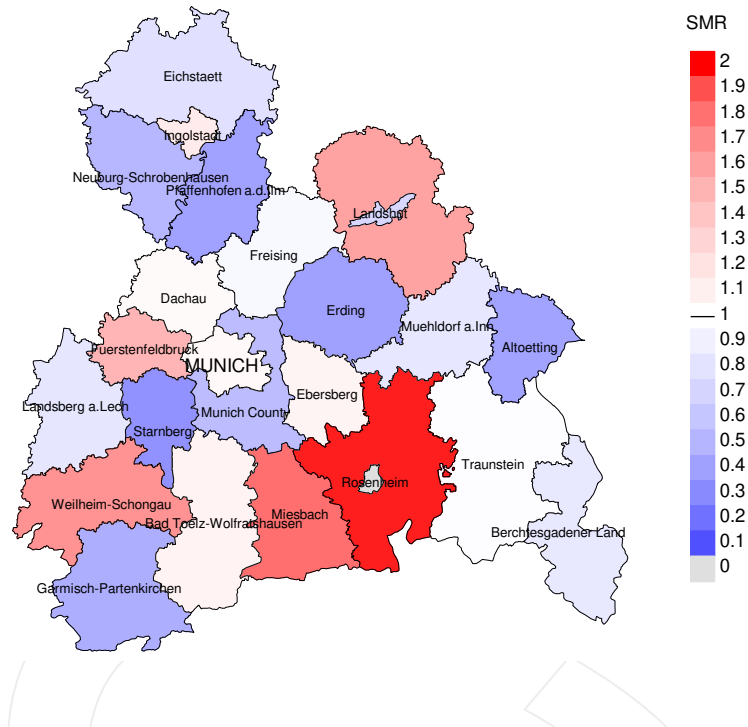


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.2/100,000 WS N=97, females 0.1/100,000 WS N=69).

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

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

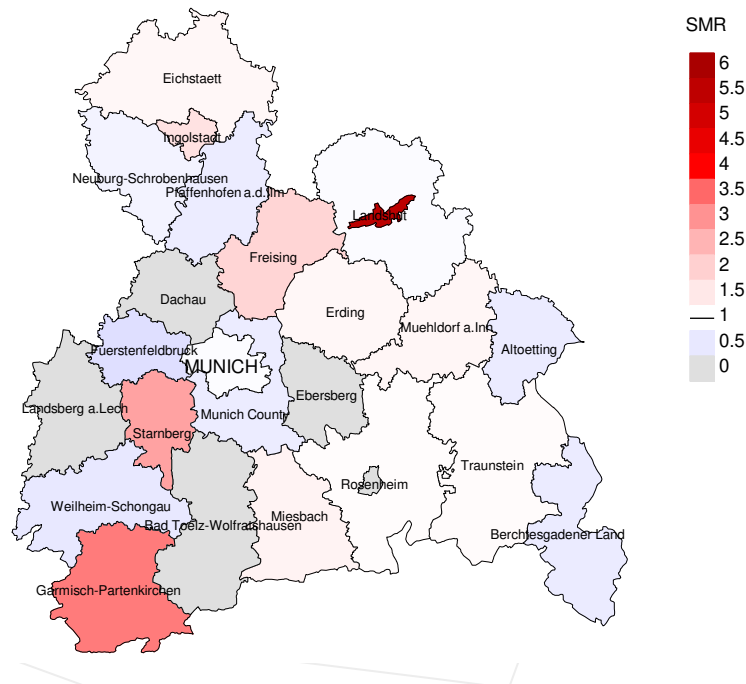


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=97, females N=69).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 0 women died from pancr. neuroend. tumor. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.00. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 2.80, 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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