

Munich Cancer Registry



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ICD-10 C33, C34: Lung cancer

Survival

Year of diagnosis	1988-1997	1998-2016
Patients	4,651	35,059
Diseases	4,676	35,397
Cases evaluated	4,150	24,155
Creation date	08/22/2018	
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/surv/sC3334E-ICD-10-C33-C34-Lung-cancer-survival.pdf>

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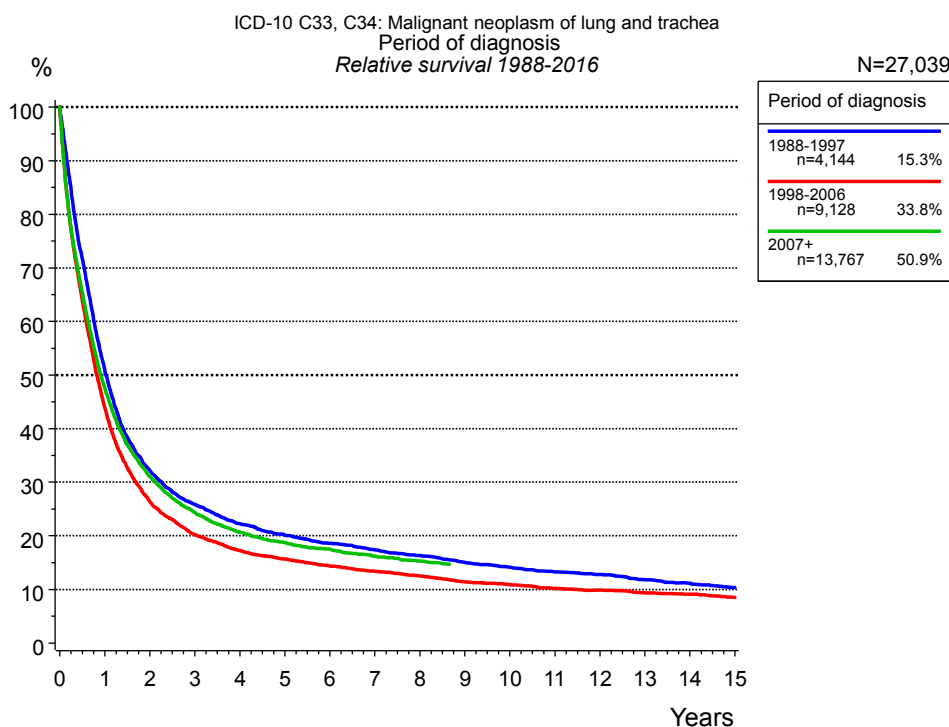


Figure 1a. Relative survival of patients with lung cancer by period of diagnosis. Included in the evaluation are 27,039 cases diagnosed between 1988 and 2016.

The presented survival curves are derived from clinical records with valid follow-up informations, which means that death certificate cases (DCO) cases are omitted from the analysis. With this one restriction, the MCR has provided population-based statistics since 1998, collecting data on all cancer cases in the region of southern Bavaria. Historical data of previous time periods can be heavily selected, therefore, univariate survival comparisons of the presented time periods must be carefully considered. Nonetheless, all calculable survival curves are depicted to facilitate the comparison of long time follow-up analyses of relative survival between particular cancers.

Years	Period of diagnosis					
	1988-1997 n=4,144		1998-2006 n=9,128		2007+ n=13,767	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	49.8	51.0	42.8	44.0	46.5	47.6
2	30.7	32.2	25.2	26.4	29.7	31.0
3	24.1	25.8	18.9	20.2	22.8	24.3
4	20.3	22.2	15.8	17.3	18.9	20.7
5	17.9	20.1	14.0	15.7	16.7	18.7
6	16.2	18.6	12.5	14.3	15.3	17.5
7	14.8	17.4	11.4	13.4	13.8	16.2
8	13.6	16.3	10.4	12.5	12.8	15.3
9	12.2	15.1	9.2	11.4		
10	11.1	14.1	8.6	10.9		
11	10.2	13.3	7.8	10.2		
12	9.6	12.8	7.4	9.8		
13	8.6	11.8	6.9	9.4		
14	7.9	11.1	6.5	9.1		
15	7.2	10.3	5.9	8.5		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with lung cancer by period of diagnosis for period 1988-2016 (N=27,039).

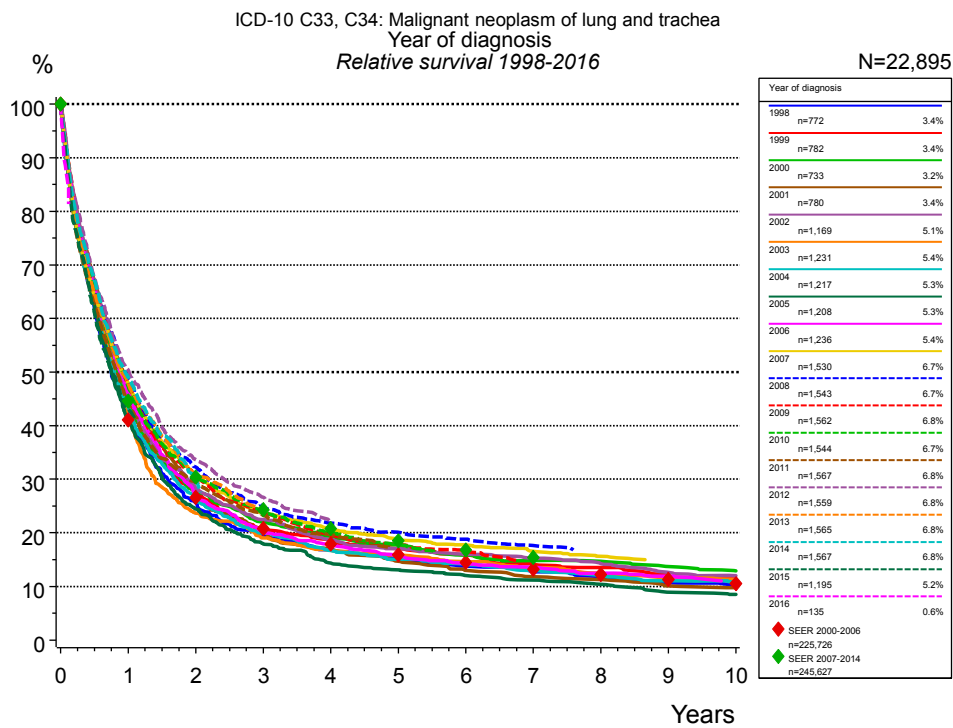


Figure 1c. Relative survival of patients with lung cancer by year of diagnosis. Included in the evaluation are 22,895 cases diagnosed between 1998 and 2016.

The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 2000 to 2014, and are represented by colored diamonds in order to facilitate comparisons between MCR and SEER.

Years	Year of diagnosis													
	1998 n=772		1999 n=782		2000 n=733		2001 n=780		2002 n=1,169		2003 n=1,231		2004 n=1,217	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	41.4	42.5	43.5	44.7	42.7	43.8	46.7	47.8	44.5	45.6	40.6	41.6	42.4	43.5
2	24.4	25.6	26.3	27.7	26.7	27.9	26.1	27.3	27.0	28.3	22.6	23.7	25.1	26.2
3	18.1	19.4	19.2	20.6	20.7	22.0	19.1	20.3	21.0	22.5	17.8	19.1	18.7	20.0
4	15.3	16.8	16.9	18.7	17.7	19.3	15.6	16.9	17.1	18.7	15.4	16.7	15.4	16.7
5	13.7	15.4	15.0	17.0	16.0	17.7	13.3	14.7	15.3	17.1	14.2	15.9	13.5	15.1
6	11.9	13.8	13.7	15.9	13.9	15.8	11.5	13.0	13.9	16.0	12.8	14.6	12.3	14.0
7	10.9	12.8	12.0	14.1	12.8	14.8	10.3	11.8	13.0	15.3	11.6	13.5	11.2	13.0
8	9.4	11.5	11.2	13.6	12.5	14.7	9.7	11.3	11.9	14.3	10.3	12.4	10.0	12.0
9	8.6	10.7	9.5	11.9	11.3	13.7	8.4	10.1	10.3	12.6	9.4	11.7	9.0	11.1
10	8.0	10.1	8.9	11.4	10.3	12.9	8.0	9.8	9.5	12.0	9.0	11.3	8.5	10.7

cont'd	Year of diagnosis													
	2005		2006		2007		2008		2009		2010		2011	
	n=1,208		n=1,236		n=1,530		n=1,543		n=1,562		n=1,544		n=1,567	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	40.0	40.9	44.9	46.0	46.6	47.8	47.5	48.6	46.7	47.7	46.3	47.3	43.3	44.3
2	23.4	24.5	26.0	27.2	29.3	30.7	30.8	32.3	29.4	30.7	29.1	30.3	28.2	29.4
3	16.9	17.9	19.0	20.3	22.1	23.7	23.2	24.7	22.4	23.9	22.5	23.9	21.8	23.3
4	13.2	14.4	16.2	17.8	18.8	20.7	20.0	21.8	18.0	19.6	18.4	20.0	18.1	19.7
5	11.9	13.1	14.0	15.7	16.6	18.7	18.0	20.1	16.0	17.8	16.0	17.8		
6	10.7	12.0	12.4	14.2	15.3	17.7	16.4	18.8	14.6	16.7				
7	9.8	11.2	11.5	13.5	14.0	16.6	15.0	17.6						
8	8.9	10.4	10.4	12.5	12.8	15.6								
9	7.4	8.9	9.7	11.9										
10	6.9	8.5												

cont'd	Year of diagnosis									
	2012		2013		2014		2015		2016	
	n=1,559		n=1,565		n=1,567		n=1,195		n=135	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	49.2	50.4	46.9	48.0	47.9	49.1	42.3	43.1		
2	32.2	33.7	29.6	30.9	28.8	29.9				
3	25.0	26.7	22.7	24.1						
4	20.7	22.1								

Table 1d. Observed (obs.) and relative (rel.) survival of patients with lung cancer by year of diagnosis for period 1998-2016 (N=22,895).

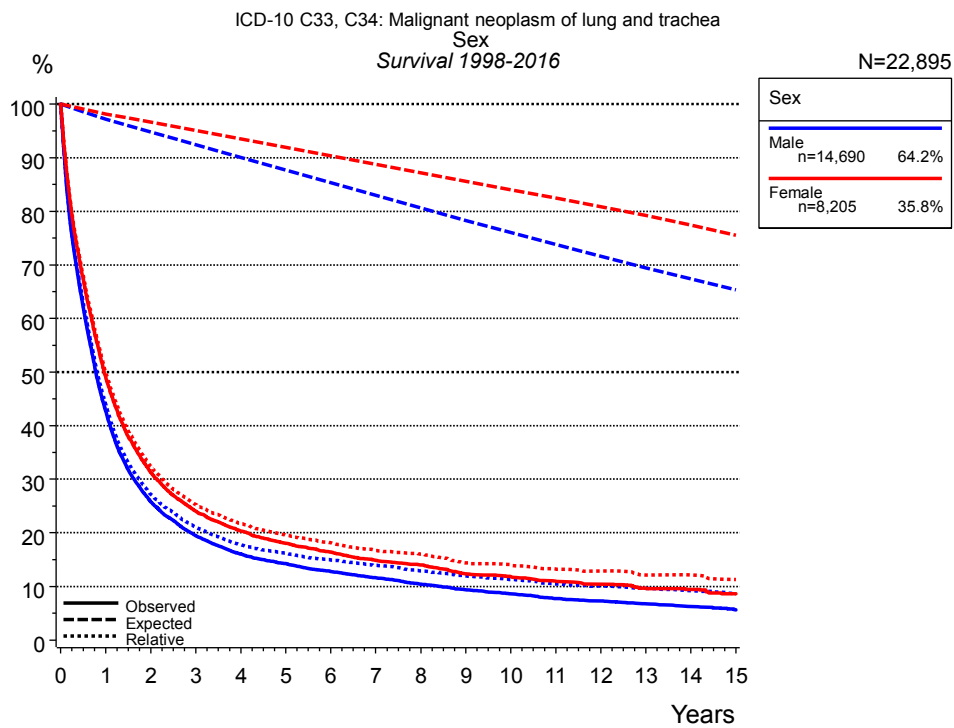


Figure 2a. Survival of patients with lung cancer by sex. Included in the evaluation are 22,895 cases diagnosed between 1998 and 2016.

Years	Sex			
	Male n=14,690		Female n=8,205	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	42.7	43.9	49.0	49.9
2	25.8	27.2	31.3	32.4
3	19.5	21.0	24.0	25.3
4	16.1	17.8	20.3	21.7
5	14.2	16.2	18.0	19.6
6	12.8	15.0	16.4	18.1
7	11.6	14.0	14.9	16.7
8	10.4	12.9	14.0	16.0
9	9.4	11.9	12.3	14.4
10	8.6	11.3	11.8	14.0
11	7.7	10.5	10.9	13.2
12	7.3	10.1	10.4	12.9
13	6.7	9.7	9.7	12.1
14	6.2	9.2	9.5	12.2
15	5.6	8.6	8.6	11.3

Table 2b. Observed (obs.) and relative (rel.) survival of patients with lung cancer by sex for period 1998-2016 (N=22,895).

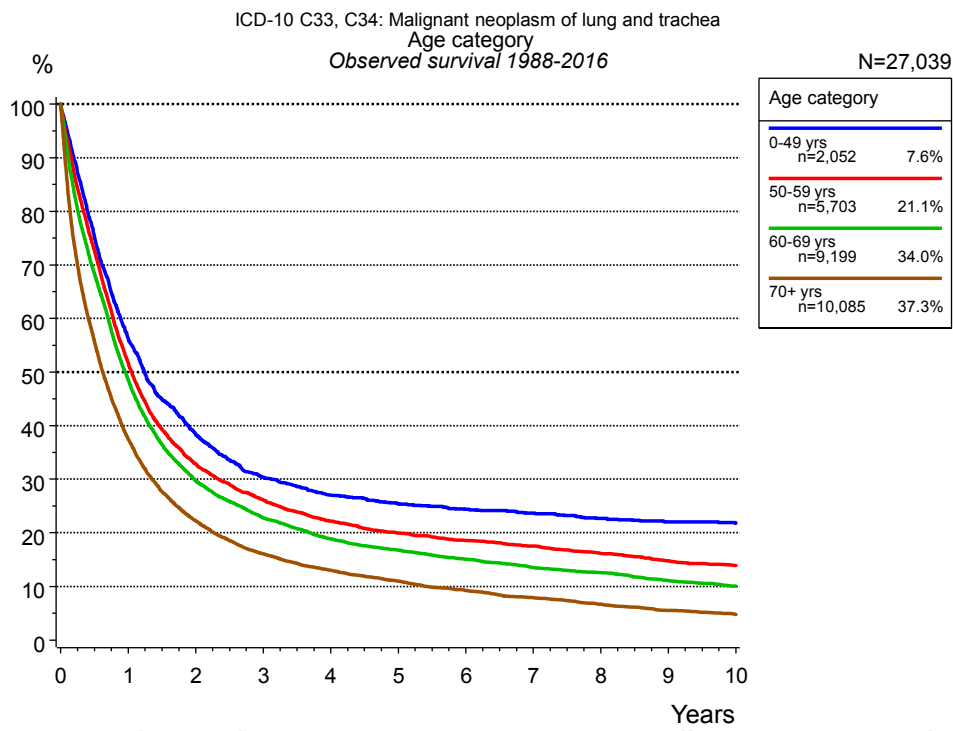


Figure 3a. Observed survival of patients with lung cancer by age category. Included in the evaluation are 27,039 cases diagnosed between 1988 and 2016.

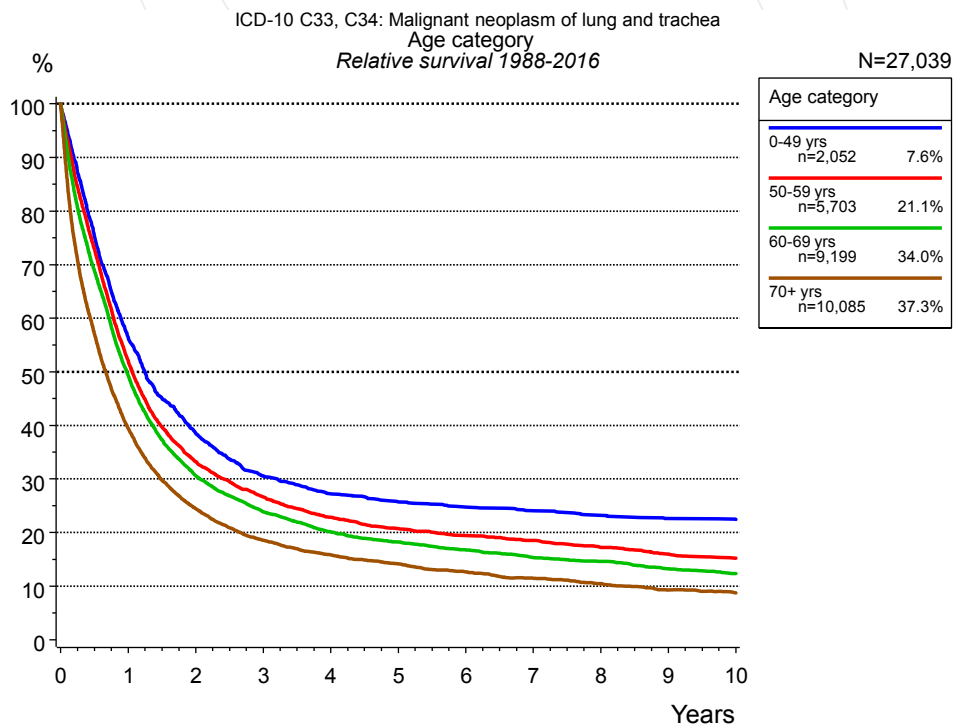


Figure 3b. Relative survival of patients with lung cancer by age category. Included in the evaluation are 27,039 cases diagnosed between 1988 and 2016.

Years	Age category							
	0-49 yrs n=2,052		50-59 yrs n=5,703		60-69 yrs n=9,199		70+ yrs n=10,085	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	56.3	56.5	51.7	52.0	48.6	49.3	37.5	39.4
2	38.4	38.6	32.8	33.2	29.7	30.6	22.2	24.5
3	30.3	30.5	26.1	26.6	22.8	23.9	16.1	18.6
4	27.0	27.2	22.2	22.8	18.8	20.1	13.0	15.9
5	25.4	25.7	20.0	20.7	16.8	18.2	11.0	14.2
6	24.4	24.8	18.6	19.5	15.1	16.8	9.2	12.6
7	23.7	24.1	17.5	18.5	13.5	15.3	7.9	11.5
8	22.7	23.2	16.2	17.3	12.6	14.6	6.7	10.4
9	22.0	22.6	14.8	16.0	11.1	13.3	5.5	9.3
10	21.8	22.5	13.9	15.2	10.0	12.4	4.7	8.8

Table 3c. Observed (obs.) and relative (rel.) survival of patients with lung cancer by age category for period 1988-2016 (N=27,039).

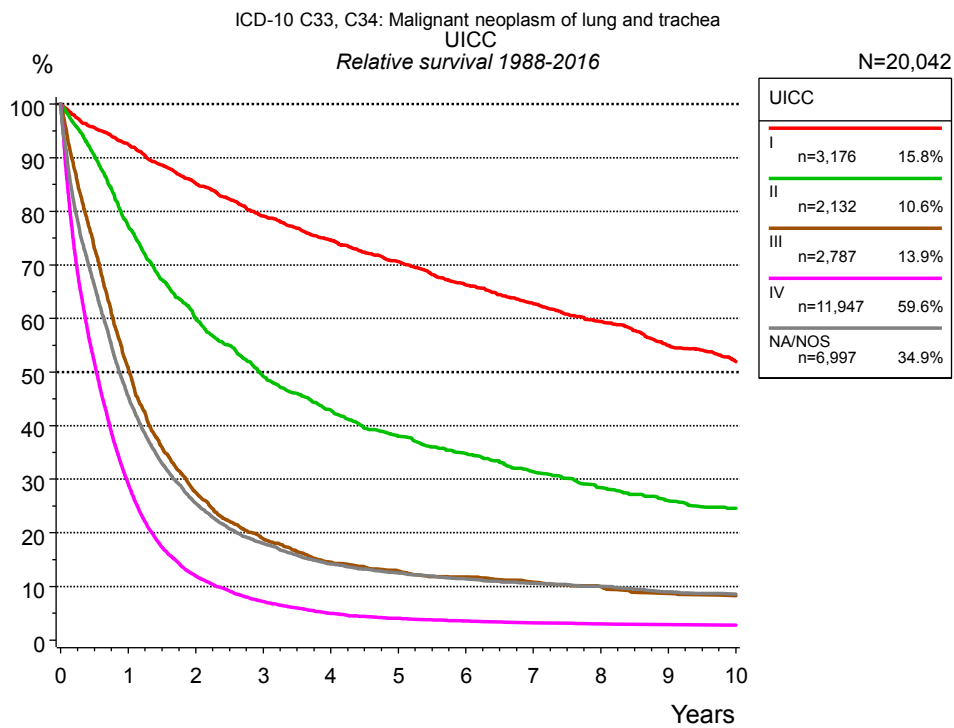


Figure 4a. Relative survival of patients with lung cancer by UICC. For 23,679 of 27,039 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 20,042 cases an evaluable classification was established. The grey line represents the subgroup of 6,997 patients with missing values regarding UICC (25.9 % of 27,039 patients, the percent values of all other categories are related to n=20,042).

Years	UICC									
	I n=3,176		II n=2,132		III n=2,787		IV n=11,947		NA/NOS n=6,997	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	90.6	92.5	75.9	77.3	49.7	50.8	28.4	29.1	44.0	45.5
2	81.9	85.2	57.8	60.0	26.4	27.6	11.5	11.9	24.0	25.5
3	74.5	79.2	46.4	49.2	17.8	18.9	6.7	7.1	16.5	18.0
4	68.7	74.6	39.7	42.9	13.4	14.5	4.6	5.0	12.7	14.2
5	63.5	70.6	34.4	38.0	11.6	12.9	3.7	4.0	10.9	12.5
6	58.2	66.3	30.8	34.8	10.5	11.8	3.1	3.5	9.7	11.4
7	53.8	62.8	27.1	31.4	9.4	10.8	2.8	3.2	8.8	10.6
8	49.7	59.4	24.1	28.4	8.5	10.0	2.5	3.0	8.1	10.1
9	44.8	55.0	21.5	26.0	7.2	8.7	2.4	2.9	7.1	9.0
10	41.3	51.9	19.8	24.6	6.7	8.3	2.3	2.8	6.6	8.6

Table 4b. Observed (obs.) and relative (rel.) survival of patients with lung cancer by UICC for period 1988-2016 (N=20,042).

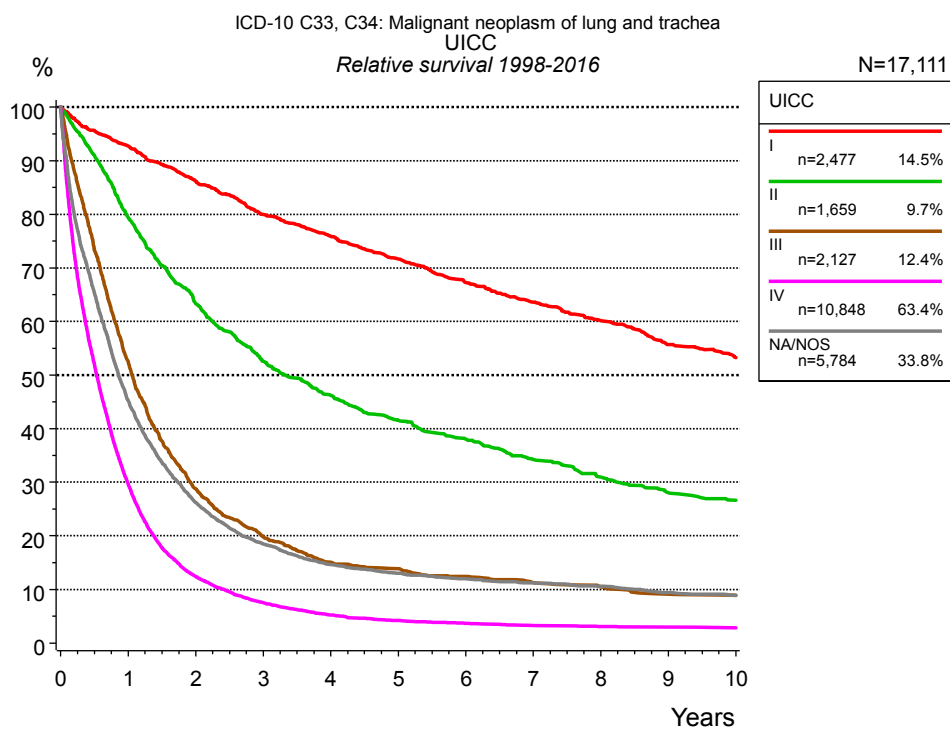


Figure 4c. Relative survival of patients with lung cancer by UICC. For 20,014 of 22,895 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 17,111 cases an evaluable classification was established. The grey line represents the subgroup of 5,784 patients with missing values regarding UICC (25.3 % of 22,895 patients, the percent values of all other categories are related to n=17,111).

Years	UICC									
	I n=2,477		II n=1,659		III n=2,127		IV n=10,848		NA/NOS n=5,784	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	90.9	92.7	78.0	79.4	51.3	52.5	29.0	29.6	43.8	45.2
2	82.8	86.2	60.9	63.3	27.6	28.7	11.9	12.4	24.7	26.2
3	75.3	80.0	49.6	52.6	18.8	19.9	7.1	7.5	16.9	18.5
4	69.9	75.9	42.8	46.2	13.9	15.1	4.8	5.2	13.0	14.6
5	64.5	71.6	37.6	41.5	12.6	13.9	3.8	4.2	11.3	13.0
6	59.2	67.3	33.7	38.0	11.0	12.4	3.3	3.7	10.1	12.0
7	54.6	63.6	29.6	34.2	9.8	11.3	2.9	3.3	9.3	11.2
8	50.4	60.2	26.3	31.0	9.0	10.5	2.6	3.1	8.5	10.6
9	45.4	55.7	23.2	28.1	7.6	9.1	2.5	2.9	7.4	9.4
10	42.5	53.2	21.5	26.7	7.2	8.9	2.4	2.8	6.8	8.9

Table 4d. Observed (obs.) and relative (rel.) survival of patients with lung cancer by UICC for period 1998-2016 (N=17,111).

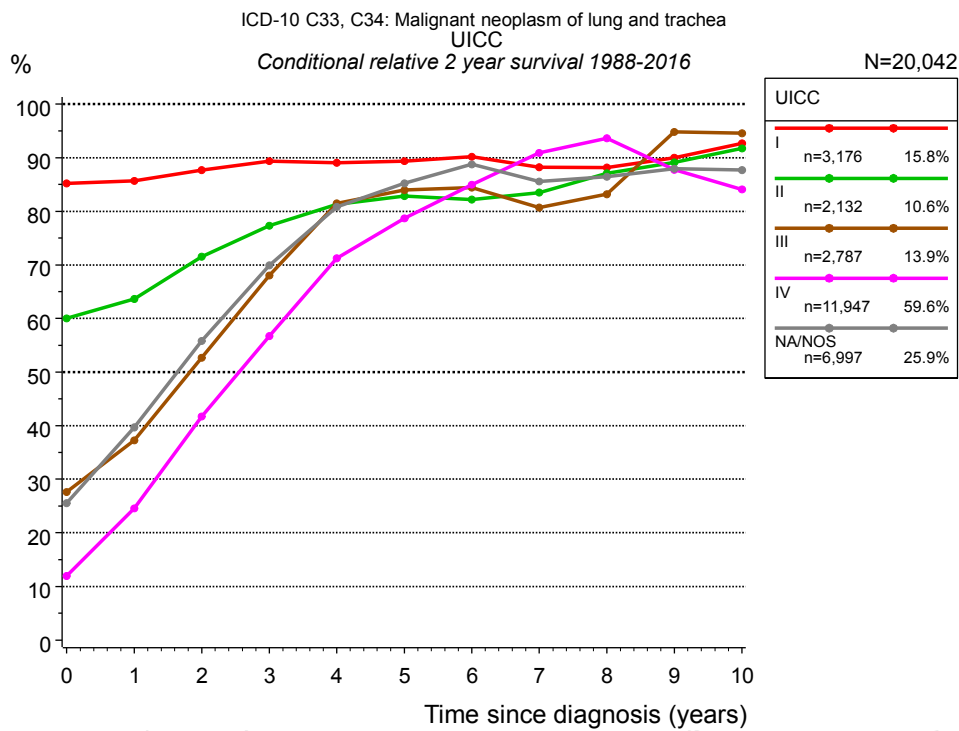


Figure 4e. Conditional relative 2-year survival of patients with lung cancer by UICC. For 23,679 of 27,039 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 20,042 cases an evaluable classification was established. The grey line represents the subgroup of 6,997 patients with missing values regarding UICC (25.9 % of 27,039 patients, the percent values of all other categories are related to n=20,042).

Years	UICC									
	I		II		III		IV		NA/NOS	
	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs
0	3,176	85.2	2,132	60.0	2,787	27.6	11,947	11.9	6,997	25.5
1	2,689	85.7	1,538	63.7	1,291	37.2	3,160	24.5	2,906	39.7
2	2,263	87.7	1,075	71.5	633	52.7	1,158	41.7	1,483	55.8
3	1,930	89.4	799	77.3	393	68.0	608	56.7	956	69.9
4	1,660	89.1	626	81.3	266	81.4	345	71.2	672	80.8
5	1,423	89.3	498	82.8	205	83.9	232	78.7	541	85.2
6	1,189	90.2	407	82.2	170	84.4	162	84.9	448	88.8
7	1,015	88.2	322	83.5	136	80.7	117	90.9	368	85.6
8	857	88.2	257	87.1	106	83.2	87	93.6	292	86.5
9	696	90.0	200	89.1	79	94.8	57	87.7	207	88.0
10	589	92.7	171	91.7	61	94.5	45	84.1	169	87.7

Table 4f. Conditional relative 2-year survival of patients with lung cancer by UICC for period 1988-2016 (N=20,042).

Conditional relative survival rates refer to the relative survival probability, in this case for 2 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 4c). The results illustrate to what extent the cancer induced mortality of particular subgroups declines in the subsequent years after detection of the malignancy. For instance, according to the presented survival statistics, patients in the subgroup UICC="I", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 89.4% (n=1,930).

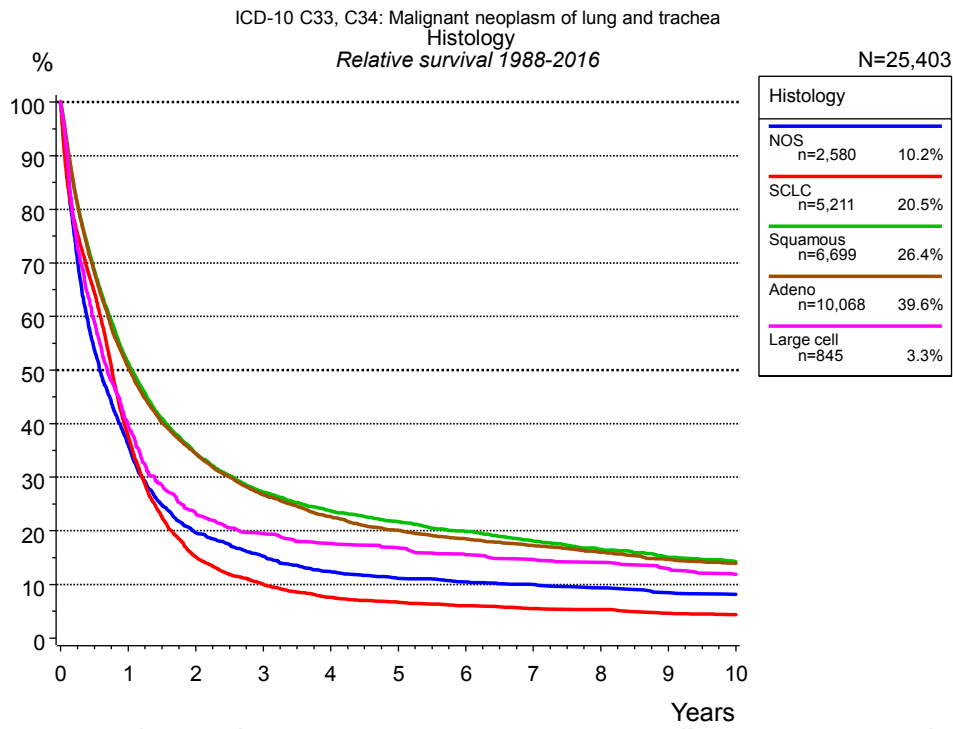


Figure 4g. Relative survival of patients with lung cancer by histology. For 25,403 of 27,039 cases diagnosed between 1988 and 2016 valid data could be obtained for this item.

Years	Histology									
	NOS n=2,580		SCLC n=5,211		Squamous n=6,699		Adeno n=10,068		Large cell n=845	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	35.0	36.0	36.8	37.6	50.0	51.4	49.4	50.5	38.8	39.6
2	18.6	19.6	14.5	15.1	32.7	34.4	33.0	34.4	22.4	23.3
3	14.2	15.3	9.5	10.0	25.2	27.2	25.1	26.8	18.4	19.5
4	11.2	12.4	7.0	7.6	21.3	23.7	20.8	22.6	16.5	17.7
5	9.9	11.2	6.1	6.7	19.0	21.7	18.1	20.1	15.2	16.8
6	9.1	10.5	5.4	6.0	16.9	19.9	16.3	18.5	13.8	15.5
7	8.5	10.0	4.8	5.5	15.0	18.1	14.8	17.3	12.8	14.7
8	7.8	9.4	4.6	5.3	13.3	16.5	13.4	16.0	12.1	14.1
9	6.9	8.5	3.9	4.6	11.8	15.1	11.9	14.6	10.9	12.9
10	6.5	8.1	3.6	4.3	10.8	14.2	11.1	13.9	9.8	11.9

Table 4h. Observed (obs.) and relative (rel.) survival of patients with lung cancer by histology for period 1988-2016 (N=25,403).

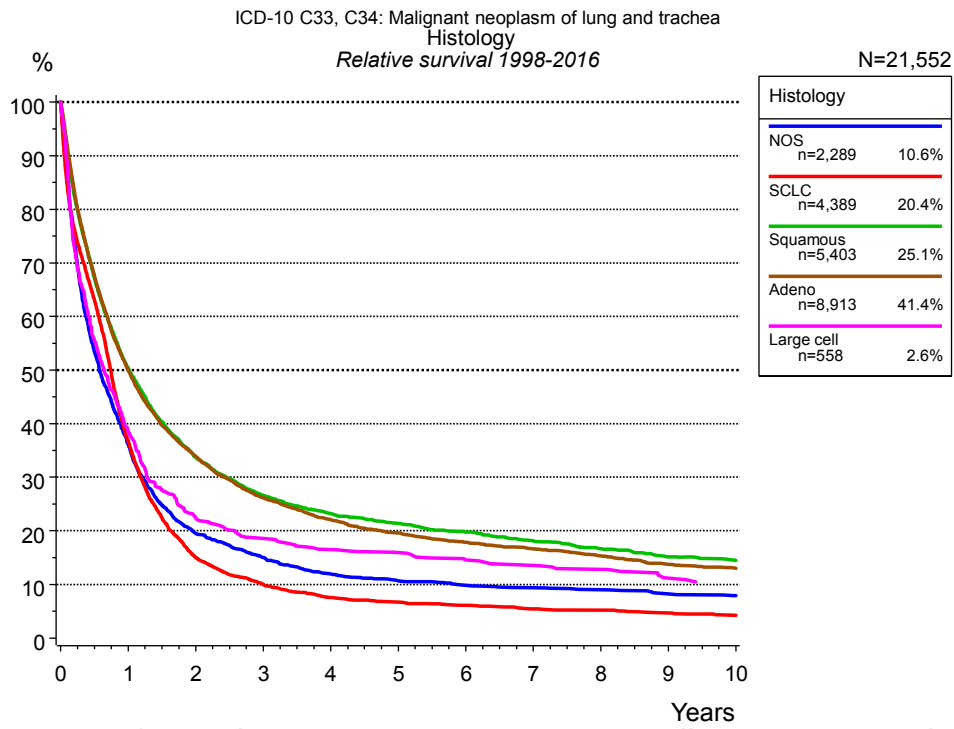


Figure 4i. Relative survival of patients with lung cancer by histology. For 21,552 of 22,895 cases diagnosed between 1998 and 2016 valid data could be obtained for this item.

Years	Histology									
	NOS n=2,289		SCLC n=4,389		Squamous n=5,403		Adeno n=8,913		Large cell n=558	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	35.2	36.1	36.0	36.7	49.0	50.4	48.8	50.0	38.0	38.6
2	18.5	19.5	14.5	15.0	32.0	33.7	32.5	33.9	21.5	22.4
3	13.9	15.0	9.5	10.0	24.6	26.6	24.6	26.2	17.7	18.6
4	10.9	12.0	7.1	7.6	20.9	23.2	20.3	22.1	15.4	16.5
5	9.5	10.7	6.1	6.7	18.8	21.4	17.6	19.6	14.5	15.9
6	8.7	9.9	5.5	6.1	16.9	19.8	15.7	17.9	12.9	14.5
7	8.1	9.4	4.8	5.4	15.0	18.1	14.3	16.6	11.9	13.5
8	7.5	9.0	4.5	5.2	13.5	16.6	12.8	15.3	11.1	12.8
9	6.8	8.3	4.0	4.7	11.9	15.2	11.2	13.7	9.3	11.2
10	6.3	7.9	3.6	4.3	11.1	14.5	10.3	13.0		

Table 4j. Observed (obs.) and relative (rel.) survival of patients with lung cancer by histology for period 1998-2016 (N=21,552).

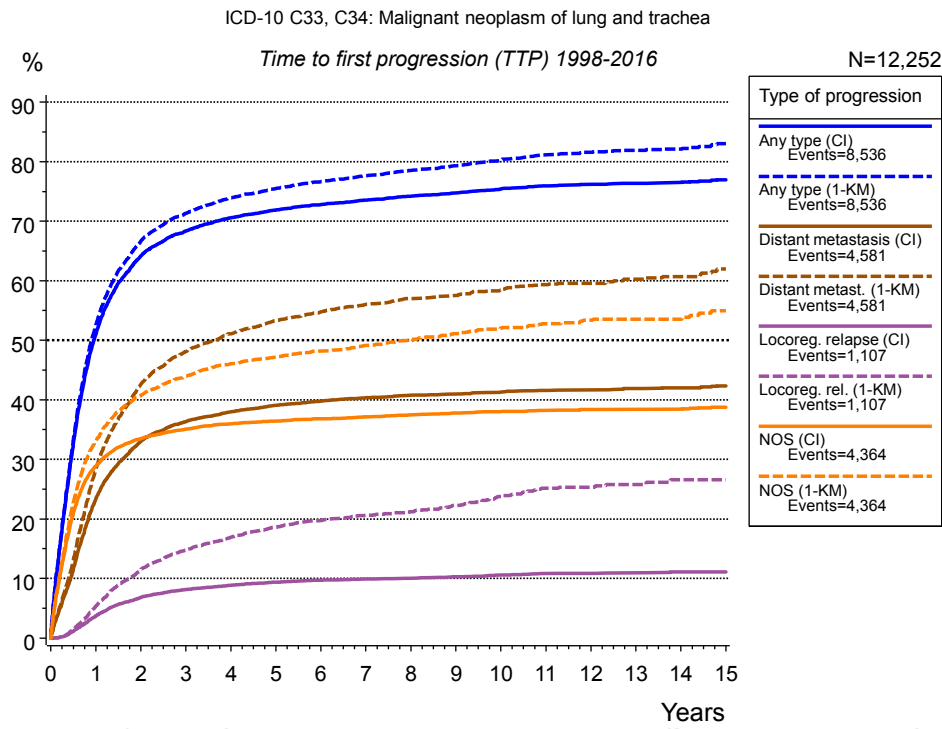


Figure 5a. Time to first progression of 12,252 patients with lung cancer diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression						
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metast. (1-KM)	Locoreg. relapse (CI)	Locoreg. rel. (1-KM)	NOS (CI)
	n=12,252 %	n=12,252 %	n=12,252 %	n=12,252 %	n=12,252 %	n=12,252 %	n=12,252 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	51.0	52.5	23.3	28.3	3.7	5.4	28.9
2	64.1	66.6	33.0	42.5	6.8	11.5	33.5
3	68.3	71.3	36.3	48.1	8.1	14.8	35.1
4	70.6	73.9	38.0	51.1	8.8	16.9	36.0
5	71.9	75.5	39.1	53.3	9.4	18.6	36.4
6	72.8	76.6	39.8	54.7	9.7	19.8	36.9
7	73.5	77.6	40.3	56.0	9.9	20.6	37.2
8	74.2	78.5	40.8	57.0	10.0	21.2	37.5
9	74.8	79.3	41.0	57.6	10.3	22.3	37.8
10	75.4	80.3	41.3	58.5	10.6	23.8	38.1
11	76.0	81.2	41.6	59.4	10.8	25.1	38.3
12	76.2	81.6	41.7	59.6	10.9	25.3	38.4
13	76.4	81.9	41.9	60.3	11.0	25.8	38.4
14	76.5	82.1	42.0	60.7	11.1	26.6	38.4
15	77.0	83.0	42.3	61.9	11.1	26.6	38.7

Type of progression	
<i>cont'd</i>	NOS (1-KM) n=12,252
Years	%
0	0.0
1	33.1
2	40.7
3	44.0
4	46.1
5	47.1
6	48.3
7	49.1
8	50.1
9	51.1
10	52.0
11	52.8
12	53.4
13	53.5
14	53.5
15	55.0

Table 5b. Time to first progression of patients with lung cancer for period 1998-2016 (N=12,252).

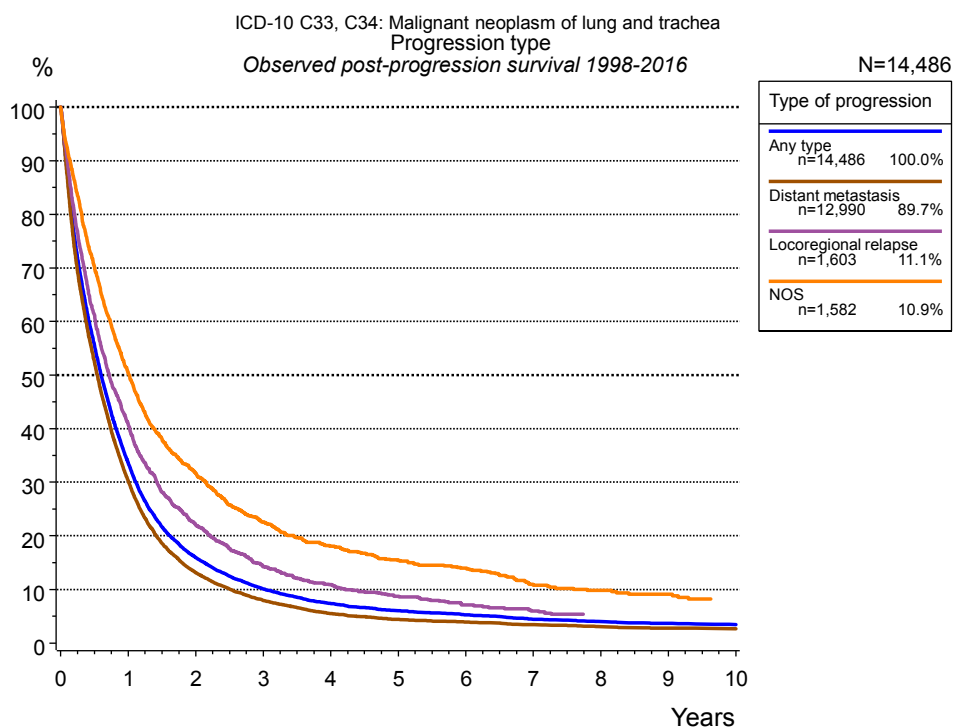


Figure 5c. Observed post-progression survival of 14,486 patients with lung cancer diagnosed between 1998 and 2016. These 14,486 patients with documented progression events during their course of disease represent 63.6 % of the totally 22,779 evaluated cases (incl. M1, n=10,527, 46.2 %). Patients with cancer relapse documented via death certificates only were excluded (n=4,577, 20.1 %). Multiple progression types on different sites are included in the evaluation even when not occurring synchronously. The NOS (not otherwise specified) class is included under the condition, that it is the one and only progression type during the course of disease.

Medical record documentation often lacks the linguistic severity to distinguish between local relapse, regional lymph node metastasis and distant spread in solid cancers. Frequently, the statement “not specified” is the only information in registries regarding relapse of the disease. The category “Any type” denotes all cases who suffered from at least one relapse during the course of disease (incl. primary M1-status). Although, the real number of relapsed patients is likely to be much higher. The accumulated percentage of patients with local relapse or distant metastasis exceeds the 100 % value because patients are potentially considered in more than one subgroup.

Years	Type of progression			
	Any type n=14,486 %	Distant metastasis n=12,990 %	Locoregional relapse n=1,603 %	NOS n=1,582 %
0	100.0	100.0	100.0	100.0
1	33.6	30.2	40.8	50.4
2	15.9	13.1	22.1	31.6
3	10.1	7.9	14.2	22.6
4	7.3	5.5	10.9	18.1
5	6.0	4.4	8.7	15.4
6	5.3	3.9	7.1	13.9
7	4.4	3.4	6.0	10.8
8	3.9	3.0		9.8
9	3.6	2.7		9.1
10	3.4	2.6		

Table 5d. Observed post-progression survival of patients with lung cancer for period 1998-2016 (N=14,486).

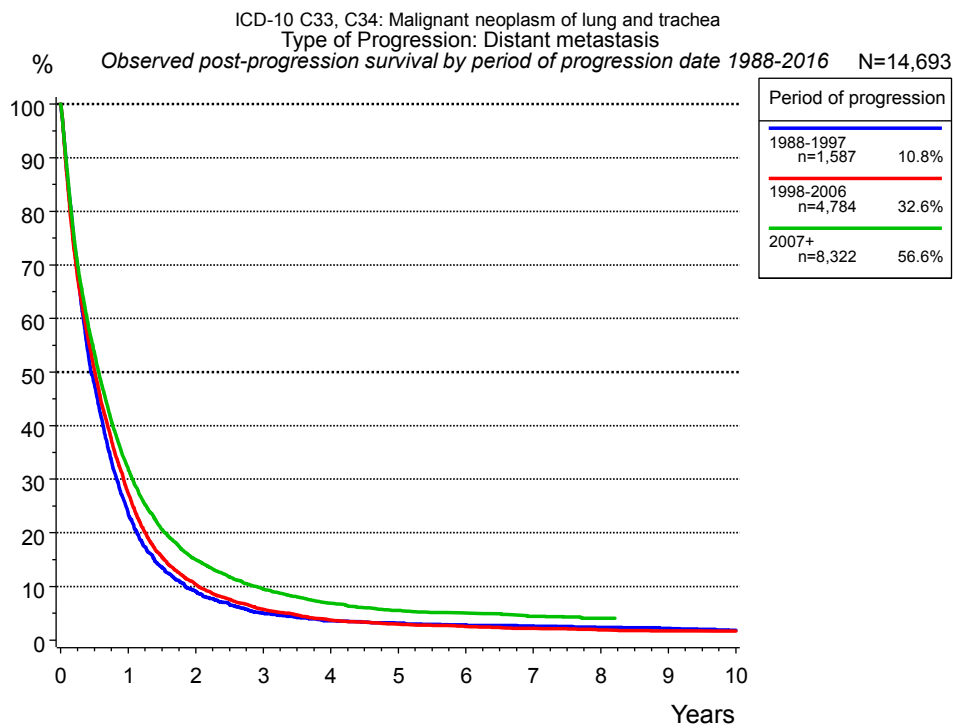


Figure 5e. Observed post-progression (distant metastasis) survival of 14,693 patients with lung cancer diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=1,587 %	1998-2006 n=4,784 %	2007+ n=8,322 %
0	100.0	100.0	100.0
1	23.6	27.4	31.9
2	9.1	10.3	15.0
3	5.0	5.7	9.5
4	3.6	3.7	6.9
5	3.2	2.9	5.5
6	2.8	2.5	5.0
7	2.6	2.2	4.4
8	2.3	1.9	4.1
9	2.2	1.7	
10	1.8	1.6	

Table 5f. Observed post-progression (distant metastasis) survival of patients with lung cancer for period 1988-2016 by period of progression (N=14,693).

Shortcuts

MCR Munich Cancer Registry, Germany

NCI National Cancer Institute, USA

SEER Surveillance, Epidemiology, and End Results, USA

UICC Union for International Cancer Control, Geneva

DCO Death certificate only Death certificate provides the only notification to the registry.

NA Not available

NOS Not otherwise specified

OS Overall/Observed survival Overall/Observed survival (Kaplan-Meier estimate)
Date of entry: diagnosis
Event: death from any cause

RS Relative survival Survival compared to “general population”,
ratio of observed to expected survival (Ederer II method),
reflecting cancer specific survival

AS Assembled survival Assembled chart of
observed, expected, relative survival

CS Conditional survival Survival probability under the condition of surviving
a given period of time

TTP Time to progression Time to first progression / relapse
Date of entry: diagnosis
Event: (progression / relapse): first local-, lymph node recurrence,
distant metastasis or unspecified progression

1-KM 1 minus Kaplan-Meier estimator
 (“inverse” Kaplan-Meier estimator)

CI Cumulative incidence
Death as competing risk (according to Kalbfleisch und Prentice)

PPS Post-progression survival Survival since first progression / relapse (Kaplan-Meier estimate)
Date of entry (progression / relapse): first local-, lymph node
recurrence, distant metastasis or unspecified progression
Event: death from any cause

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