

# Munich Cancer Registry



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

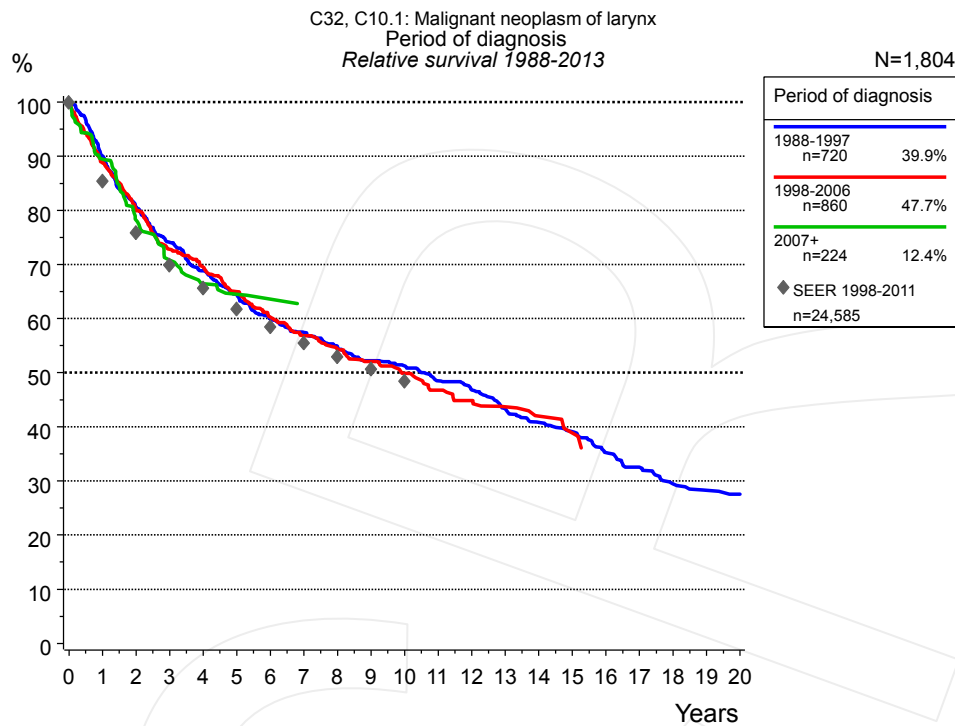
## Cancer statistics: Survival

### C32, C10.1: Larynx cancer

Year of diagnosis	1988-2013
Patients	3,007
Diseases	3,010
Cases evaluated	1,804
Creation date	05/13/2015
Export date	12/30/2014
Population	4.64 m



[http://www.tumorregister-muenchen.de/en/facts/surv/surv\\_C32\\_\\_E.pdf](http://www.tumorregister-muenchen.de/en/facts/surv/surv_C32__E.pdf)



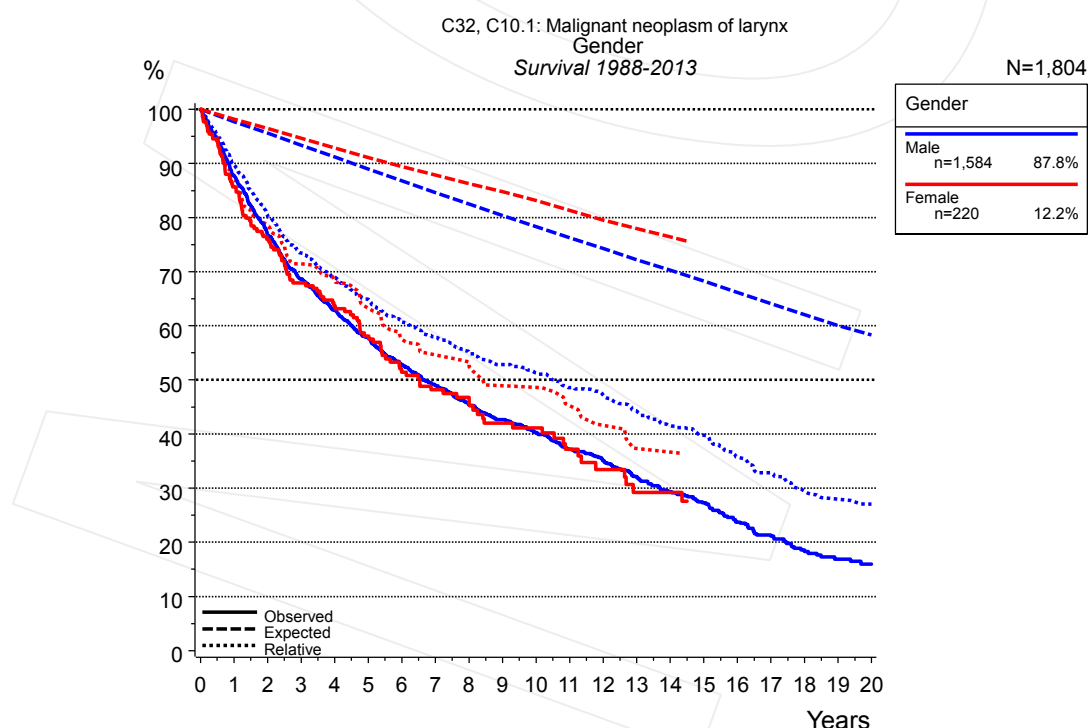
**Figure 1a.** Relative survival of patients with larynx cancer by period of diagnosis. Included in the evaluation are 1,804 cases diagnosed between 1988 and 2013.

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 1998 to 2011, and are represented by gray diamonds in order to facilitate comparisons between MCR and SEER.

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 1988, 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=720		1998-2006 n=860		2007+ n=224	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.9	90.0	87.0	88.7	87.9	89.5
2	76.8	80.5	77.0	80.1	75.1	78.2
3	69.0	74.1	68.6	72.8	66.3	70.8
4	62.5	68.8	64.0	69.5	60.9	66.4
5	57.3	64.6	58.5	65.0	58.3	64.5
6	51.7	59.9	53.0	60.3	57.0	63.6
7	48.3	57.4	49.1	56.9		
8	45.1	54.8	45.4	54.2		
9	42.0	52.2	42.8	52.1		
10	40.1	51.2	39.8	49.9		
11	37.0	48.5	36.5	46.8		
12	34.9	46.8	34.2	44.9		
13	31.4	43.3	32.1	43.7		
14	28.9	40.8	29.9	42.0		
15	26.9	39.1	27.5	38.9		
16	23.6	35.2				
17	21.1	32.5				
18	18.5	29.5				
19	17.2	28.2				
20	16.4	27.5				

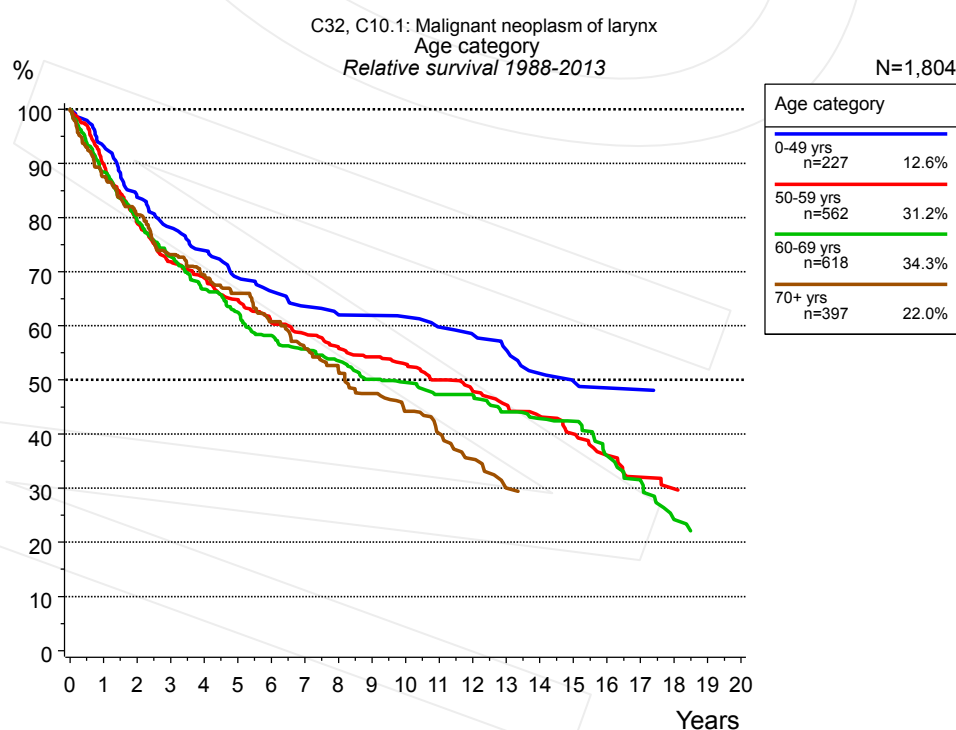
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with larynx cancer by period of diagnosis for period 1988-2013 (N=1,804).



**Figure 2a.** Survival of patients with larynx cancer by gender. Included in the evaluation are 1,804 cases diagnosed between 1988 and 2013.

Years	Gender			
	Male n=1,584		Female n=220	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	87.7	89.7	85.7	87.0
2	76.8	80.3	76.0	78.6
3	68.6	73.5	68.0	71.4
4	62.9	68.9	63.7	68.2
5	57.8	64.9	58.1	63.3
6	52.8	60.8	51.5	57.5
7	49.0	57.9	48.2	54.6
8	45.4	55.0	46.8	53.3
9	42.7	52.8	42.0	48.9
10	40.3	51.3	41.2	48.6
11	37.2	48.6	37.2	45.2
12	35.2	47.2	33.5	41.6
13	32.0	44.3	29.2	37.3
14	29.3	41.6	29.2	36.6
15	27.3	39.8	27.6	35.3
16	23.7	35.8		
17	21.1	32.9		
18	18.3	29.5		
19	16.9	28.0		
20	16.0	27.1		

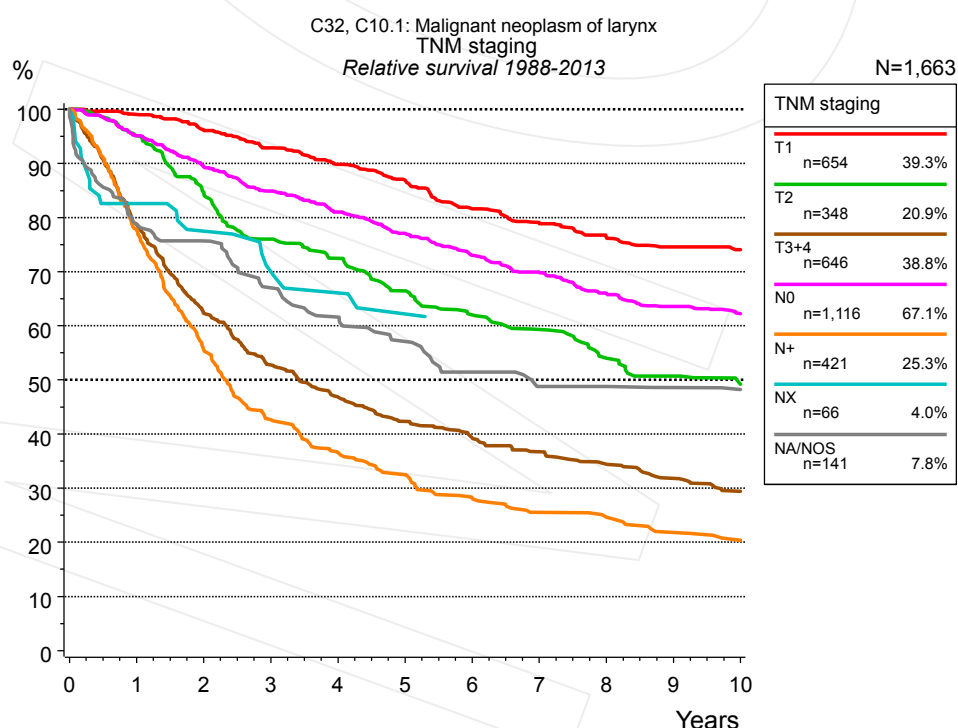
**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with larynx cancer by gender for period 1988-2013 (N=1,804).



**Figure 3a.** Relative survival of patients with larynx cancer by age category. Included in the evaluation are 1,804 cases diagnosed between 1988 and 2013.

Years	Age category							
	0-49 yrs n=227		50-59 yrs n=562		60-69 yrs n=618		70+ yrs n=397	
	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	93.3	93.2	89.3	89.8	86.9	88.4	82.4	87.6
2	83.3	83.8	78.0	79.1	76.6	79.4	71.1	80.5
3	77.6	78.1	70.2	71.9	68.8	72.8	60.6	73.2
4	73.2	73.9	66.5	68.8	61.8	66.8	53.6	69.4
5	67.9	68.9	62.2	64.8	56.5	62.5	47.8	66.0
6	65.0	66.4	57.4	60.6	51.2	58.3	40.2	60.7
7	62.0	63.6	54.9	58.5	47.7	55.7	33.8	55.9
8	60.7	62.0	51.7	56.0	44.5	53.5	28.9	51.6
9	60.0	61.9	49.5	54.3	40.4	50.2	24.9	47.5
10	59.2	61.7	47.6	52.9	38.5	49.6	20.6	44.2
11	56.8	59.8	44.3	50.0	35.3	47.3	17.2	40.1
12	55.2	58.4	41.9	47.9	33.9	47.2	13.9	35.4
13	52.6	55.5	39.0	45.4	30.2	44.1	10.2	30.0
14	48.0	51.2	36.6	43.3	27.9	42.9		
15	45.9	49.8	33.2	40.0	26.3	42.4		
16	44.7	48.5	28.9	36.1	21.2	36.0		
17	44.7	48.2	25.3	32.0	17.2	31.6		
18	43.1	47.9	23.4	29.9	12.4	24.3		
19	43.1	47.6						
20	43.1	47.2						

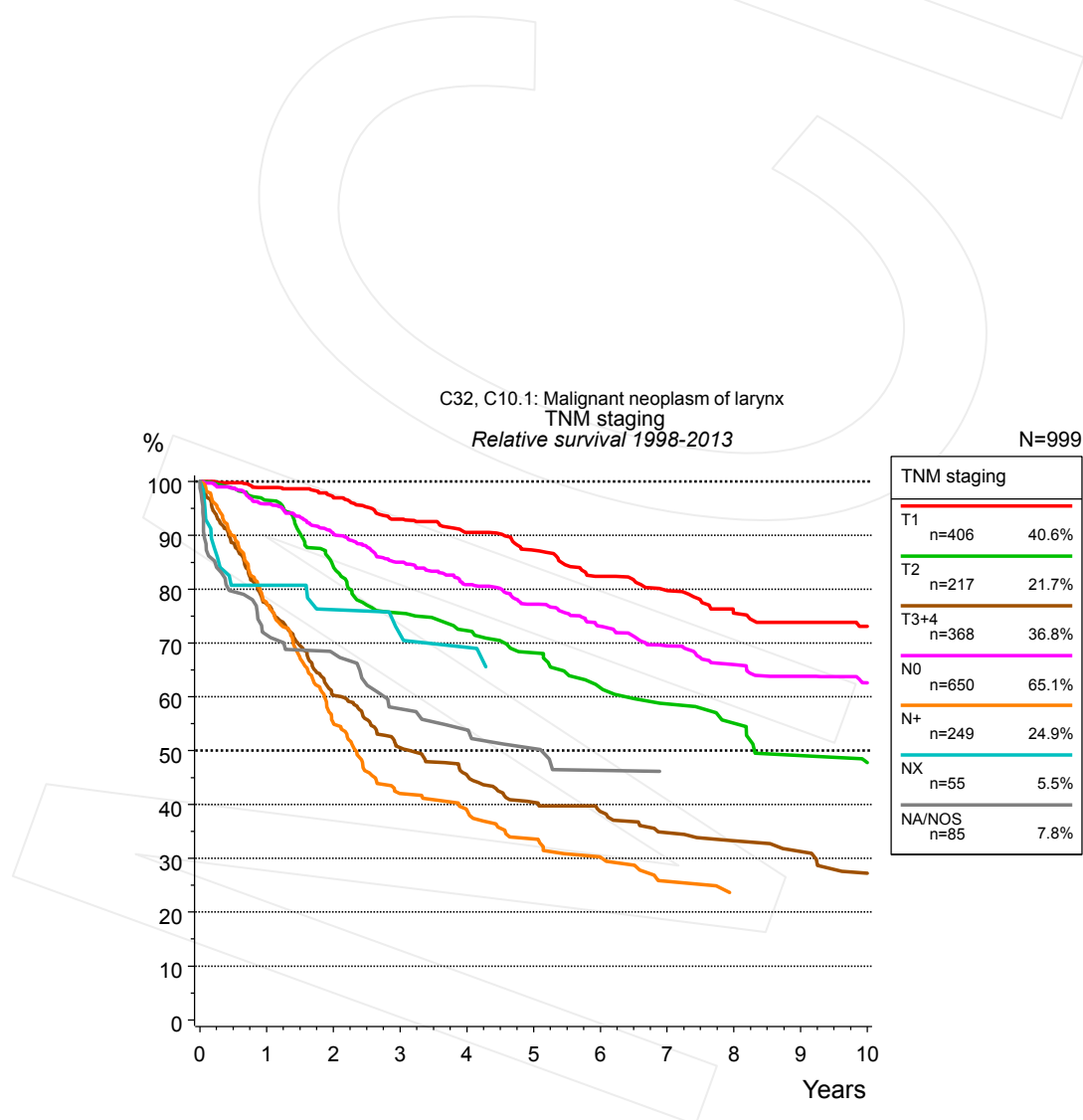
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with larynx cancer by age category for period 1988-2013 (N=1,804).



**Figure 4a.** Relative survival of patients with larynx cancer by TNM staging. For 1,668 of 1,804 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 1,663 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 141 patients with missing values regarding TNM staging (7.8% of 1,804 patients, the percent values of all other categories are related to n=1,663).

TNM staging														
Years	T1 n=654		T2 n=348		T3+4 n=646		N0 n=1,116		N+ n=421		NX n=66		NA/NOS n=141	
	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	96.7	99.0	93.3	95.1	77.3	78.8	93.0	95.2	76.5	77.7	81.6	82.6	77.2	78.6
2	91.6	96.1	81.2	84.5	60.1	62.4	85.4	89.4	53.8	55.5	74.4	77.5	72.0	75.7
3	86.5	92.9	71.6	76.1	49.9	52.8	79.3	84.9	40.7	42.7	66.2	70.0	62.0	67.0
4	81.4	89.8	66.7	72.5	43.5	46.9	73.8	81.0	34.4	36.6	61.8	66.1	55.8	61.6
5	77.0	86.9	60.0	66.5	38.7	42.4	68.7	77.1	30.3	32.5	56.9	62.2	50.1	57.1
6	70.2	81.6	54.6	62.0	35.2	39.3	63.4	73.0	25.7	28.1	54.0	61.7	43.9	51.4
7	66.3	78.9	51.0	59.3	32.3	36.7	59.2	69.8	22.9	25.6	54.0	61.7	39.9	48.8
8	62.5	76.3	45.6	54.0	29.7	34.4	54.6	66.0	22.0	24.7	54.0	61.7	39.9	48.8
9	59.7	74.6	42.0	50.7	26.9	31.8	51.5	63.6	19.0	21.8			37.7	48.6
10	57.5	74.0	39.6	49.2	24.5	29.4	49.0	62.3	17.7	20.4			36.4	48.2

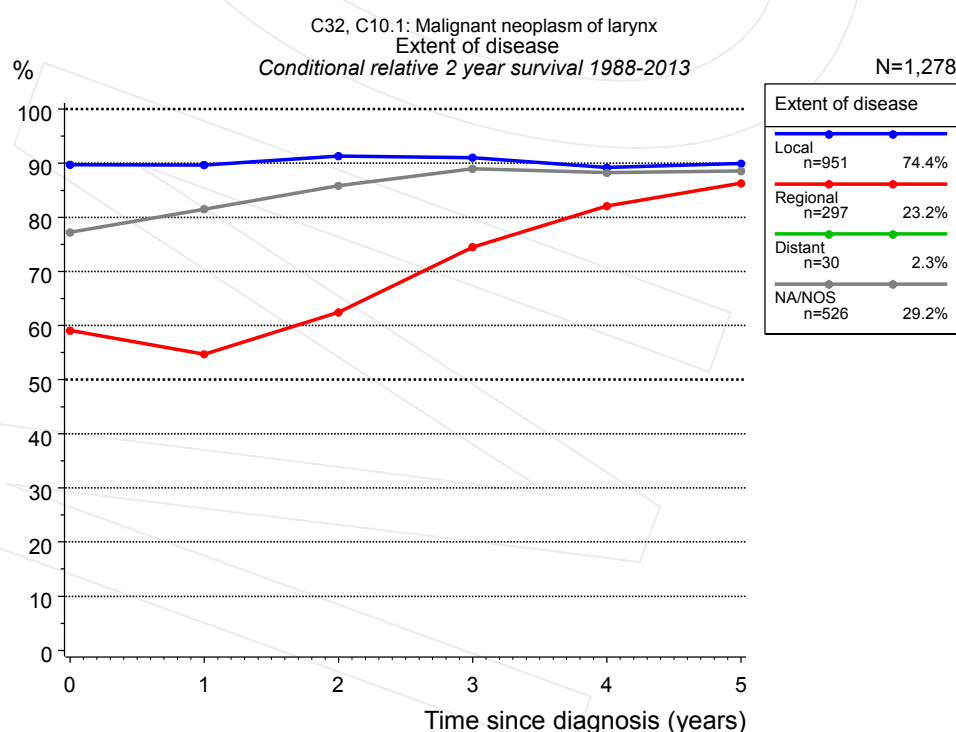
**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with larynx cancer by TNM staging for period 1988-2013 (N=3,251).



**Figure 4c.** Relative survival of patients with larynx cancer by TNM staging. For 1,003 of 1,084 cases diagnosed between 1998 and 2013 valid data could be obtained for this item. For a total of 999 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 85 patients with missing values regarding TNM staging (7.8% of 1,084 patients, the percent values of all other categories are related to n=999).

TNM staging														
Years	T1 n=406		T2 n=217		T3+4 n=368		N0 n=650		N+ n=249		NX n=55		NA/NOS n=85	
	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	97.0	98.9	94.8	96.5	76.0	77.2	93.9	95.8	76.4	77.4	79.7	80.7	70.2	71.5
2	92.7	96.9	81.9	84.1	58.2	60.3	86.5	90.3	53.6	55.1	72.9	76.2	65.1	68.1
3	87.2	93.0	71.6	75.6	48.0	50.6	79.8	85.0	40.1	42.0	67.7	71.6	54.2	57.8
4	82.6	90.6	67.2	72.3	42.5	45.5	74.2	80.9	36.9	39.0	65.0	69.2	50.0	53.9
5	77.7	87.3	62.1	68.2	37.3	40.4	69.3	77.2	31.7	33.6	58.5	63.7	45.6	50.4
6	71.5	82.4	55.3	61.7	34.9	38.7	64.1	73.1	27.6	30.2			40.5	46.4
7	67.9	79.8	51.2	58.7	30.9	34.8	59.7	69.4	23.2	25.7			38.3	46.1
8	62.1	75.6	47.6	55.1	29.0	33.3	55.0	66.0	20.9	23.4			38.3	45.8
9	59.5	73.9	41.9	49.1	27.2	31.3	52.5	63.8					38.3	45.5
10	57.0	73.1	39.7	47.8	23.2	27.2	49.9	62.6						

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with larynx cancer by TNM staging for period 1998-2013 (N=1,945).

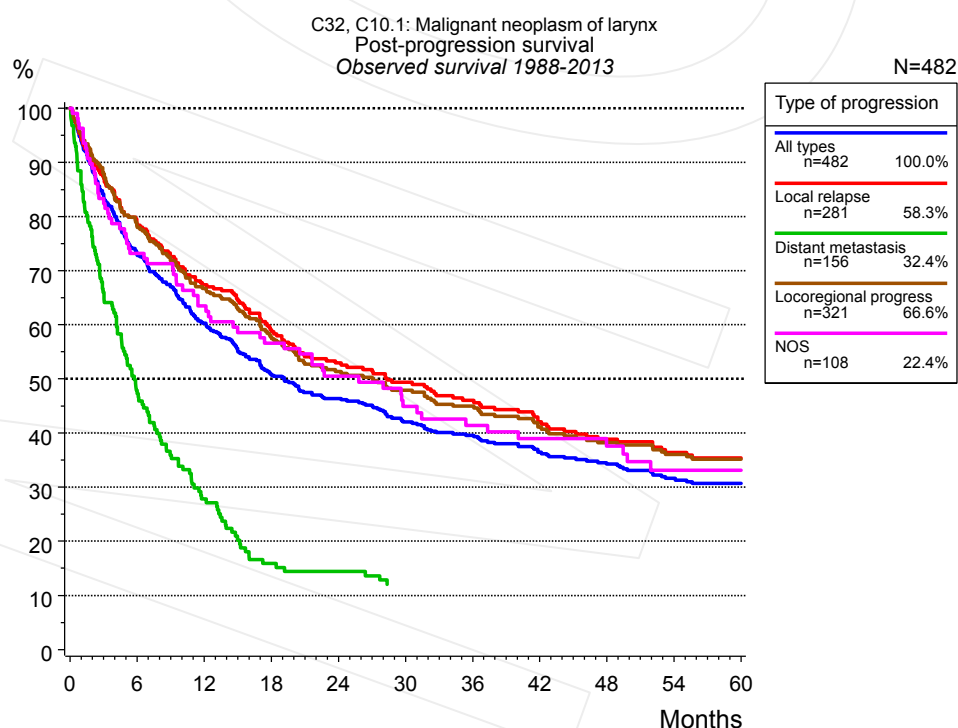


**Figure 4e.** Conditional relative 2-year survival of patients with larynx cancer by extent of disease. For 1,668 of 1,804 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 1,278 cases an evaluable classification was established. The grey line represents the subgroup of 526 patients with missing values regarding extent of disease (29.2% of 1,804 patients, the percent values of all other categories are related to n=1,278).

Years	Extent of disease							
	Local		Regional		Distant		NA/NOS	
	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs	n	Cond. surv. % 2 yrs
0	951	89.7	297	59.1	30		526	77.2
1	865	89.7	228	54.7			427	81.5
2	764	91.3	152	62.5			346	85.8
3	678	91.0	107	74.5			288	89.0
4	598	89.2	85	82.1			240	88.2
5	509	90.0	72	86.3			207	88.6

**Table 4f.** Conditional relative 2-year survival of patients with larynx cancer by extent of disease for period 1988-2013 (N=1,278).

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 extent of disease="Local", who are alive at least 3 years after cancer diagnosis, the conditional relative 2-year survival rate is 91.0% (n=678).



**Figure 5a.** Observed post-progression survival of 482 patients with larynx cancer diagnosed between 1988 and 2013 (incl. M1). These 482 patients with documented progression events during their course of disease represent 26.7% of the totally 1,804 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=141, 7.8%). 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 "All types" 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.

Months	Type of progression				NOS n=108 %
	All types n=482 %	Local relapse n=281 %	Distant metastasis n=156 %	Locoregional progress n=321 %	
0	100.0	100.0	100.0	100.0	100.0
12	60.3	67.4	27.8	66.7	63.5
24	46.4	52.9	14.4	51.4	50.5
36	39.6	46.0	12.0	45.0	41.4
48	34.3	38.9		38.2	37.6
60	30.7	35.4		35.2	33.1

**Table 5b.** Observed post-progression survival of patients with larynx cancer for period 1988-2013 (N=482).

## Shortcuts

MCR	Munich Cancer Registry, Germany (Tumorregister München)
NCI	National Cancer Institute, USA
SEER	Surveillance, Epidemiology, and End Results, USA
UICC	Union for International Cancer Control, Geneva
DCO	Death certificate only. The death certificate provides the only notification to the registry.
NA	Not available
NOS	Not otherwise specified
OS	Observed/overall survival (Kaplan-Meier estimate)
RS	Relative survival, compared to the general population, ratio of observed to expected survival (Ederer II method), reflecting excess mortality among cancer patients
AS	Assembled survival chart (observed, expected, relative)
PPS	Post-progression survival, survival since first relapse (Kaplan-Meier estimate)
progression	Date of entry: Date of first locoregional recurrence, distant metastasis, unspecified
	Event: Death of all causes
CS	Conditional survival, survival probability under the condition of surviving a given period of time

## Recommended Citation

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