

# Munich Cancer Registry



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Munich Cancer Registry at Munich Cancer Center  
Marchioninstr. 15  
Munich, 81377  
Germany

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

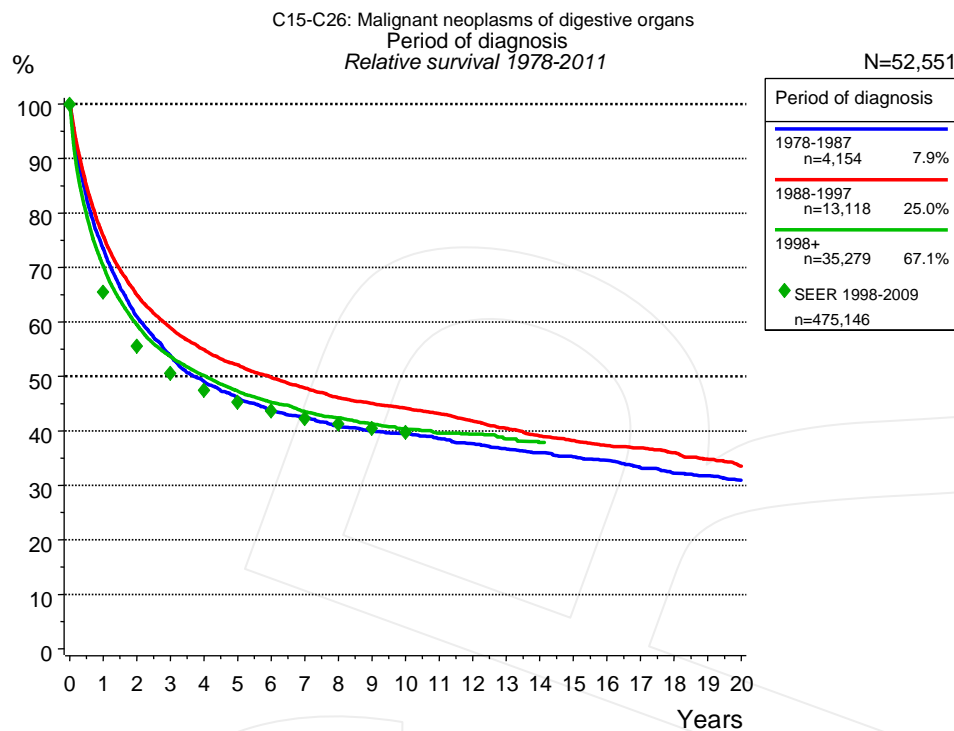
## Cancer statistics: Survival

### C15-C26: GI cancer

Year of diagnosis	1978-1987	1988-1997	1998-2011
Patients	4,610	15,180	67,689
Diseases	4,666	15,471	69,628
Creation date	04/01/2013		
Export date	01/03/2013		
Population	4.5 m		



[http://www.tumorregister-muenchen.de/en/facts/surv/surv\\_C1526E.pdf](http://www.tumorregister-muenchen.de/en/facts/surv/surv_C1526E.pdf)

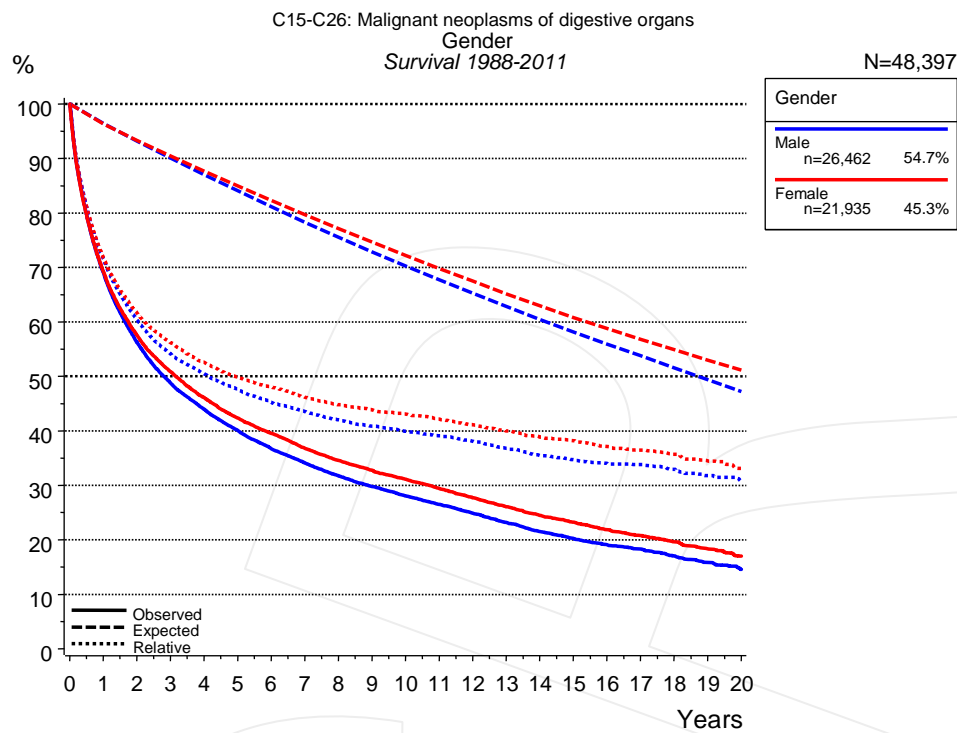


**Figure 1a.** Relative survival of patients with GI cancer by period of diagnosis. Included in the evaluation are 52,551 cases diagnosed between 1978 and 2011.

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					
	1978-1987 n=4,154		1988-1997 n=13,118		1998+ n=35,279	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	71.1	73.4	73.0	75.7	67.7	70.2
2	57.2	60.9	60.5	64.9	55.5	59.4
3	48.9	53.7	53.1	58.9	48.4	53.6
4	43.3	49.1	47.9	54.9	43.8	50.1
5	39.5	46.1	43.9	52.1	40.0	47.3
6	36.2	43.7	40.6	49.8	37.0	45.2
7	34.0	42.4	37.7	47.9	34.5	43.5
8	31.8	40.9	35.0	46.1	32.5	42.4
9	30.0	40.0	33.1	45.0	30.5	41.3
10	28.6	39.5	31.3	44.2	28.8	40.3
11	27.0	38.6	29.6	43.2	27.3	39.6
12	25.4	37.7	27.6	41.8	26.3	39.4
13	23.8	36.6	25.8	40.5	24.6	38.5
14	22.7	36.0	24.0	39.0	23.2	37.9
15	21.4	35.2	22.7	38.2		
16	20.3	34.6	21.4	37.3		
17	18.7	33.2	20.5	36.8		
18	17.5	32.2	19.2	36.0		
19	16.7	31.8	17.8	34.8		
20	15.6	30.9	16.5	33.5		

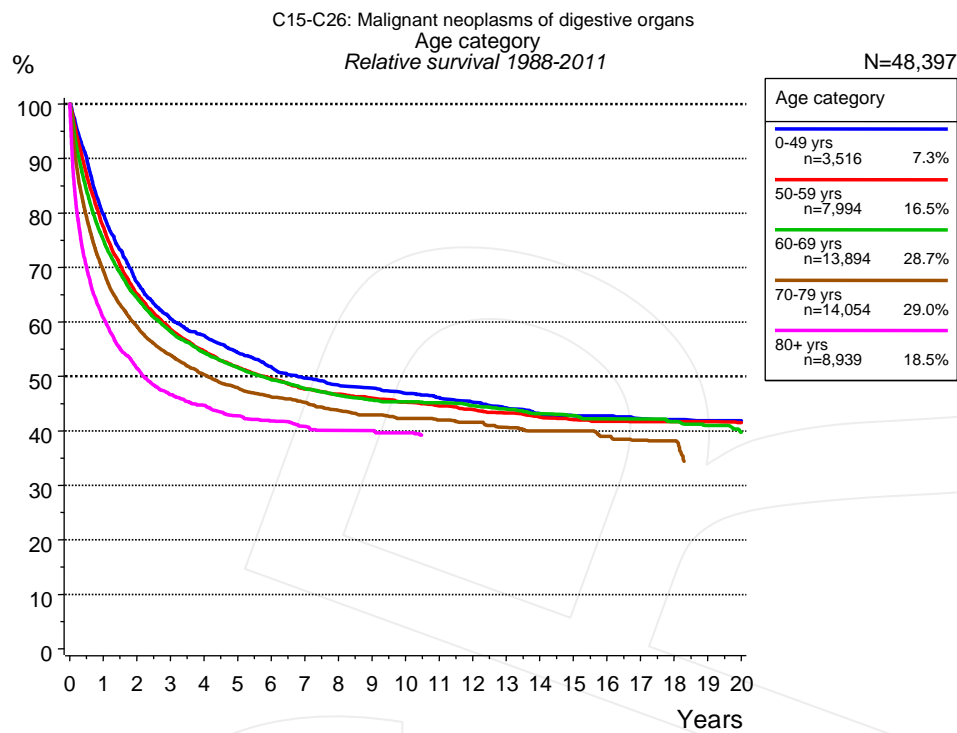
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with GI cancer by period of diagnosis for period 1978-2011 (N=52,551).



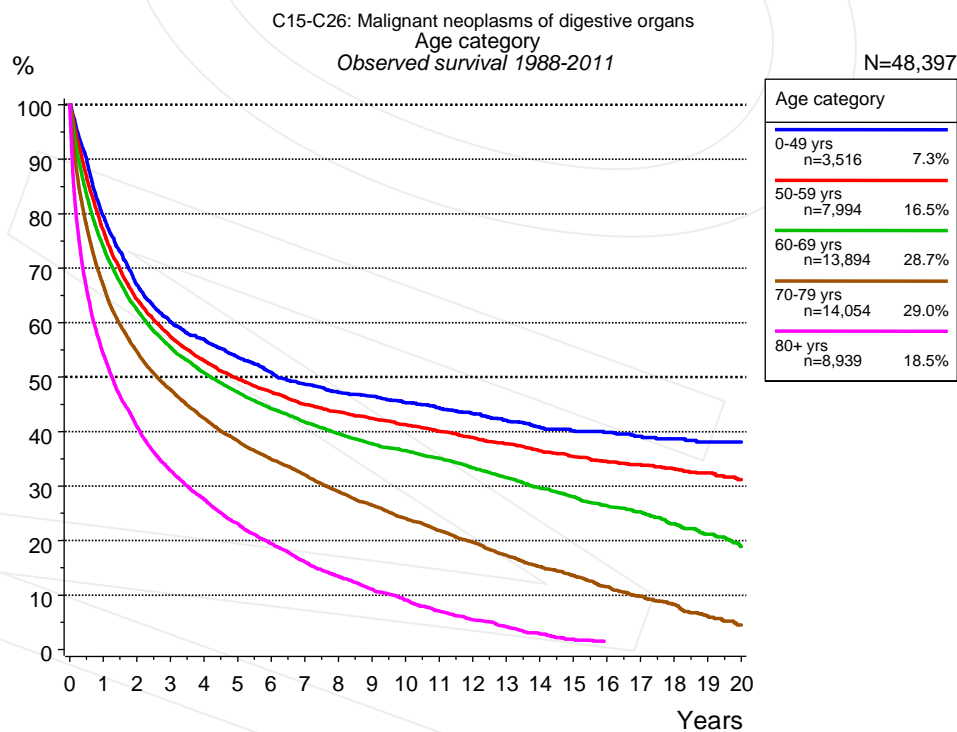
**Figure 2a.** Survival of patients with GI cancer by gender. Included in the evaluation are 48,397 cases diagnosed between 1988 and 2011.

Years	Gender			
	Male n=26,462		Female n=21,935	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	69.0	71.6	69.2	71.9
2	56.3	60.4	57.6	61.7
3	48.8	54.1	50.9	56.2
4	43.9	50.5	46.1	52.6
5	40.1	47.7	42.4	49.9
6	36.7	45.2	39.5	48.0
7	34.1	43.6	36.8	46.2
8	31.7	42.0	34.6	44.8
9	29.8	40.8	32.8	43.9
10	28.1	39.9	31.1	43.1
11	26.5	39.1	29.4	42.1
12	24.9	38.1	27.7	41.1
13	23.2	36.8	26.1	40.0
14	21.5	35.5	24.5	38.9
15	20.2	34.7	23.2	38.2
16	19.1	34.0	21.8	37.1
17	18.3	33.8	20.8	36.5
18	17.0	32.9	19.6	35.7
19	15.8	31.8	18.3	34.5
20	14.6	30.8	17.0	33.1

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with GI cancer by gender for period 1988-2011 (N=48,397).



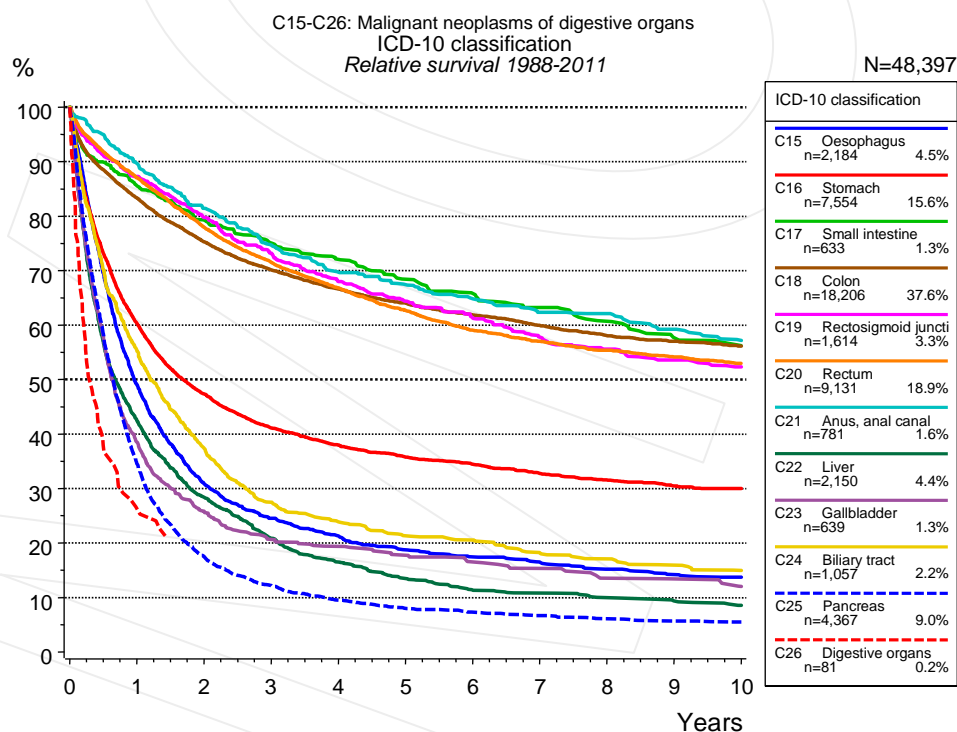
**Figure 3a.** Relative survival of patients with GI cancer by age category. Included in the evaluation are 48,397 cases diagnosed between 1988 and 2011.



**Figure 3b.** Observed survival of patients with GI cancer by age category. Included in the evaluation are 48,397 cases diagnosed between 1988 and 2011.

Years	Age category									
	0-49 yrs n=3,516		50-59 yrs n=7,994		60-69 yrs n=13,894		70-79 yrs n=14,054		80+ yrs n=8,939	
	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	79.6	79.7	76.9	77.4	73.9	75.0	66.8	69.4	54.2	60.7
2	66.9	67.2	64.3	65.2	62.4	64.4	54.7	59.2	41.0	51.5
3	60.1	60.5	57.4	58.6	55.5	58.3	47.7	53.9	32.8	46.6
4	56.9	57.5	53.0	54.6	50.8	54.3	42.4	50.3	27.6	44.7
5	53.6	54.4	49.7	51.7	47.2	51.6	38.3	47.9	23.1	42.8
6	50.9	51.8	47.2	49.6	44.2	49.4	34.9	46.2	19.4	41.8
7	48.7	49.7	44.9	47.7	41.7	47.8	32.1	45.2	16.1	40.8
8	47.2	48.4	43.6	46.7	39.6	46.5	29.0	43.7	13.4	40.1
9	46.5	47.9	42.4	46.0	37.7	45.6	26.5	42.9	11.1	40.1
10	45.3	46.9	41.2	45.3	36.5	45.3	24.1	42.3	9.0	39.7
11	44.4	46.1	40.0	44.6	35.1	45.2	21.8	42.0		
12	43.3	45.3	38.9	43.9	33.4	44.6	19.7	41.6		
13	42.1	44.2	37.7	43.3	31.6	43.9	17.3	40.6		
14	40.8	43.1	36.5	42.5	29.6	43.1	15.2	40.0		
15	40.2	42.7	35.4	42.0	28.0	42.8	13.6	40.0		
16	39.9	42.7	34.5	41.7	26.4	42.2	11.5	39.0		
17	39.2	42.2	33.9	41.7	25.3	42.2	9.8	38.3		
18	38.7	42.1	33.2	41.7	23.1	41.7	8.3	38.2		
19	38.1	41.9	32.4	41.7	21.1	41.0				
20	38.1	41.9	31.2	41.5	18.9	39.7				

**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with GI cancer by age category for period 1988-2011 (N=48,397).

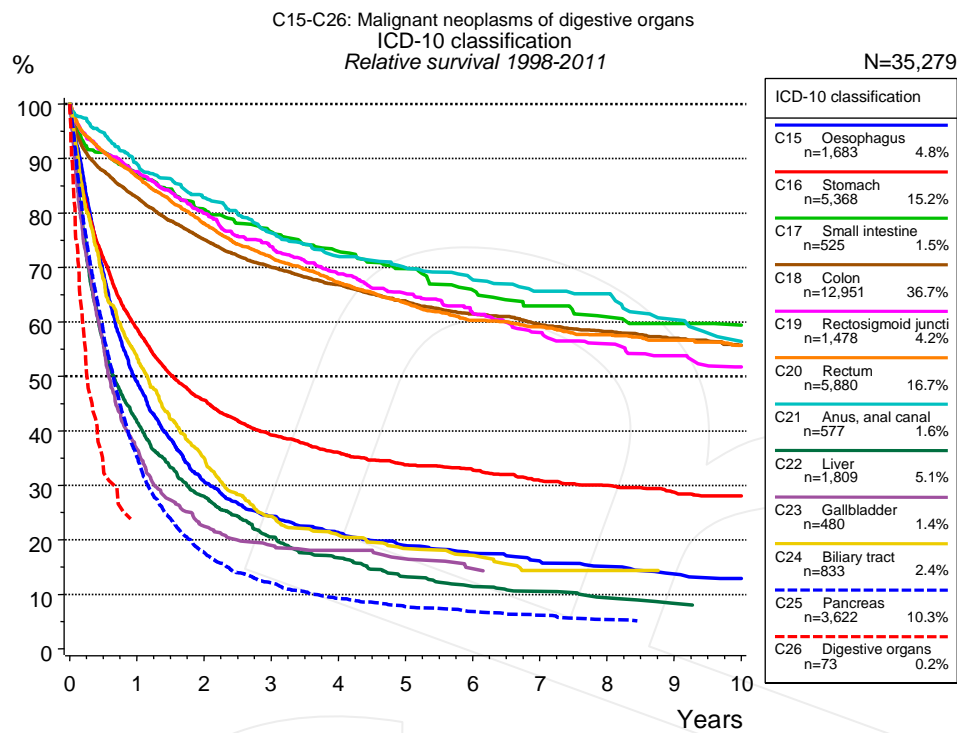


**Figure 4a.** Relative survival of patients with GI cancer by ICD-10 classification. Included in the evaluation are 48,397 cases diagnosed between 1988 and 2011.

ICD-10 classification														
	C15 Oesophagus		C16 Stomach		C17 Small intestine		C18 Colon		C19 Rectosigmoid junction		C20 Rectum		C21 Anus, anal canal	
	n=2,184		n=7,554		n=633		n=18,206		n=1,614		n=9,131		n=781	
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	47.9	49.1	57.7	60.3	83.5	85.6	80.0	83.3	84.5	87.3	84.2	87.0	87.2	89.6
2	29.6	30.9	43.7	47.4	75.8	79.3	69.6	75.3	74.9	79.8	73.2	78.0	77.1	81.4
3	23.0	24.5	36.7	41.1	70.3	75.1	62.5	70.1	66.8	73.2	65.2	71.5	69.1	74.7
4	19.5	21.3	32.8	38.0	66.1	72.0	57.2	66.6	60.2	68.0	59.2	66.8	63.1	69.7
5	16.8	18.8	29.8	35.8	61.4	68.4	53.0	64.1	55.3	64.4	53.9	62.7	59.6	67.4
6	15.3	17.5	27.8	34.4	57.9	65.8	49.2	61.9	51.0	61.3	49.3	59.0	56.1	64.8
7	14.1	16.4	25.5	32.7	54.6	63.2	45.9	59.9	46.5	57.8	46.2	57.0	52.6	62.4
8	12.7	15.2	23.7	31.6	51.3	60.7	42.8	58.0	43.2	55.6	43.5	55.4	51.6	62.1
9	11.7	14.2	22.2	30.5	47.6	57.7	40.5	57.0	40.5	53.6	41.2	54.2	48.0	59.3
10	11.0	13.7	21.2	30.0	45.3	56.2	38.3	56.1	37.8	52.3	39.0	53.0	45.2	57.2

ICD-10 classification											
<i>cont'd</i>	C22 Liver		C23 Gallbladder		C24 Biliary tract		C25 Pancreas		C26 Digestive organs		
	n=2,150		n=639		n=1,057		n=4,367		n=81		
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	41.3	42.4	36.9	38.5	53.4	55.3	33.6	34.6	25.6	26.2	
2	26.9	28.4	23.7	25.8	35.0	37.3	16.6	17.5			
3	19.3	20.9	18.4	20.7	25.3	27.5	11.4	12.2			
4	15.0	16.5	16.8	19.4	21.4	23.9	8.7	9.5			
5	12.1	13.5	14.9	17.8	18.6	21.3	7.1	8.0			
6	9.9	11.3	13.3	16.5	17.6	20.6	6.3	7.3			
7	9.3	10.8	12.0	15.3	15.1	18.2	5.7	6.7			
8	8.4	10.0	10.1	13.6	13.9	17.1	5.1	6.1			
9	7.7	9.4	9.6	13.4	12.6	15.9	4.6	5.7			
10	6.9	8.6	8.2	12.0	11.4	14.9	4.3	5.5			

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with GI cancer by ICD-10 classification for period 1988-2011 (N=48,397).

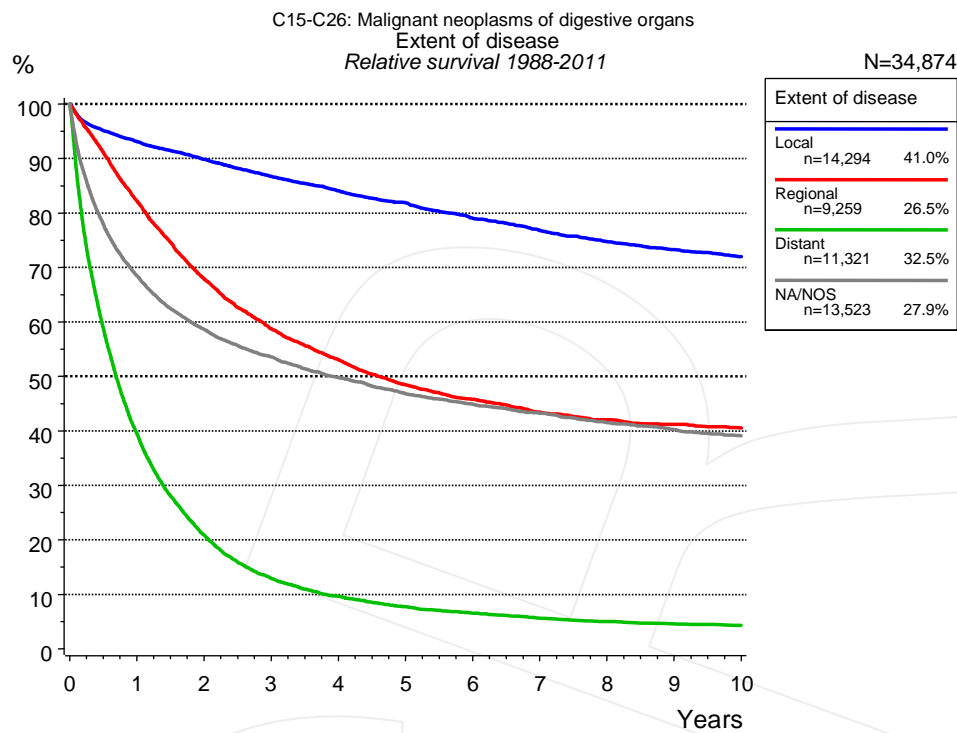


**Figure 4c.** Relative survival of patients with GI cancer by ICD-10 classification. Included in the evaluation are 35,279 cases diagnosed between 1998 and 2011.

ICD-10 classification														
Years	C15 Oesophagus		C16 Stomach		C17 Small intestine		C18 Colon		C19 Rectosigmoid junction		C20 Rectum		C21 Anus, anal canal	
	n=1,683		n=5,368		n=525		n=12,951		n=1,478		n=5,880		n=577	
	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	47.9	49.1	56.1	58.8	85.1	87.0	79.5	82.9	84.8	87.5	83.8	86.6	86.8	89.0
2	29.4	30.7	42.1	45.6	77.3	80.6	69.5	75.2	75.2	79.9	73.3	78.0	78.7	82.8
3	22.8	24.3	34.9	39.2	71.9	76.5	62.4	70.0	67.6	73.8	65.6	71.8	71.0	76.3
4	19.6	21.3	31.0	36.0	67.3	73.0	57.4	66.8	61.1	68.8	59.7	67.2	65.7	72.1
5	17.1	19.0	28.1	33.8	63.1	69.8	52.8	63.9	56.1	65.2	54.8	63.5	62.4	70.0
6	15.5	17.6	26.3	32.8	58.3	65.9	48.9	61.5	51.5	61.6	50.6	60.3	59.3	67.7
7	13.9	16.1	23.8	30.9	54.7	63.0	45.7	59.5	47.1	58.1	48.2	59.1	56.0	65.7
8	12.8	15.1	22.4	30.0	51.8	60.9	43.0	58.3	43.9	56.0	45.7	57.6	54.9	65.2
9	11.5	13.7	20.7	28.7	50.2	59.7	40.5	57.0	41.0	53.8	43.5	56.7	49.8	60.4
10	10.4	12.9	19.8	28.0	49.0	59.4	38.1	55.7	37.8	51.7	41.3	55.7	46.1	56.4

ICD-10 classification											
cont'd	C22 Liver		C23 Gallbladder		C24 Biliary tract		C25 Pancreas		C26 Digestive organs		
	n=1,809		n=480		n=833		n=3,622		n=73		
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	40.5	41.6	35.2	36.6	51.6	53.5	34.3	35.2			
2	26.5	28.0	20.7	22.5	32.8	35.0	16.8	17.6			
3	19.0	20.5	17.0	19.0	22.4	24.3	11.3	12.1			
4	15.2	16.7	15.8	18.1	18.6	20.9	8.4	9.2			
5	11.8	13.3	14.1	16.5	16.1	18.4	6.9	7.7			
6	10.0	11.4	12.0	14.7	14.8	17.2	5.9	6.8			
7	9.1	10.5			12.0	14.4	5.2	6.2			
8	7.9	9.4			12.0	14.4	4.4	5.3			
9	6.9	8.3					4.1	5.0			
10	6.5	7.8									

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with GI cancer by ICD-10 classification for period 1998-2011 (N=35,279).

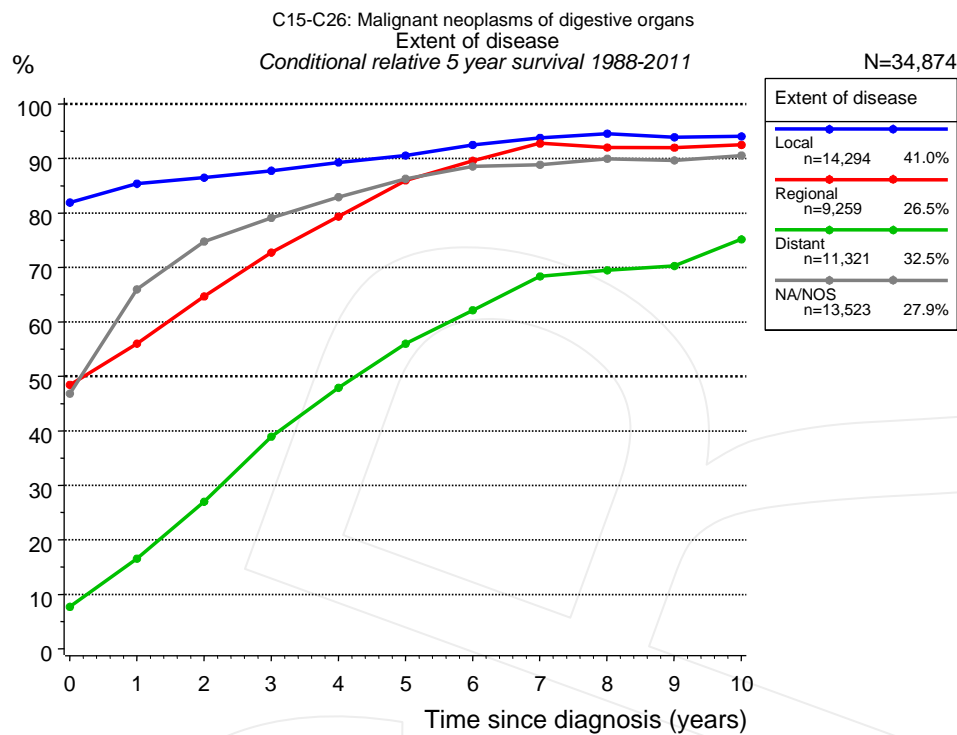


**Figure 4e.** Relative survival of patients with GI cancer by extent of disease. For 42,527 of 48,397 cases diagnosed between 1988 and 2011 valid data could be obtained for this item. For a total of 34,874 cases an evaluable classification was established. The grey line represents the subgroup of 13,523 patients with missing values regarding extent of disease (27.9% of 48,397 patients, the percent values of all other categories are related to n=34,874).

Years	Extent of disease							
	Local n=14,294		Regional n=9,259		Distant n=11,321		NA/NOS n=13,523	
	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	89.9	93.1	79.6	82.2	38.2	39.5	65.4	68.5
2	83.9	89.9	63.7	67.9	19.7	20.9	53.9	58.6
3	78.3	86.7	53.5	58.8	11.9	12.9	47.5	53.6
4	73.4	84.1	46.9	53.1	8.7	9.6	42.6	49.8
5	69.1	81.9	41.6	48.5	6.8	7.7	38.7	46.8
6	64.4	79.0	38.1	45.8	5.6	6.5	35.8	44.9
7	60.4	76.8	35.1	43.4	4.7	5.6	33.3	43.2
8	56.7	74.7	32.9	42.0	4.1	5.0	30.9	41.5
9	53.7	73.3	31.2	41.2	3.7	4.6	28.9	40.2
10	50.9	72.0	29.8	40.5	3.3	4.3	27.1	39.1

**Table 4f.** Observed (obs.) and relative (rel.) survival of patients with GI cancer by extent of disease for period 1988-2011 (N=34,874).



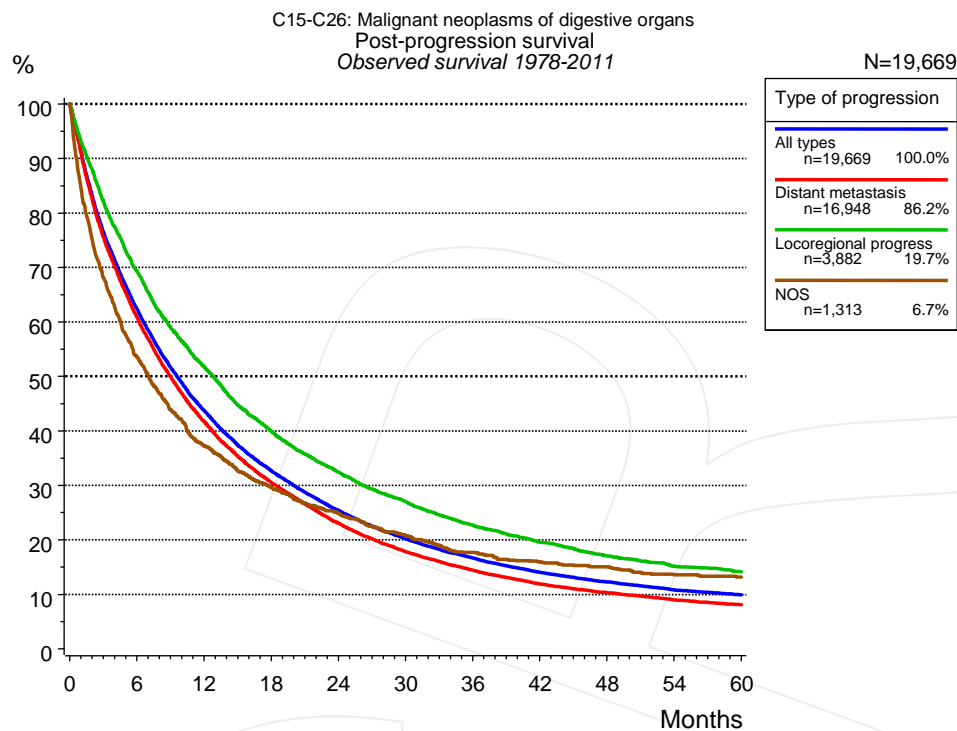


**Figure 4g.** Conditional relative 5-year survival of patients with GI cancer by extent of disease. For 42,527 of 48,397 cases diagnosed between 1988 and 2011 valid data could be obtained for this item. For a total of 34,874 cases an evaluable classification was established. The grey line represents the subgroup of 13,523 patients with missing values regarding extent of disease (27.9% of 48,397 patients, the percent values of all other categories are related to n=34,874).

Years	Extent of disease							
	Local		Regional		Distant		NA/NOS	
	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	14,294	81.9	9,259	48.5	11,321	7.7	13,523	46.8
1	12,240	85.4	6,985	56.0	3,994	16.6	8,342	66.0
2	10,629	86.5	5,137	64.7	1,859	27.0	6,348	74.8
3	9,127	87.8	3,923	72.7	986	38.9	5,091	79.1
4	7,776	89.3	3,078	79.3	617	47.9	4,034	82.9
5	6,580	90.5	2,409	86.0	408	56.0	3,240	86.3
6	5,506	92.5	1,973	89.6	288	62.1	2,641	88.5
7	4,763	93.8	1,663	92.8	207	68.4	2,193	88.9
8	4,146	94.6	1,419	92.0	152	69.5	1,837	90.0
9	3,569	93.9	1,211	92.0	121	70.3	1,518	89.7
10	3,011	94.1	1,018	92.5	98	75.1	1,250	90.5

**Table 4h.** Conditional relative 5-year survival of patients with GI cancer by extent of disease for period 1988-2011 (N=34,874).

Conditional relative survival rates refer to the relative survival probability, in this case for 5 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 4e). 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 5-year survival rate is 87.8% (n=9,127).



**Figure 5a.** Observed post-progression survival of 19,669 patients with GI cancer diagnosed between 1978 and 2011 (incl. M1). These 19,669 patients with documented progression events during their course of disease represent 37.4% of the totally 52,551 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=6,916, 13.2%). 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			
	All types n=19,669	Distant metastasis n=16,948	Locoregional progress n=3,882	NOS n=1,313
	%	%	%	%
0	100.0	100.0	100.0	100.0
12	43.7	41.7	51.7	37.2
24	25.4	23.0	32.4	24.8
36	16.7	14.4	22.7	17.7
48	12.3	10.3	17.0	15.0
60	9.9	8.1	14.2	13.2

**Table 5b.** Observed post-progression survival of patients with GI cancer for period 1978-2011 (N=19,669).

**Shortcuts**

AS	Assembled survival chart (observed, expected, relative)
CS	Conditional survival
DCO	Death certificate only. The death certificate provides the only notification to the registry.
MCR	Munich Cancer Registry, Germany (Tumorregister München)
NA	Not available
NCI	National Cancer Institute, USA
NOS	Not otherwise specified
OS	Observed/overall survival (Kaplan-Meier estimate)
PPS	Post-progression survival
RS	Relative Survival. Ratio of observed and expected survival (derived from the normal population)
SEER	Surveillance, Epidemiology, and End Results, USA
TTP	Time to progression
	Date of entry: Date of diagnosis
	Event (Progression): First local recurrence, lymph node relapse or distant metastasis, unspecified recurrence
	First all-cause recurrence is illustrated by survival curves (Kaplan-Meier estimate).
	First local recurrence, lymph node relapse or distant metastasis are depicted cumulatively, where applicable ("reverse" Kaplan-Meier estimate).
UICC	Union for International Cancer Control, Geneva

**Recommended Citation**

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