

# Munich Cancer Registry



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## ICD-10 C18-C20: Colorectal cancer

### Survival

Year of diagnosis	1988-1997	1998-2019
Patients	10,065	58,112
Diseases	10,232	59,796
Cases evaluated	8,988	45,160
Creation date	01/27/2021	
Database export	01/07/2021	
Population	4.92 m	



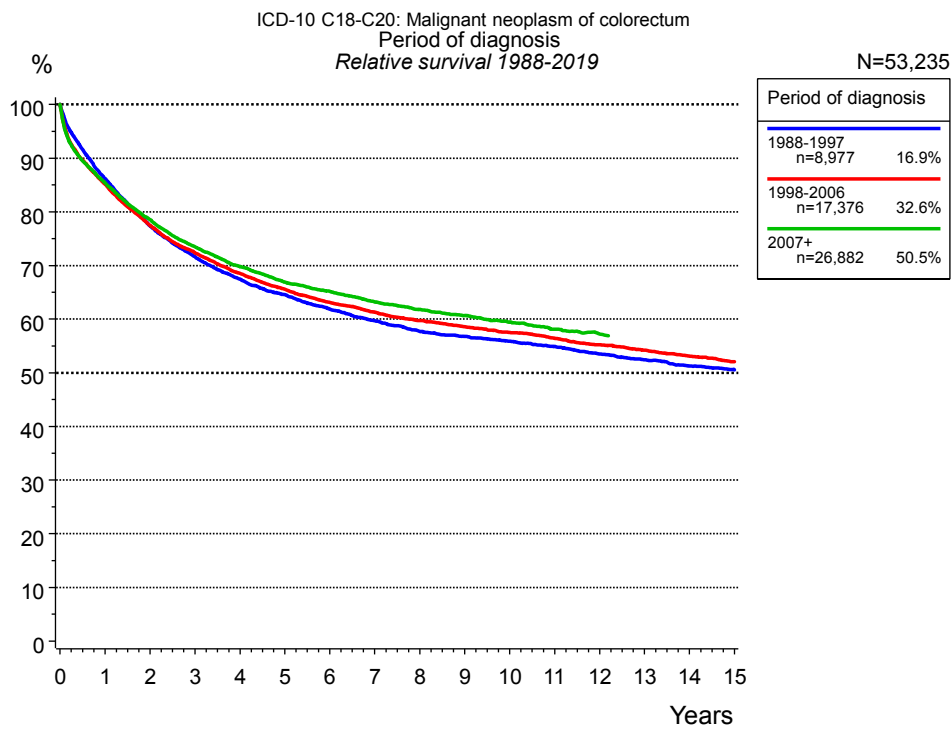
Munich Cancer Registry  
Cancer Registry Bavaria - Upper Bavaria Regional Center  
at Klinikum Grosshadern/IBE  
Marchioninstr. 15  
Munich, 81377  
Germany

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

<https://www.tumorregister-muenchen.de/en/facts/surv/sC1820E-ICD-10-C18-C20-Colorectal-cancer-survival.pdf>

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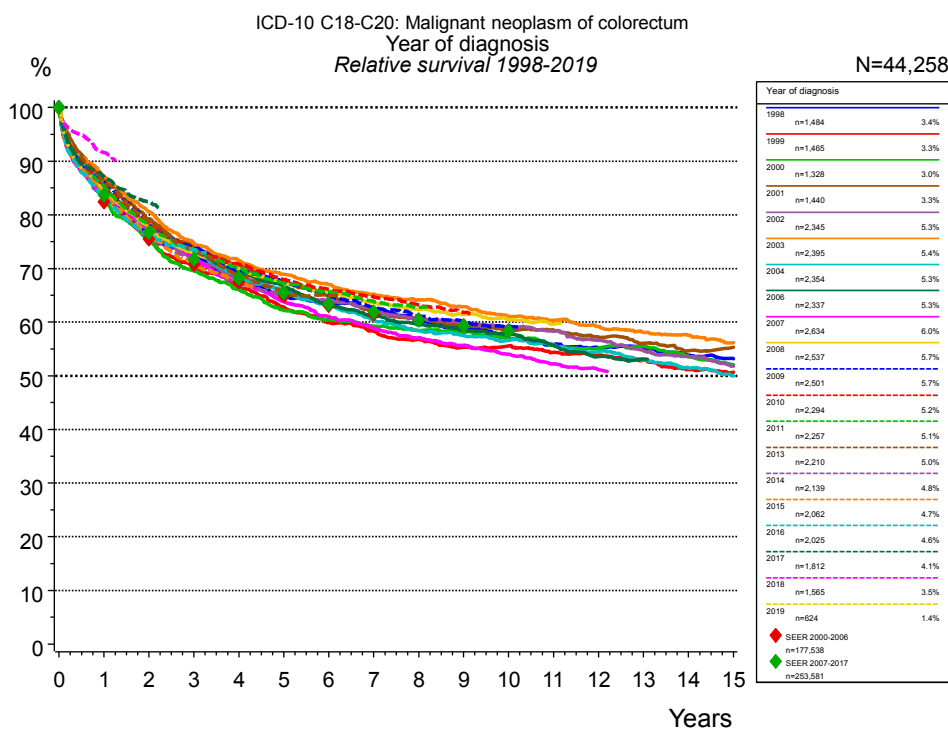


**Figure 1a.** Relative survival of patients with colorectal cancer by period of diagnosis. Included in the evaluation are 53,235 cases diagnosed between 1988 and 2019.

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=8,977		1998-2006 n=17,376		2007+ n=26,882	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	83.1	86.2	82.0	85.2	82.5	85.4
2	72.0	77.4	72.1	77.5	73.5	78.6
3	64.5	71.6	65.2	72.3	66.6	73.5
4	58.6	67.5	59.7	68.5	61.2	69.8
5	54.2	64.6	55.3	65.6	56.7	66.9
6	50.2	61.9	51.5	63.1	53.5	65.1
7	46.7	59.6	48.3	61.3	50.1	63.2
8	43.6	57.7	45.5	59.7	47.4	61.8
9	41.4	56.8	43.1	58.6	44.9	60.7
10	39.3	55.9	40.8	57.5	42.4	59.4
11	37.3	54.9	38.6	56.4	40.0	58.1
12	35.1	53.5	36.4	55.2	38.0	57.2
13	33.2	52.5	34.4	54.2		
14	31.2	51.3	32.4	53.1		
15	29.7	50.6	30.6	52.1		
Median	6.0		6.5		7.1	

**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with colorectal cancer by period of diagnosis for period 1988-2019 (N=53,235).



**Figure 1c.** Relative survival of patients with colorectal cancer by year of diagnosis. Included in the evaluation are 44,258 cases diagnosed between 1998 and 2019.

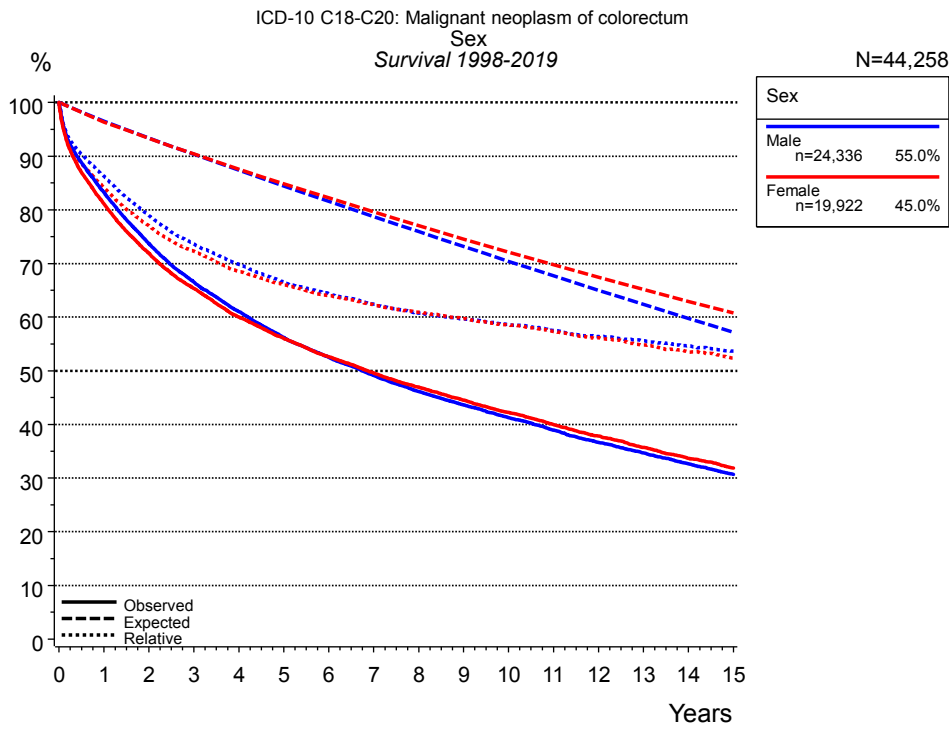
The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 2000 to 2017, and are represented by colored diamonds in order to facilitate comparisons between MCR and SEER.

Years	Year of diagnosis													
	1998 n=1,484		1999 n=1,465		2000 n=1,328		2001 n=1,440		2002 n=2,345		2003 n=2,395		2004 n=2,354	
	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	81.5	84.8	80.6	83.9	80.0	83.3	83.4	86.7	82.0	85.2	84.2	87.2	82.0	85.0
2	70.6	76.1	70.0	75.4	70.2	75.5	73.8	79.2	71.7	77.1	75.2	80.6	72.3	77.6
3	64.7	72.1	62.9	70.1	62.5	69.6	66.7	74.0	64.6	71.9	67.6	74.8	65.7	73.0
4	58.9	68.0	57.7	66.6	57.4	66.1	61.7	70.7	59.6	68.6	62.6	71.5	59.7	68.5
5	54.7	65.2	52.4	62.8	52.2	62.2	57.1	67.6	55.4	65.9	58.3	68.9	55.5	65.9
6	51.3	63.4	48.4	59.9	49.2	60.5	53.0	64.8	51.9	64.0	54.8	67.0	51.7	63.4
7	48.6	62.1	45.6	58.4	46.6	59.2	49.4	62.3	49.0	62.5	51.6	65.2	47.4	60.3
8	45.8	60.6	42.8	56.7	44.4	58.4	46.6	60.7	46.0	60.8	49.0	64.1	44.5	58.4
9	43.1	59.1	40.3	55.3	42.8	58.2	44.1	59.3	43.7	59.9	46.3	62.9	42.2	57.5
10	40.1	57.0	39.1	55.6	40.4	56.9	41.9	58.3	41.6	59.1	43.5	61.1	40.1	56.6
11	38.0	55.8	36.9	54.3	38.2	55.7	40.7	58.6	39.4	58.3	41.3	60.3	38.1	55.7
12	36.2	55.2	35.2	53.8	36.5	55.2	38.4	57.1	36.9	56.6	39.0	59.2	35.9	54.5
13	34.7	55.0	33.2	52.9	35.4	55.5	36.4	56.1	34.4	54.7	36.9	58.1	33.5	52.9
14	32.7	53.8	30.9	51.1	32.8	53.5	34.1	54.7	32.3	53.6	35.1	57.6	31.3	51.4
15	31.0	53.1	29.4	50.6	30.7	52.0	33.3	55.3	30.1	51.8	32.8	56.1	29.3	50.0
Median	6.6		5.7		5.7		6.8		6.6		7.5		6.4	

<i>cont'd</i>	Year of diagnosis													
	2006		2007		2008		2009		2010		2011		2013	
	n=2,337		n=2,634		n=2,537		n=2,501		n=2,294		n=2,257		n=2,210	
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	82.3	85.2	80.4	83.2	81.7	84.8	83.1	86.1	82.5	85.6	82.2	85.3	83.4	86.4
2	72.8	77.6	72.8	77.9	72.4	77.7	73.6	78.8	73.2	78.5	72.6	77.8	74.0	79.0
3	66.6	73.2	64.9	71.8	65.8	72.9	66.8	73.9	66.2	73.5	66.1	73.2	66.9	73.7
4	61.0	69.2	59.1	67.5	61.1	70.0	60.9	69.7	61.7	70.8	61.2	70.1	60.5	68.6
5	57.0	66.8	54.0	63.8	56.7	67.2	57.0	67.4	57.2	67.9	56.9	67.3	56.1	65.7
6	52.1	63.1	49.9	61.0	53.7	65.7	53.3	65.2	53.8	66.1	53.7	65.7	53.7	64.9
7	48.9	61.2	46.5	58.9	50.3	63.7	49.5	62.7	50.8	64.6	50.4	63.7		
8	45.9	59.5	43.6	57.1	47.6	62.4	46.7	61.2	47.9	63.2	47.9	62.7		
9	43.6	58.5	41.1	55.7	45.3	61.4	44.3	60.2	45.1	61.8				
10	41.5	57.8	38.5	54.0	42.9	60.4	42.1	59.3						
11	38.5	55.7	36.0	52.2	40.9	59.7								
12	35.7	53.6	34.0	51.2										
13	34.2	53.1												
Median	6.7		6.0		7.1		6.9		7.3		7.1			

<i>cont'd</i>	Year of diagnosis											
	2014		2015		2016		2017		2018		2019	
	n=2,139		n=2,062		n=2,025		n=1,812		n=1,565		n=624	
Years	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
1	80.9	83.8	81.0	83.9	80.6	83.5	84.3	87.1	89.0	91.6		
2	71.3	76.3	71.5	76.3	71.3	76.2	77.5	82.4				
3	64.3	71.0	64.1	70.7	66.8	73.5						
4	59.3	67.5	59.4	67.5								
5	55.6	65.2										
Median												

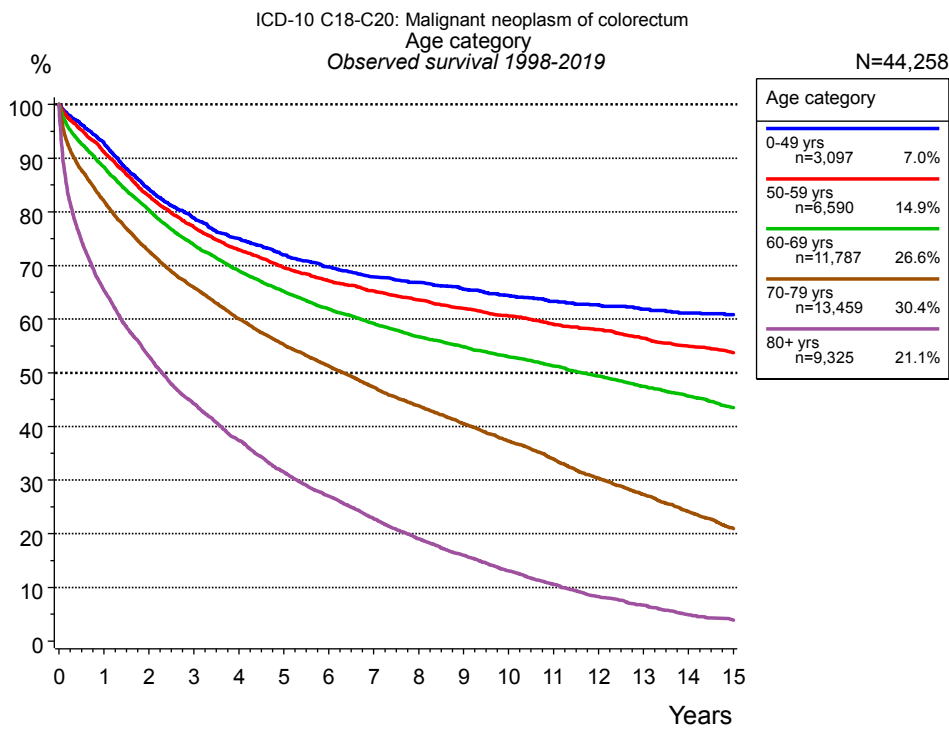
**Table 1d.** Observed (obs.) and relative (rel.) survival of patients with colorectal cancer by year of diagnosis for period 1998-2019 (N=44,258).



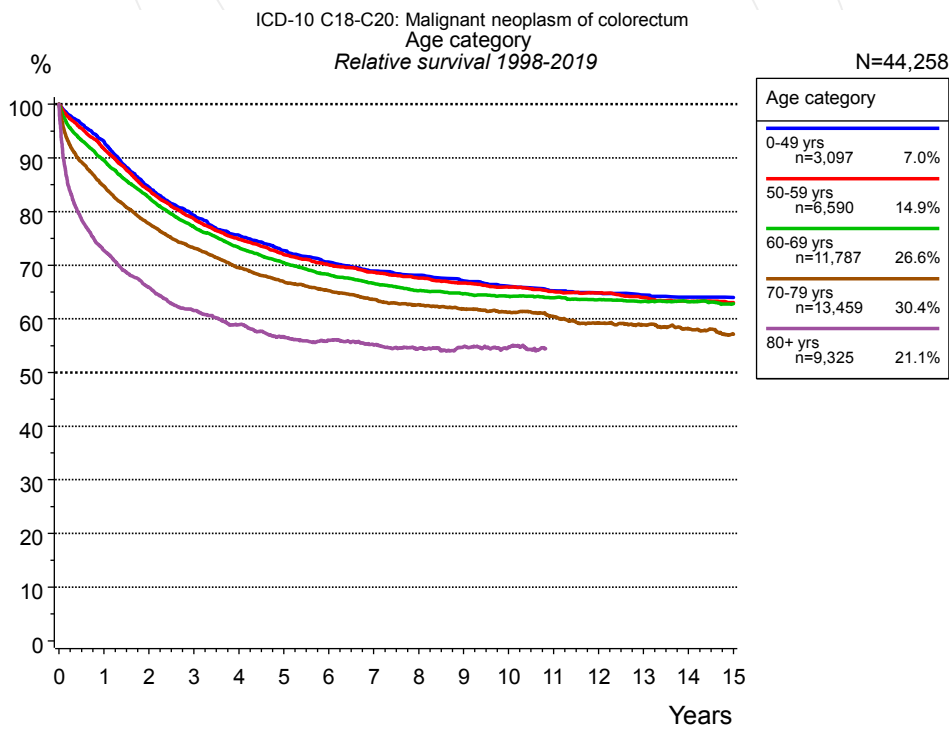
**Figure 2a.** Survival of patients with colorectal cancer by sex. Included in the evaluation are 44,258 cases diagnosed between 1998 and 2019.

Years	Sex			
	Male n=24,336		Female n=19,922	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	83.3	86.3	81.1	84.1
2	73.7	78.9	71.9	77.1
3	66.5	73.6	65.4	72.3
4	61.1	69.9	60.0	68.5
5	56.2	66.5	56.0	66.0
6	52.5	64.4	52.6	64.0
7	49.1	62.4	49.6	62.2
8	46.1	60.8	46.9	60.9
9	43.7	59.7	44.5	59.7
10	41.3	58.6	42.2	58.5
11	38.9	57.5	39.9	57.3
12	36.7	56.3	37.8	56.1
13	34.7	55.6	35.7	54.8
14	32.6	54.6	33.7	53.5
15	30.7	53.7	31.8	52.4
Median	6.7		6.9	

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with colorectal cancer by sex for period 1998-2019 (N=44,258).



**Figure 3a.** Observed survival of patients with colorectal cancer by age category. Included in the evaluation are 44,258 cases diagnosed between 1998 and 2019.

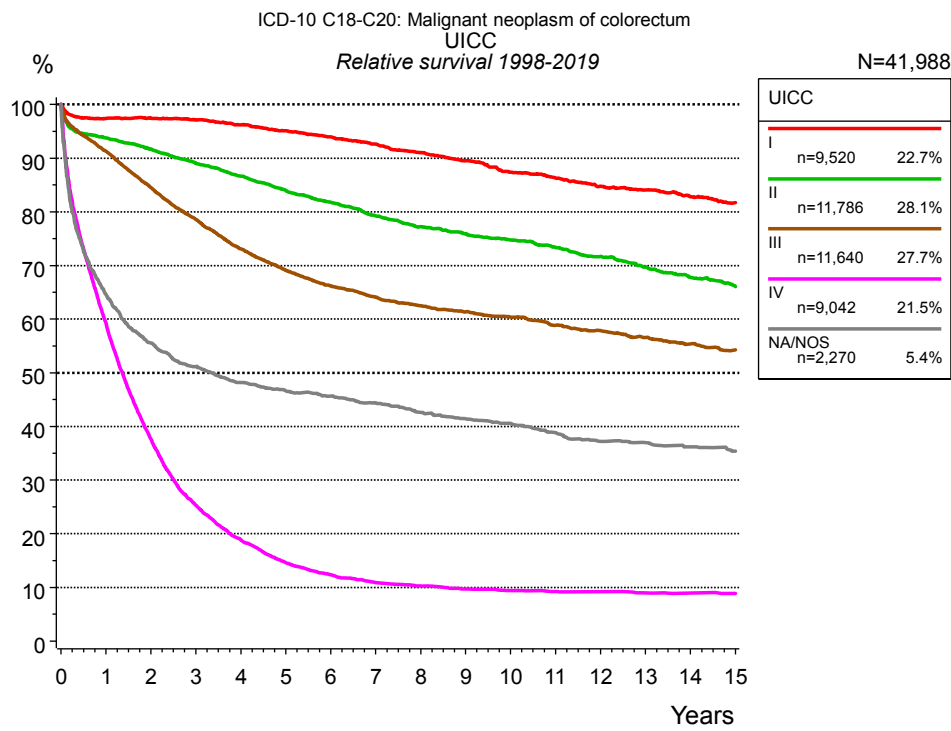


**Figure 3b.** Relative survival of patients with colorectal cancer by age category. Included in the evaluation are 44,258 cases diagnosed between 1998 and 2019.

Years	Age category									
	0-49 yrs n=3,097		50-59 yrs n=6,590		60-69 yrs n=11,787		70-79 yrs n=13,459		80+ yrs n=9,325	
	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	92.9	93.0	91.2	91.7	88.4	89.6	82.0	84.7	65.4	72.7
2	84.2	84.5	83.0	84.0	80.3	82.6	72.7	77.7	53.2	65.9
3	78.9	79.3	77.2	78.6	73.8	77.1	65.9	73.2	44.2	61.6
4	75.0	75.6	72.9	74.8	69.0	73.3	60.0	69.5	37.4	58.9
5	72.0	72.7	69.6	72.0	65.2	70.5	55.2	66.9	31.5	56.7
6	69.7	70.6	67.1	70.0	61.9	68.3	51.2	65.2	27.0	56.0
7	67.8	68.9	65.2	68.7	59.2	66.6	47.3	63.6	22.8	55.1
8	66.9	68.1	63.5	67.6	56.7	65.3	43.9	62.6	19.1	54.5
9	65.6	67.1	62.0	66.7	54.8	64.7	40.5	61.9	16.0	54.8
10	64.4	66.1	60.5	65.9	53.0	64.2	37.2	61.2	13.1	54.7
11	63.3	65.3	59.1	65.1	51.2	63.9	33.9	60.4	10.6	54.9
12	62.7	64.9	58.0	64.8	49.4	63.6	30.3	59.2	8.3	54.4
13	61.9	64.4	56.4	64.0	47.5	63.2	27.3	58.9	6.7	56.7
14	61.2	64.0	54.9	63.3	45.6	63.2	24.1	58.1	4.8	54.7
15	60.8	64.0	53.8	63.0	43.5	62.8	21.0	57.1	3.9	59.5
Median			18.6		11.6		6.3		2.3	

**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with colorectal cancer by age category for period 1998-2019 (N=44,258).

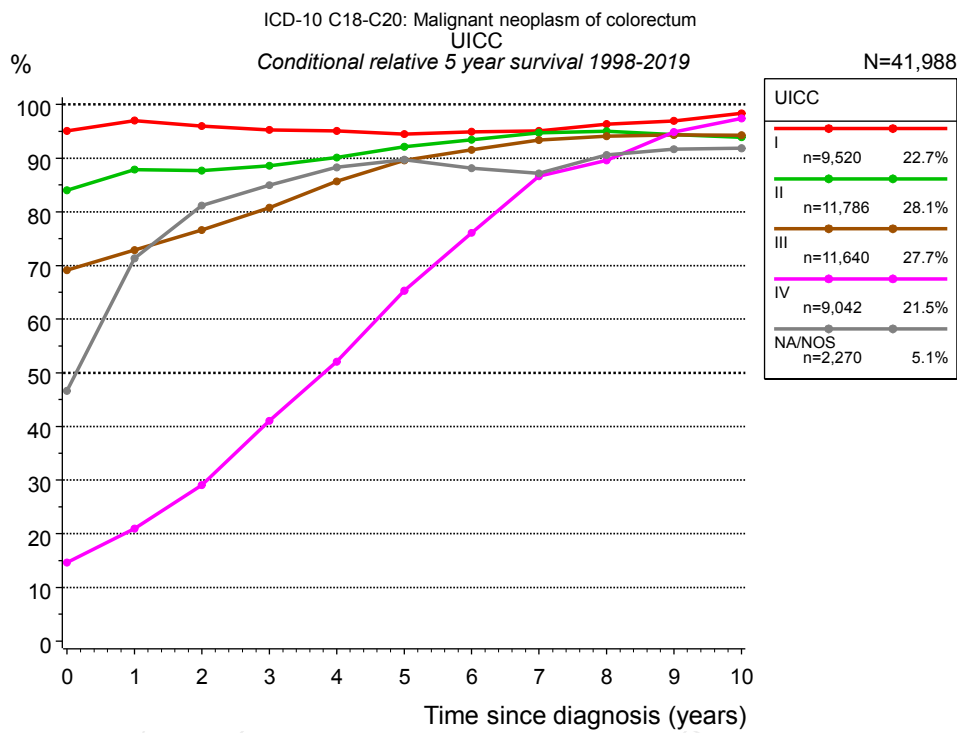




**Figure 4a.** Relative survival of patients with colorectal cancer by UICC. For 42,211 of 44,258 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 41,988 cases an evaluable classification was established. The grey line represents the subgroup of 2,270 patients with missing values regarding UICC (5.1 % of 44,258 patients, the percent values of all other categories are related to n=41,988).

Years	UICC									
	I n=9,520		II n=11,786		III n=11,640		IV n=9,042		NA/NOS n=2,270	
	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	94.4	97.4	90.0	93.8	88.3	91.3	57.3	59.2	60.9	64.6
2	91.5	97.5	84.7	91.6	79.3	84.5	35.6	37.7	50.1	55.5
3	88.3	97.2	79.3	89.0	71.6	78.6	23.3	25.3	44.5	51.2
4	84.6	96.2	74.3	86.6	64.6	73.1	17.0	18.9	40.6	48.2
5	80.9	95.1	69.4	84.0	59.3	69.1	12.9	14.6	38.2	46.6
6	77.3	94.0	65.1	81.8	55.1	66.2	10.7	12.4	36.3	45.6
7	73.5	92.6	60.7	79.2	51.7	64.1	9.2	10.9	34.3	44.4
8	69.8	91.0	56.9	77.2	48.9	62.5	8.5	10.3	32.0	42.6
9	66.1	89.5	53.8	75.9	46.5	61.4	7.8	9.7	30.3	41.4
10	62.2	87.4	50.9	74.8	44.3	60.4	7.4	9.4	28.9	40.6
11	59.2	86.3	48.0	73.3	41.8	58.8	7.0	9.2	26.9	38.8
12	55.9	84.8	45.0	71.7	39.7	57.8	6.8	9.2	25.0	37.2
13	53.3	84.1	42.1	69.7	37.6	56.6	6.4	9.0	24.2	37.0
14	50.5	82.8	39.2	67.7	35.5	55.4	6.2	8.9	23.0	36.2
15	47.8	81.7	36.6	66.1	33.5	54.3	6.0	8.8	21.8	35.4
Median	14.2		10.4		7.6		1.3		2.0	

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with colorectal cancer by UICC for period 1998-2019 (N=41,988).

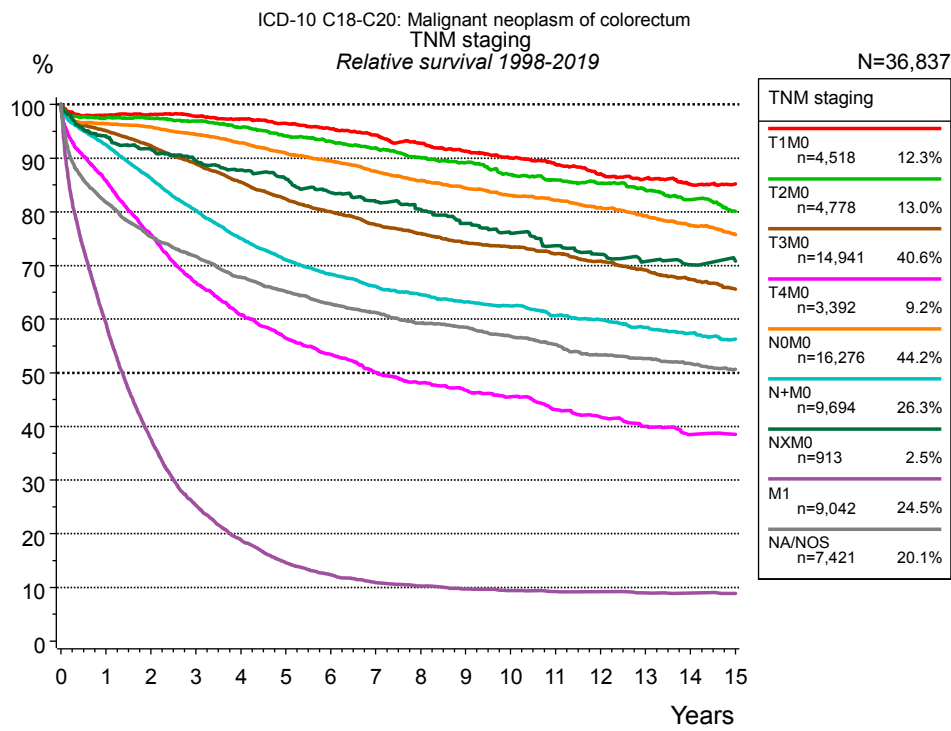


**Figure 4c.** Conditional relative 5-year survival of patients with colorectal cancer by UICC. For 42,211 of 44,258 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 41,988 cases an evaluable classification was established. The grey line represents the subgroup of 2,270 patients with missing values regarding UICC (5.1 % of 44,258 patients, the percent values of all other categories are related to n=41,988).

Years	UICC									
	I		II		III		IV		NA/NOS	
	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	9,520	95.1	11,786	84.0	11,640	69.1	9,042	14.6	2,270	46.6
1	8,440	97.0	10,070	87.9	9,805	72.9	4,909	21.0	1,309	71.3
2	7,812	96.0	9,039	87.7	8,345	76.6	2,877	29.1	1,046	81.2
3	7,152	95.3	8,000	88.6	7,086	80.7	1,754	41.1	890	85.0
4	6,493	95.1	7,080	90.1	5,986	85.7	1,180	52.1	789	88.3
5	5,834	94.5	6,221	92.1	5,142	89.6	815	65.3	714	89.7
6	5,220	94.9	5,409	93.4	4,417	91.6	614	76.1	653	88.1
7	4,597	95.1	4,685	94.8	3,793	93.4	473	86.6	590	87.2
8	4,014	96.3	4,046	95.0	3,243	94.1	386	89.6	515	90.6
9	3,478	96.9	3,484	94.4	2,760	94.3	305	94.8	458	91.7
10	2,964	98.4	2,976	93.9	2,331	94.3	249	97.4	413	91.8

**Table 4d.** Conditional relative 5-year survival of patients with colorectal cancer by UICC for period 1998-2019 (N=41,988).

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 4a). 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 5-year survival rate is 95.3% (n=7,152).

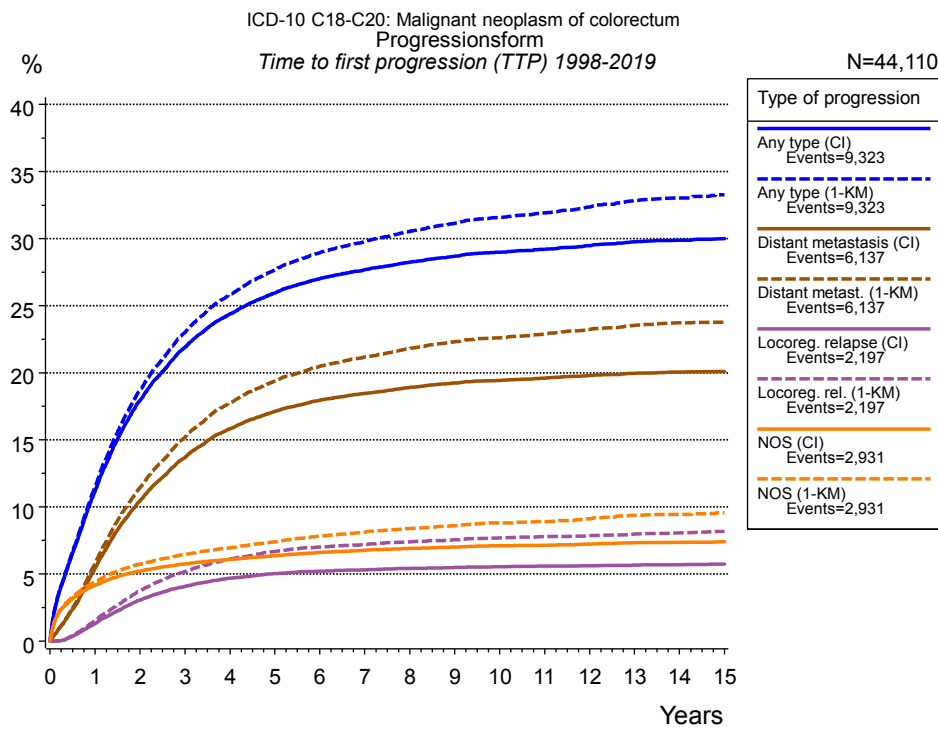


**Figure 4g.** Relative survival of patients with colorectal cancer by TNM staging. For 42,211 of 44,258 cases diagnosed between 1998 and 2019 valid data could be obtained for this item. For a total of 36,837 cases an evaluable classification was established. The accumulated percentage exceeds the 100 % value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 7,421 patients with missing values regarding TNM staging (16.8 % of 44,258 patients, the percent values of all other categories are related to n=36,837).

Years	TNM staging													
	T1M0 n=4,518		T2M0 n=4,778		T3M0 n=14,941		T4M0 n=3,392		N0M0 n=16,276		N+M0 n=9,694		NXM0 n=913	
	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	95.4	98.0	94.3	97.5	91.8	95.1	82.5	85.8	93.0	96.4	89.6	92.5	91.5	94.1
2	93.0	98.2	91.3	97.4	86.1	92.3	70.4	75.8	89.4	95.8	81.1	86.3	86.7	91.7
3	90.1	97.8	87.8	96.9	80.2	88.9	60.1	66.8	85.0	94.4	73.3	80.3	82.4	89.5
4	87.1	97.3	83.8	95.7	74.6	85.5	52.9	60.8	80.8	92.8	66.6	75.0	78.7	87.8
5	83.9	96.5	79.6	94.1	69.5	82.4	47.6	56.4	76.4	91.0	61.3	71.1	75.1	86.1
6	80.5	95.5	76.2	93.2	65.2	80.0	43.6	53.4	72.5	89.5	57.3	68.4	71.0	83.6
7	77.0	94.3	72.6	92.0	61.0	77.6	39.6	50.1	68.4	87.5	53.7	66.1	67.5	81.9
8	73.4	92.8	68.7	90.1	57.7	76.0	36.8	48.1	64.7	85.8	50.9	64.6	64.6	80.4
9	69.8	91.3	65.5	89.2	54.4	74.3	34.6	46.7	61.3	84.5	48.3	63.2	60.7	77.9
10	66.5	90.0	61.6	86.9	51.8	73.4	32.7	45.5	58.1	83.1	46.2	62.4	57.1	76.0
11	63.3	88.9	58.8	85.9	49.0	72.2	29.9	43.1	55.3	82.1	43.5	60.6	53.8	73.7
12	59.9	87.1	56.2	85.3	46.4	70.8	28.1	41.7	52.3	80.8	41.6	59.9	50.7	72.1
13	57.1	86.2	53.4	84.1	43.5	69.1	26.0	40.0	49.3	79.3	39.2	58.4	48.0	70.7
14	54.1	85.1	50.2	82.2	40.7	67.4	24.2	38.5	46.2	77.4	37.2	57.4	45.9	70.2
15	52.1	85.2	47.1	80.1	38.0	65.6	23.4	38.5	43.4	75.7	35.2	56.3	44.6	70.8
Median	15.9		14.2		10.7		4.6		12.8		8.3		12.1	

<i>cont'd</i>	TNM staging			
	M1 n=9,042		NA/NOS n=7,421	
	obs. %	rel. %	obs. %	rel. %
Years				
0	100.0	100.0	100.0	100.0
1	57.3	59.2	78.0	81.8
2	35.6	37.7	69.0	75.3
3	23.3	25.3	63.3	71.7
4	17.0	18.9	57.7	67.8
5	12.9	14.6	53.5	65.2
6	10.7	12.4	49.7	62.8
7	9.2	10.9	46.7	61.2
8	8.5	10.3	43.6	59.3
9	7.8	9.7	41.5	58.5
10	7.4	9.4	38.8	56.8
11	7.0	9.2	36.3	55.2
12	6.8	9.2	33.7	53.3
13	6.4	9.0	32.1	52.7
14	6.2	8.9	30.3	51.7
15	6.0	8.8	28.6	50.6
Median	1.3		5.9	

**Table 4h.** Observed (obs.) and relative (rel.) survival of patients with colorectal cancer by TNM staging for period 1998-2019 (N=36,837).

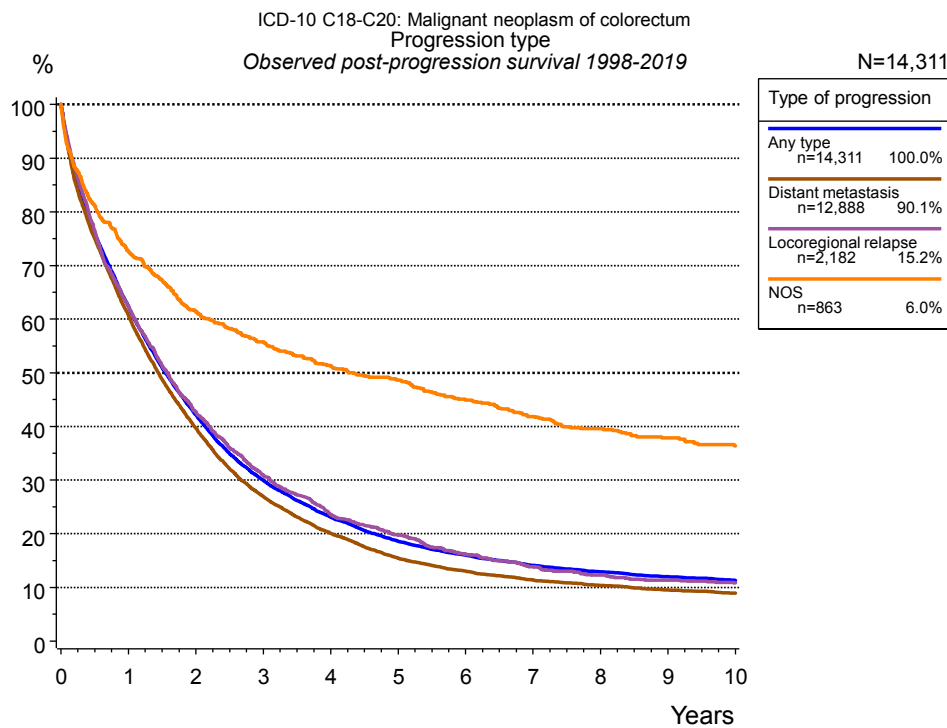


**Figure 5a.** Time to first progression of 44,110 patients with colorectal cancer diagnosed between 1998 and 2019 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

	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	35,231	35,231	35,234	35,234	44,110	44,110	44,107	
Events	9,288	9,288	6,123	6,123	2,188	2,188	2,917	
compet.	8,084		10,691		21,618		20,771	
Years	%	%	%	%	%	%	%	%
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	11.2	11.5	5.4	5.8	1.3	1.5	4.2	
2	17.9	18.7	10.4	11.4	3.1	3.7	5.2	
3	21.9	23.0	13.7	15.2	4.1	5.2	5.7	
4	24.4	25.8	15.8	17.7	4.7	6.1	6.1	
5	25.9	27.7	17.1	19.4	5.0	6.7	6.4	
6	27.0	29.0	18.0	20.5	5.2	7.0	6.6	
7	27.7	29.8	18.5	21.2	5.3	7.2	6.8	
8	28.2	30.5	18.9	21.8	5.4	7.4	6.9	
9	28.7	31.1	19.2	22.3	5.5	7.6	7.0	
10	29.0	31.6	19.4	22.6	5.5	7.7	7.1	
11	29.2	31.9	19.6	22.9	5.6	7.8	7.1	
12	29.5	32.4	19.8	23.2	5.6	7.9	7.2	
13	29.8	32.9	20.0	23.5	5.7	8.0	7.3	
14	29.9	33.0	20.1	23.7	5.7	8.1	7.4	
15	30.0	33.3	20.1	23.8	5.7	8.2	7.4	

Type of progression	
<i>cont'd</i>	NOS (1-KM)
N	44,107
Events	2,917
compet.	
Years	%
0	0.0
1	4.4
2	5.7
3	6.5
4	6.9
5	7.4
6	7.8
7	8.1
8	8.4
9	8.6
10	8.8
11	8.9
12	9.1
13	9.4
14	9.4
15	9.6

**Table 5b.** Time to first progression of patients with colorectal cancer for period 1998-2019 (N=44,110), also showing the total of progression events (Events) and of deaths as competing risk (compet.).

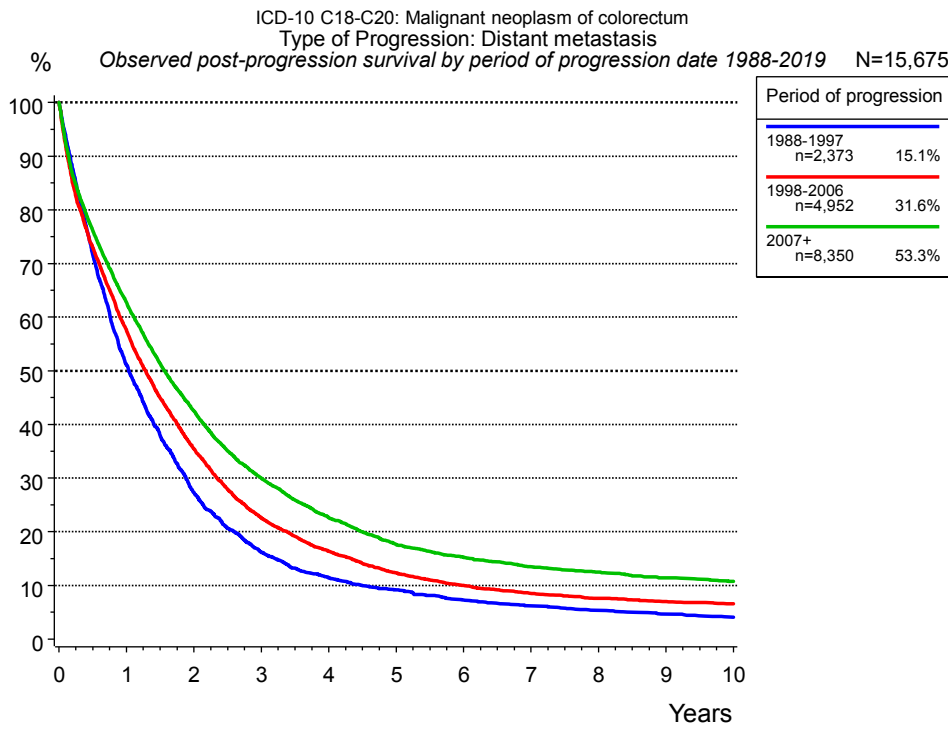


**Figure 5c.** Observed post-progression survival of 14,311 patients with colorectal cancer diagnosed between 1998 and 2019. These 14,311 patients with documented progression events during their course of disease represent 32.4 % of the totally 44,110 evaluated cases (incl. M1, n=8,879, 20.1 %). Patients with cancer relapse documented via death certificates only were excluded (n=3,891, 8.8 %). 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 “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=14,311 %	Distant metastasis n=12,888 %	Locoregional relapse n=2,182 %	NOS n=863 %
0	100.0	100.0	100.0	100.0
1	62.4	60.8	62.3	72.8
2	42.2	39.7	42.7	61.3
3	30.0	26.9	31.0	55.8
4	23.1	20.1	23.5	51.3
5	18.6	15.4	19.8	48.6
6	16.0	13.0	16.2	44.9
7	14.1	11.3	13.8	41.8
8	12.9	10.4	12.3	39.6
9	12.0	9.5	11.4	37.8
10	11.3	8.9	10.8	36.3

**Table 5d.** Observed post-progression survival of patients with colorectal cancer for period 1998-2019 (N=14,311).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 15,675 patients with colorectal cancer diagnosed between 1988 and 2019 by period of progression.

Years	Period of progression		
	1988-1997 n=2,373 %	1998-2006 n=4,952 %	2007+ n=8,350 %
0	100.0	100.0	100.0
1	51.1	57.6	62.8
2	27.3	35.5	42.5
3	16.2	22.6	30.0
4	11.4	16.3	22.6
5	9.2	12.3	17.6
6	7.2	9.9	15.3
7	6.2	8.5	13.4
8	5.3	7.6	12.5
9	4.6	6.9	11.4
10	4.1	6.5	10.7

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with colorectal cancer for period 1988-2019 by period of progression (N=15,675).



## 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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