

Munich Cancer Registry



- ▶ Incidence and Mortality
- ▶ Selection Matrix
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ICD-10 C50: Breast cancer (women)

Survival

Year of diagnosis	1988-1997	1998-2016
Patients	11,895	59,157
Diseases	12,378	61,951
Cases evaluated	10,626	47,705
Creation date	08/22/2018	
Export date	08/09/2018	
Population (females)	2.43 m	



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

https://www.tumorregister-muenchen.de/en/facts/surv/sC50f_E-ICD-10-C50-Breast-cancer-women-survival.pdf

Index of figures and tables

Fig./Tbl.		Page
1a	Relative survival by period of diagnosis (chart)	3
1b	Survival by period of diagnosis (table)	3
1c	Relative survival by year of diagnosis (chart)	4
1d	Survival by year of diagnosis (table)	4
2a	Survival of total cohort (chart)	6
2b	Survival of total cohort (table)	6
3a	Observed survival by age category (chart)	7
3b	Relative survival by age category (chart)	7
3c	Survival by age category (table)	8
4a	Relative survival by pTNM 1988+ (chart)	9
4b	Survival by pTNM 1988+ (table)	9
4c	Relative survival by pTNM 1998+ (chart)	11
4d	Survival by pTNM 1998+ (table)	11
4e	Conditional survival by extent of disease (chart)	13
4f	Conditional survival by extent of disease (table)	13
5a	Time to first progression (chart)	14
5b	Time to first progression (table)	14
5c	Observed post-progression survival (chart)	16
5d	Observed post-progression survival (table)	16
5e	Observed post-progression survival by period of progression (chart)	17
5f	Observed post-progression survival by period of progression (table)	17

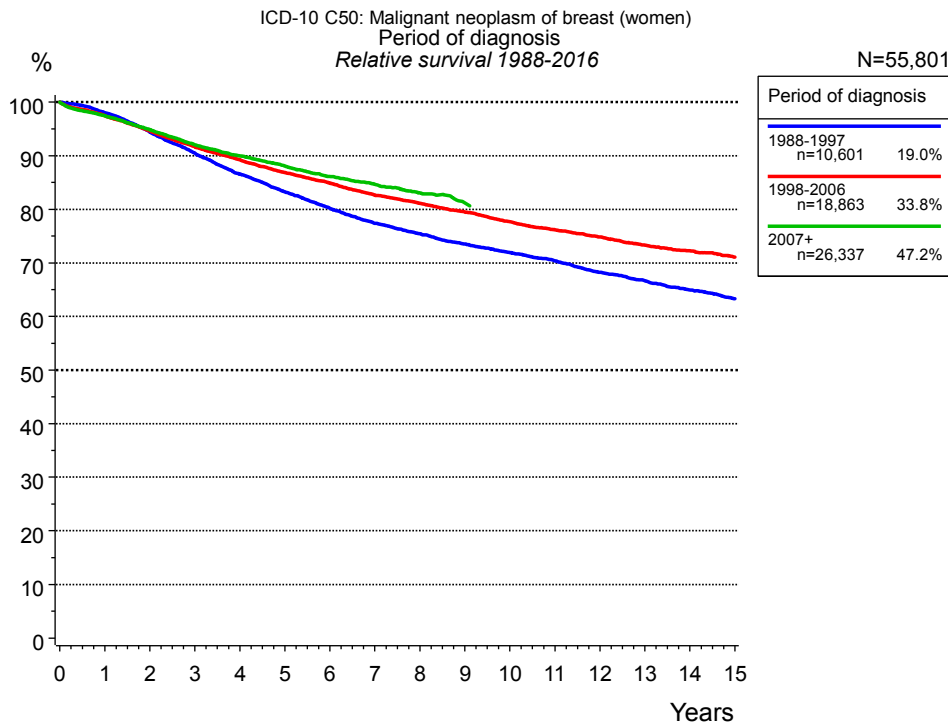


Figure 1a. Relative survival of patients with breast cancer (women) by period of diagnosis. Included in the evaluation are 55,801 cases diagnosed between 1988 and 2016.

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=10,601		1998-2006 n=18,863		2007+ n=26,337	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	96.4	98.0	95.8	97.4	95.8	97.4
2	91.4	94.5	91.4	94.6	91.8	94.9
3	86.1	90.4	87.2	91.7	87.7	92.0
4	81.0	86.5	83.5	89.2	84.4	89.9
5	76.7	83.2	80.0	86.8	81.4	88.1
6	72.6	80.2	76.9	84.9	78.3	86.1
7	69.0	77.4	73.7	82.7	75.7	84.7
8	66.1	75.4	71.2	81.1	73.1	83.1
9	63.4	73.5	68.6	79.5	70.5	81.2
10	60.9	71.9	65.9	77.7		
11	58.6	70.4	63.5	76.2		
12	55.8	68.3	61.2	74.8		
13	53.5	66.6	58.9	73.3		
14	51.2	65.0	57.0	72.3		
15	49.0	63.3	55.0	71.1		

Table 1b. Observed (obs.) and relative (rel.) survival of patients with breast cancer (women) by period of diagnosis for period 1988-2016 (N=55,801).

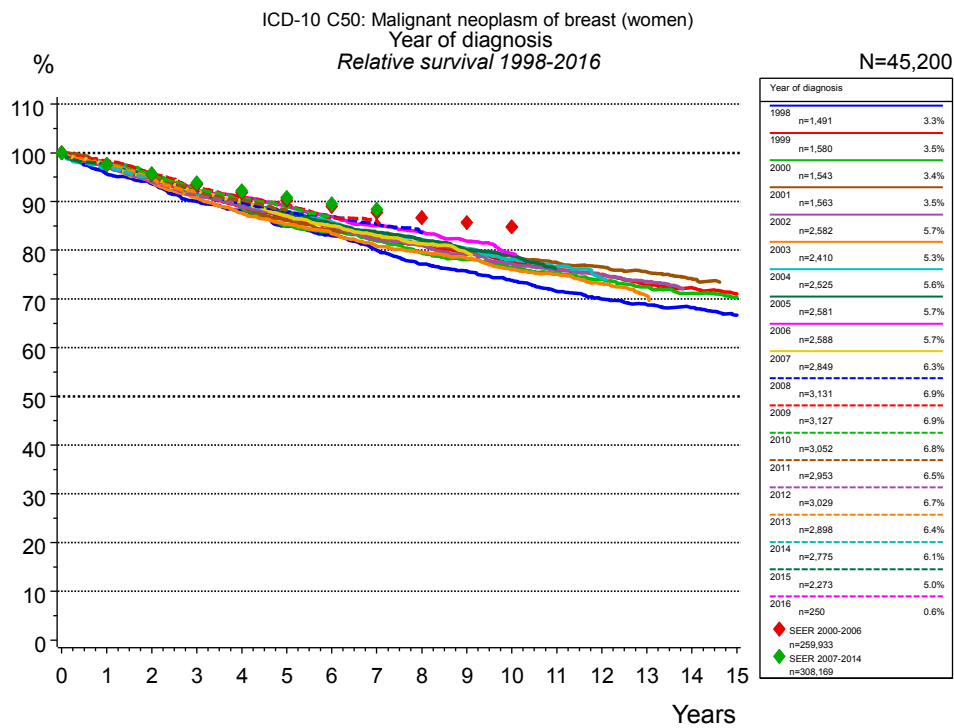


Figure 1c. Relative survival of patients with breast cancer (women) by year of diagnosis. Included in the evaluation are 45,200 cases diagnosed between 1998 and 2016.

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		1999		2000		2001		2002		2003		2004	
	n=1,491		n=1,580		n=1,543		n=1,563		n=2,582		n=2,410		n=2,525	
	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	93.9	95.7	95.7	97.4	96.2	97.9	96.2	97.8	96.4	98.1	95.6	97.3	96.0	97.6
2	90.5	93.7	91.4	94.6	92.4	95.7	91.7	94.6	91.5	94.8	90.7	93.9	91.7	94.9
3	85.6	90.1	87.4	92.0	87.6	92.3	88.0	92.2	87.0	91.7	86.2	90.8	87.1	91.6
4	82.2	88.0	82.9	88.7	82.9	88.8	83.7	89.0	83.3	89.2	81.8	87.6	84.1	89.8
5	78.1	84.9	79.4	86.3	77.9	85.0	79.9	86.1	80.0	87.1	78.4	85.4	81.0	87.8
6	75.0	83.0	76.6	84.7	75.5	83.8	77.0	84.2	76.9	85.1	75.3	83.4	77.9	85.8
7	71.1	79.9	73.6	82.7	72.7	81.9	74.5	82.7	73.1	82.2	71.8	80.9	74.4	83.2
8	67.6	77.2	71.0	81.1	69.4	79.5	72.1	81.3	70.9	81.1	69.5	79.6	72.4	82.3
9	65.3	75.7	68.8	79.8	67.1	78.1	70.1	80.1	68.0	79.2	67.2	78.4	69.6	80.3
10	62.5	73.8	66.1	77.9	64.7	76.5	67.8	78.8	65.1	77.2	64.1	76.1	66.5	78.1
11	59.6	71.6	63.5	76.2	62.6	75.4	65.6	77.4	63.0	76.1	62.1	75.1	64.2	76.7
12	57.2	70.0	61.5	75.0	60.4	74.0	63.7	76.6	60.9	75.0	59.3	73.1	61.9	74.3
13	55.2	68.8	58.5	72.8	58.1	72.4	61.8	75.6	58.7	73.6	56.5	70.7		
14	53.8	68.2	57.1	72.3	56.0	71.1	59.6	74.1						
15	51.6	66.7	55.0	71.1	54.5	70.4								

cont'd	Year of diagnosis													
	2005		2006		2007		2008		2009		2010		2011	
	n=2,581		n=2,588		n=2,849		n=3,131		n=3,127		n=3,052		n=2,953	
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	95.7	97.4	95.7	97.2	95.8	97.5	95.6	97.3	96.8	98.4	95.8	97.4	95.6	97.2
2	91.5	94.7	91.3	94.2	91.4	94.6	91.8	94.8	92.8	95.7	92.4	95.4	91.6	94.8
3	87.4	91.9	88.1	92.3	87.5	92.0	87.8	92.1	88.5	92.7	88.3	92.7	87.5	92.0
4	83.8	89.5	85.7	91.1	84.0	89.8	84.3	89.7	85.3	90.7	84.8	90.4	84.6	90.3
5	80.7	87.7	82.4	89.1	80.1	87.1	81.4	88.1	82.7	89.3	82.2	89.0	81.2	87.8
6	77.3	85.4	79.1	86.8	77.0	85.0	79.1	86.9	79.1	86.8	78.8	86.8		
7	74.7	83.7	76.2	85.0	74.0	83.1	76.5	85.4	77.4	86.1				
8	71.9	82.1	73.8	83.7	71.3	81.3	73.9	83.7						
9	68.9	80.0	70.9	81.9	68.8	79.5								
10	66.9	79.0	68.1	79.3										

cont'd	Year of diagnosis									
	2012		2013		2014		2015		2016	
	n=3,029		n=2,898		n=2,775		n=2,273		n=250	
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	95.4	97.1	96.1	97.8	95.3	96.9	95.9	97.2		
2	91.0	94.1	91.8	94.9	92.2	95.0				
3	87.0	91.4	87.6	91.7						
4	83.7	89.0								

Table 1d. Observed (obs.) and relative (rel.) survival of patients with breast cancer (women) by year of diagnosis for period 1998-2016 (N=45,200).

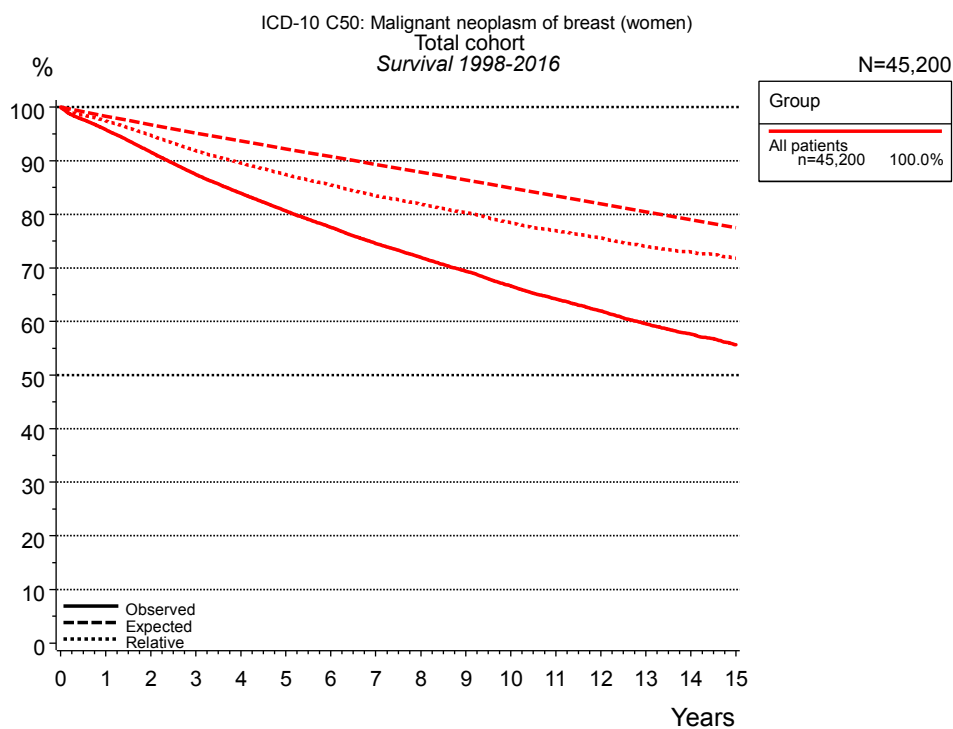


Figure 2a. Observed, expected and relative survival of the total cohort with breast cancer (women). Included in the evaluation are 45,200 cases diagnosed between 1998 and 2016.

Years	Group	
	obs. %	rel. %
0	100.0	100.0
1	95.8	97.4
2	91.6	94.7
3	87.5	91.9
4	83.9	89.6
5	80.6	87.4
6	77.6	85.4
7	74.5	83.5
8	72.0	81.9
9	69.4	80.3
10	66.6	78.5
11	64.2	76.9
12	61.9	75.6
13	59.6	74.0
14	57.7	73.0
15	55.7	71.8

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with breast cancer (women) for period 1998-2016 (N=45,200).

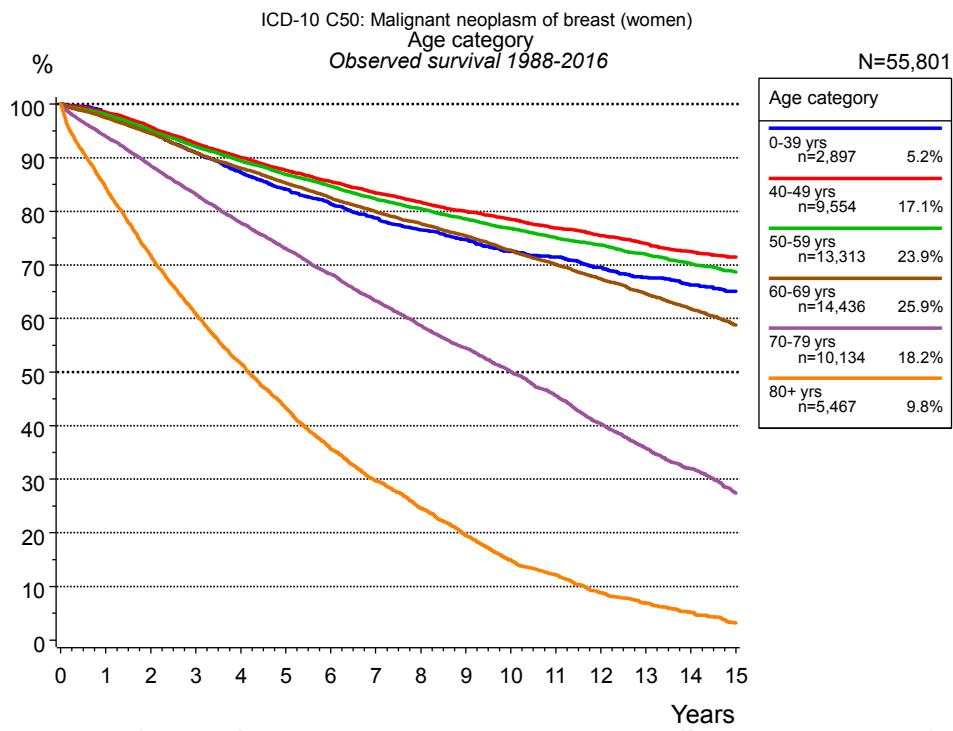


Figure 3a. Observed survival of patients with breast cancer (women) by age category. Included in the evaluation are 55,801 cases diagnosed between 1988 and 2016.

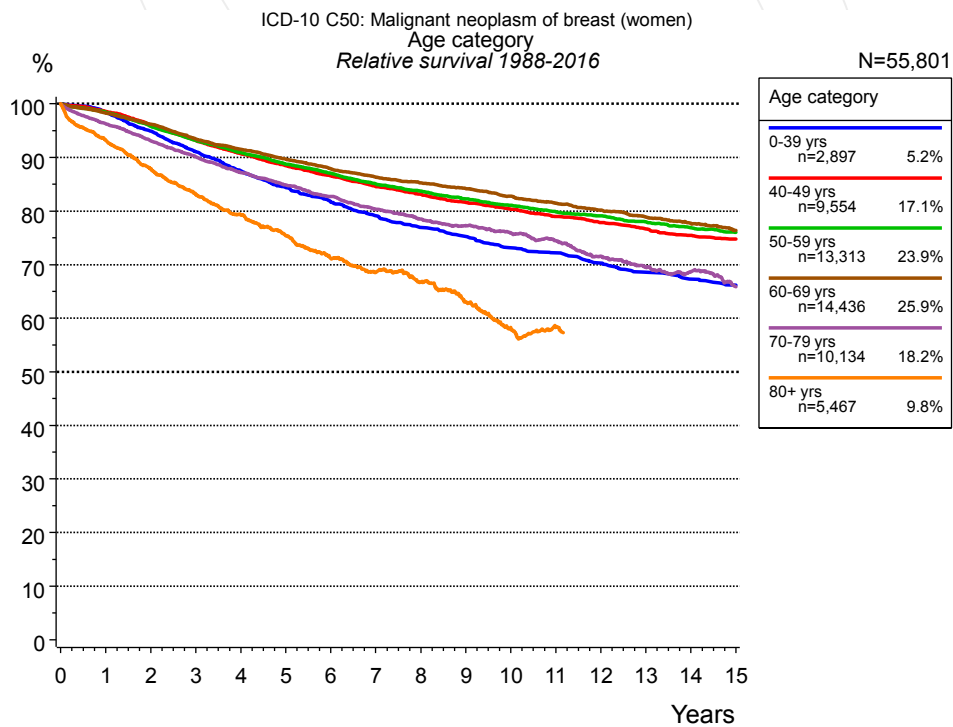


Figure 3b. Relative survival of patients with breast cancer (women) by age category. Included in the evaluation are 55,801 cases diagnosed between 1988 and 2016.

Years	Age category											
	0-39 yrs n=2,897		40-49 yrs n=9,554		50-59 yrs n=13,313		60-69 yrs n=14,436		70-79 yrs n=10,134		80+ yrs n=5,467	
	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	98.4	98.4	98.4	98.6	98.1	98.4	97.4	98.2	94.0	96.3	84.5	93.2
2	94.8	94.9	95.8	96.1	95.1	95.8	94.5	96.2	88.5	93.1	71.8	87.9
3	90.9	91.1	92.7	93.2	92.0	93.2	90.9	93.5	83.2	90.1	60.9	83.1
4	87.3	87.5	90.0	90.7	89.4	90.9	88.0	91.5	77.8	87.1	51.6	79.3
5	84.1	84.4	87.6	88.5	86.9	88.8	85.3	89.7	73.1	84.9	43.3	75.4
6	81.3	81.7	85.5	86.5	84.7	87.0	82.5	87.9	68.3	82.7	35.7	71.2
7	78.7	79.1	83.4	84.6	82.3	85.0	79.9	86.3	63.3	80.3	29.7	68.6
8	76.5	77.0	81.7	83.1	80.5	83.7	77.7	85.3	58.7	78.5	24.6	66.8
9	74.7	75.2	80.0	81.6	78.5	82.3	75.4	84.2	54.5	77.3	19.5	63.1
10	72.5	73.2	78.5	80.4	76.8	81.0	72.7	82.7	50.1	75.9	14.9	58.2
11	71.5	72.2	76.8	79.0	75.1	79.9	70.1	81.5	45.6	74.5	12.1	58.3
12	69.5	70.3	75.4	77.9	73.7	79.1	67.4	80.1	40.3	71.5	8.8	53.2
13	67.7	68.6	74.0	76.7	71.9	77.9	64.6	78.9	35.7	69.5	6.8	53.3
14	66.3	67.3	72.5	75.5	70.2	76.9	61.8	77.7	32.0	68.7	5.2	52.5
15	65.1	66.2	71.4	74.8	68.7	76.0	58.8	76.4	27.4	65.9	3.2	43.5

Table 3c. Observed (obs.) and relative (rel.) survival of patients with breast cancer (women) by age category for period 1988-2016 (N=55,801).

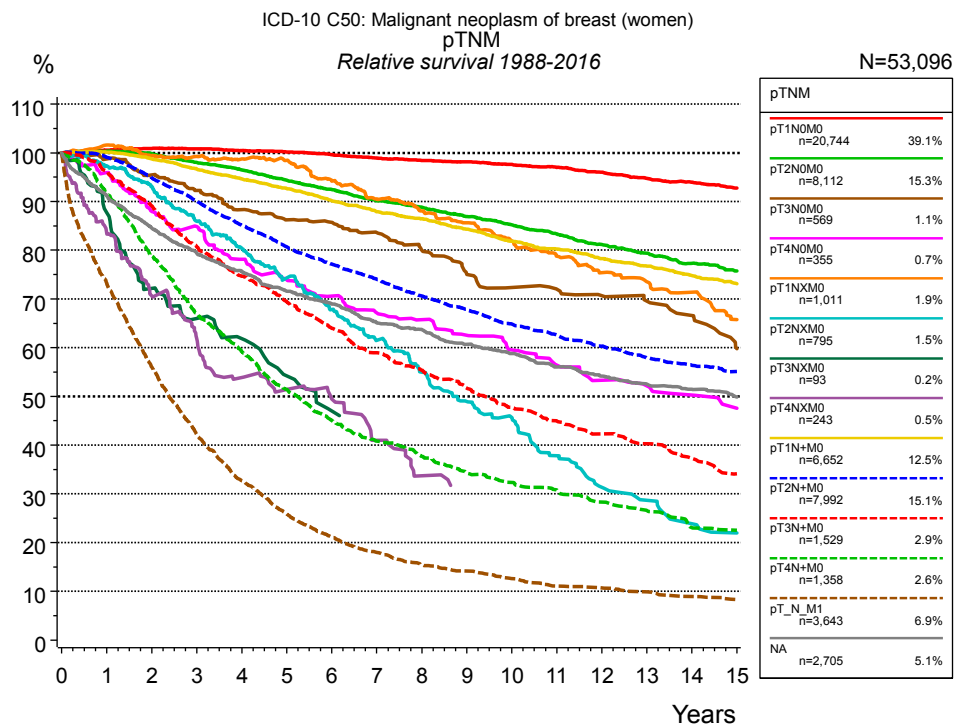


Figure 4a. Relative survival of patients with breast cancer (women) by pTNM. For 54,283 of 55,801 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 53,096 cases an evaluable classification was established. The grey line represents the subgroup of 2,705 patients with missing values regarding pTNM (4.8 % of 55,801 patients, the percent values of all other categories are related to n=53,096).

Years	pT1N0M0 n=20,744		pT2N0M0 n=8,112		pT3N0M0 n=569		pT4N0M0 n=355		pT1NXM0 n=1,011		pT2NXM0 n=795		pT3NXM0 n=93	
	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	99.6	100.6	98.8	100.3	96.3	98.7	91.4	95.9	97.0	101.6	90.3	97.3	80.1	87.7
2	98.9	100.9	96.7	99.9	90.9	95.4	80.2	88.0	90.5	99.4	79.8	93.1	61.0	72.2
3	97.7	100.8	93.3	98.0	85.8	92.3	74.0	84.8	86.2	99.3	67.9	86.0	50.7	66.0
4	96.2	100.5	90.3	96.5	80.3	88.3	65.2	78.2	81.7	98.7	58.7	80.4	43.7	61.9
5	94.8	100.2	86.8	94.4	76.6	86.2	59.3	73.9	77.6	98.4	50.1	74.3	35.0	54.2
6	93.0	99.6	83.5	92.5	74.7	85.7	54.4	70.6	70.9	94.3	42.2	67.9	28.3	47.0
7	91.1	98.9	79.9	90.1	71.2	83.6	50.0	67.1	65.2	90.5	35.3	61.5		
8	89.4	98.4	77.4	88.9	66.6	80.1	47.2	65.7	60.7	88.0	29.3	55.0		
9	87.8	98.2	74.3	86.9	61.5	75.1	43.5	62.5	56.8	85.6	24.2	48.9		
10	86.0	97.6	71.4	85.2	57.9	72.4	39.9	59.5	52.2	81.9	21.0	45.7		
11	84.1	97.0	68.6	83.4	56.6	72.0	36.5	56.4	48.2	78.8	16.3	37.8		
12	81.8	96.0	65.4	81.1	54.7	70.6	33.4	53.3	44.4	75.4	12.8	31.3		
13	79.3	94.7	62.8	79.4	52.9	69.6	31.7	52.2	41.8	73.5	11.2	28.7		
14	77.3	94.0	59.9	77.3	50.2	66.6	29.9	50.3	39.3	71.4	9.1	23.9		
15	74.9	92.7	57.5	75.7	43.9	59.8	27.5	47.6	35.0	65.7	8.1	21.9		

cont'd	pTNM													
	pT4NXM0 n=243		pT1N+M0 n=6,652		pT2N+M0 n=7,992		pT3N+M0 n=1,529		pT4N+M0 n=1,358		pT_N_M1 n=3,643		NA n=2,705	
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	75.4	83.3	99.2	100.1	97.7	99.1	94.7	96.1	88.4	91.7	71.5	73.2	87.6	91.2
2	58.1	70.7	96.8	98.7	92.3	94.9	86.4	89.1	73.5	78.8	53.7	56.1	78.3	84.5
3	46.3	61.7	93.8	96.6	86.2	90.1	77.1	80.7	60.4	66.9	39.6	42.2	71.5	79.4
4	37.1	53.8	90.8	94.6	80.3	85.1	70.3	74.7	51.6	59.1	30.1	32.7	66.3	75.6
5	32.5	51.4	87.9	92.7	75.0	80.7	64.5	69.4	43.5	51.5	23.4	25.9	61.2	71.6
6	28.2	49.4	84.5	90.2	70.6	77.2	58.6	64.0	37.0	45.1	18.7	21.1	57.6	68.9
7	21.6	41.0	81.4	87.9	66.7	74.0	53.3	59.0	32.5	40.8	15.7	18.0	53.3	65.1
8	16.4	33.7	79.0	86.5	62.6	70.6	49.3	55.4	29.2	37.7	13.2	15.5	51.1	63.7
9	14.6	31.1	76.1	84.4	59.2	67.8	45.3	51.7	25.8	34.3	11.8	14.2	47.7	60.7
10			72.8	81.8	55.7	64.8	41.3	47.8	23.8	32.3	10.3	12.6	45.3	58.8
11			70.4	80.3	53.0	62.7	38.2	45.0	22.2	30.8	8.9	11.1	42.3	56.0
12			67.7	78.3	50.1	60.3	35.5	42.3	19.9	28.3	8.4	10.7	40.0	54.1
13			65.3	76.7	47.4	57.9	33.4	40.3	18.2	26.6	7.6	9.9	38.0	52.5
14			62.7	74.8	45.3	56.4	30.5	37.3	15.5	23.1	6.7	8.9	36.5	51.5
15			60.3	73.1	43.6	55.1	27.3	34.1	14.9	22.6	6.0	8.3	34.6	49.9

Table 4b. Observed (obs.) and relative (rel.) survival of patients with breast cancer (women) by pTNM for period 1988-2016 (N=53,096).

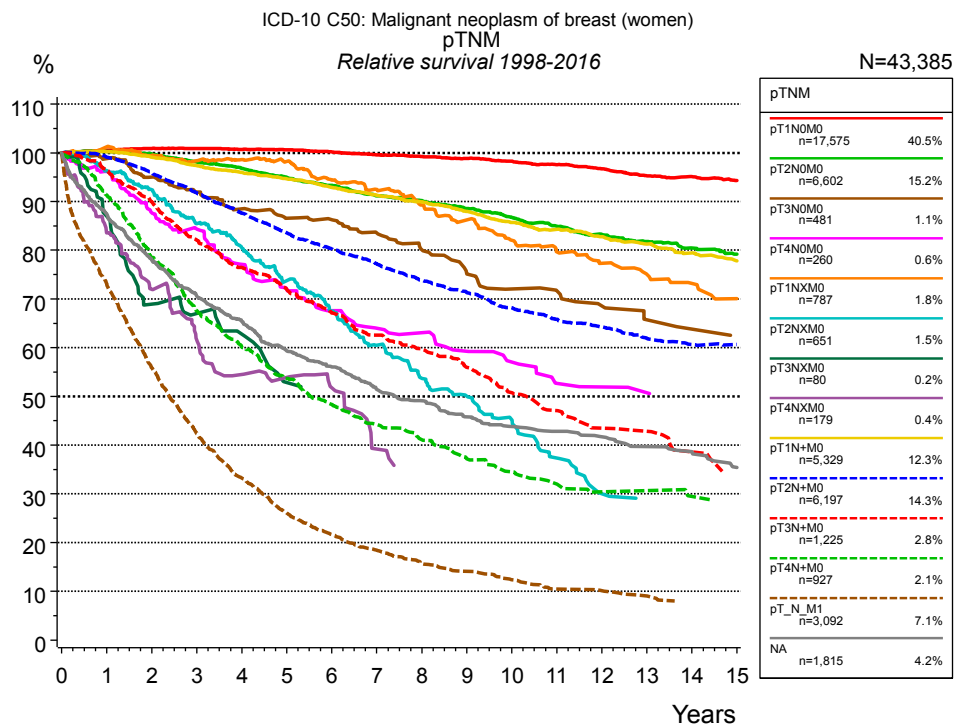


Figure 4c. Relative survival of patients with breast cancer (women) by pTNM. For 44,358 of 45,200 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 43,385 cases an evaluable classification was established. The grey line represents the subgroup of 1,815 patients with missing values regarding pTNM (4.0 % of 45,200 patients, the percent values of all other categories are related to n=43,385).

Years	pT1N0M0 n=17,575		pT2N0M0 n=6,602		pT3N0M0 n=481		pT4N0M0 n=260		pT1NXM0 n=787		pT2NXM0 n=651		pT3NXM0 n=80	
	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	99.6	100.5	98.7	100.3	96.3	98.8	91.3	96.1	96.9	101.2	89.2	96.4	79.4	86.9
2	98.9	100.9	96.6	99.8	90.3	95.0	79.4	87.8	90.8	99.5	78.8	92.4	58.3	68.9
3	97.9	100.9	93.4	98.1	85.2	91.9	73.0	84.3	85.7	98.4	67.0	85.4	51.5	67.0
4	96.6	100.7	90.5	96.8	80.1	88.5	63.6	77.1	82.0	98.6	58.2	80.5	44.7	62.8
5	95.4	100.6	87.2	95.0	76.3	86.5	57.0	72.0	77.9	98.2	49.3	73.8	34.2	52.9
6	93.7	100.2	84.2	93.3	74.6	86.2	51.4	67.6	71.6	94.4	41.5	67.5		
7	91.9	99.6	80.7	91.2	70.4	83.6	46.9	64.0	67.2	92.5	34.2	60.5		
8	90.4	99.3	78.4	90.2	66.0	80.1	45.1	63.1	62.2	89.3	28.2	53.8		
9	88.7	98.9	75.6	88.6	60.8	75.2	41.2	59.3	57.8	86.2	24.3	50.1		
10	86.8	98.3	72.6	86.7	56.7	72.1	38.1	57.1	52.9	82.0	20.4	45.2		
11	84.7	97.6	69.7	84.9	55.3	71.7	33.8	52.7	49.5	79.7	15.7	37.4		
12	82.6	96.7	66.9	83.2	52.2	68.6	32.8	52.0	46.5	77.3	11.8	30.0		
13	79.9	95.3	64.5	81.8	48.8	65.7	31.7	50.7	43.6	75.0	10.9	28.9		
14	78.3	95.1	62.1	80.5	47.1	63.8			41.5	73.2				
15	76.3	94.3	59.9	79.2					38.8	70.1				

cont'd	pTNM													
	pT4NXM0 n=179		pT1N+M0 n=5,329		pT2N+M0 n=6,197		pT3N+M0 n=1,225		pT4N+M0 n=927		pT_N_M1 n=3,092		NA n=1,815	
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	75.2	83.6	99.3	100.3	97.6	99.1	94.9	96.5	87.9	91.3	71.4	73.1	83.1	87.4
2	58.7	72.0	97.2	99.1	93.1	95.9	87.0	89.9	72.9	78.6	53.5	55.9	70.7	77.9
3	45.4	61.5	94.6	97.4	87.8	91.8	78.1	82.1	60.7	67.6	39.8	42.3	61.9	70.6
4	36.6	54.5	92.2	96.0	82.5	87.6	71.6	76.4	52.1	60.1	30.6	33.2	55.5	65.4
5	33.0	53.9	89.9	94.7	77.5	83.6	66.6	71.9	45.0	53.7	23.6	26.1	48.9	59.3
6	28.4	51.8	87.1	92.9	73.3	80.3	61.1	67.1	39.2	48.3	19.2	21.6	45.1	56.1
7	19.6	39.2	84.6	91.3	69.4	77.1	56.2	62.5	34.8	44.2	16.1	18.4	40.4	51.4
8			82.3	89.9	65.3	73.8	52.8	59.7	31.4	41.1	13.5	15.8	37.8	49.1
9			79.4	88.0	62.1	71.3	48.7	55.9	27.5	37.2	11.8	14.1	34.6	45.8
10			76.3	85.7	58.3	68.2	43.7	50.8	25.1	34.5	10.1	12.3	32.5	43.8
11			74.0	84.3	55.5	65.8	40.0	47.1	22.8	32.0	8.4	10.5	31.2	42.8
12			71.6	82.8	53.2	64.3	36.3	43.5	20.9	30.4	8.0	10.1	29.8	41.7
13			69.2	81.3	50.4	62.0	35.5	42.8	20.9	30.7	7.1	9.1	27.8	39.7
14			66.6	79.4	48.5	60.6	31.7	38.6	19.3	29.5	6.0	7.9	26.9	38.7
15			64.1	77.8	47.8	60.7	27.6	34.2					24.0	35.4

Table 4d. Observed (obs.) and relative (rel.) survival of patients with breast cancer (women) by pTNM for period 1998-2016 (N=43,385).

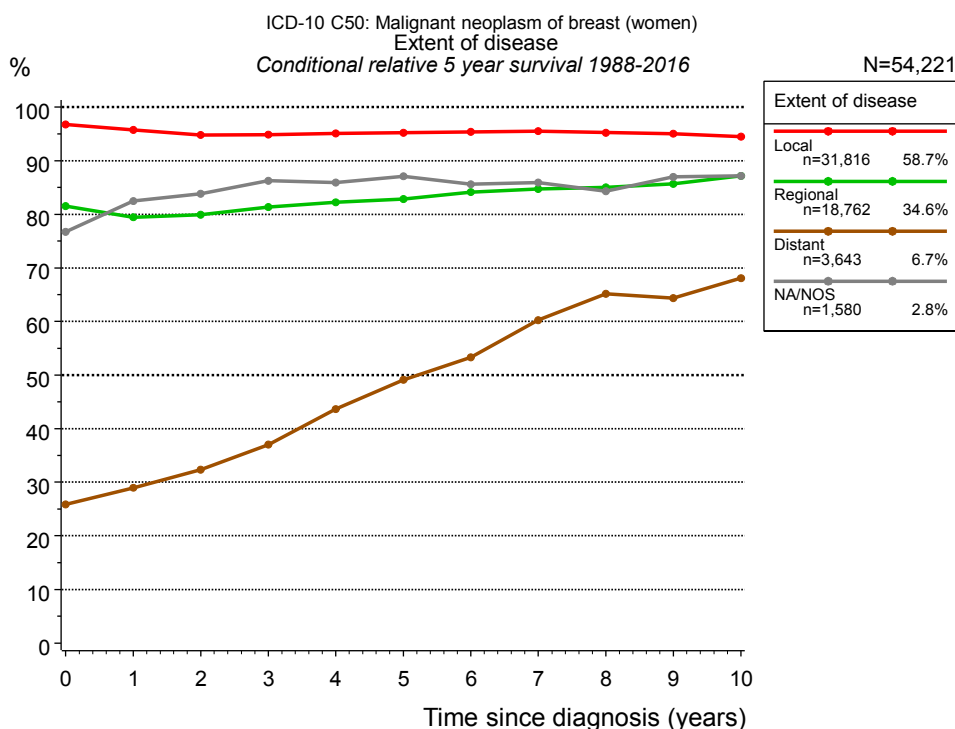


Figure 4e. Conditional relative 5-year survival of patients with breast cancer (women) by extent of disease. For 54,283 of 55,801 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 54,221 cases an evaluable classification was established. The grey line represents the subgroup of 1,580 patients with missing values regarding extent of disease (2.8 % of 55,801 patients, the percent values of all other categories are related to n=54,221).

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	31,816	96.8	18,762	81.5	3,643	25.9	1,580	76.7
1	29,417	95.7	17,229	79.5	2,458	28.9	1,342	82.5
2	27,127	94.8	15,401	79.9	1,723	32.3	1,215	83.9
3	24,700	94.9	13,549	81.4	1,161	37.0	1,106	86.3
4	22,296	95.1	11,925	82.2	814	43.7	1,010	85.9
5	20,024	95.2	10,465	82.8	581	49.1	915	87.1
6	17,786	95.4	9,134	84.1	416	53.3	846	85.6
7	15,547	95.5	7,894	84.7	318	60.2	776	85.9
8	13,516	95.2	6,779	85.0	235	65.1	726	84.3
9	11,812	95.1	5,800	85.7	188	64.3	658	87.0
10	10,334	94.5	4,940	87.2	149	68.1	608	87.2

Table 4f. Conditional relative 5-year survival of patients with breast cancer (women) by extent of disease for period 1988-2016 (N=54,221).

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 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 5-year survival rate is 94.9% (n=24,700).

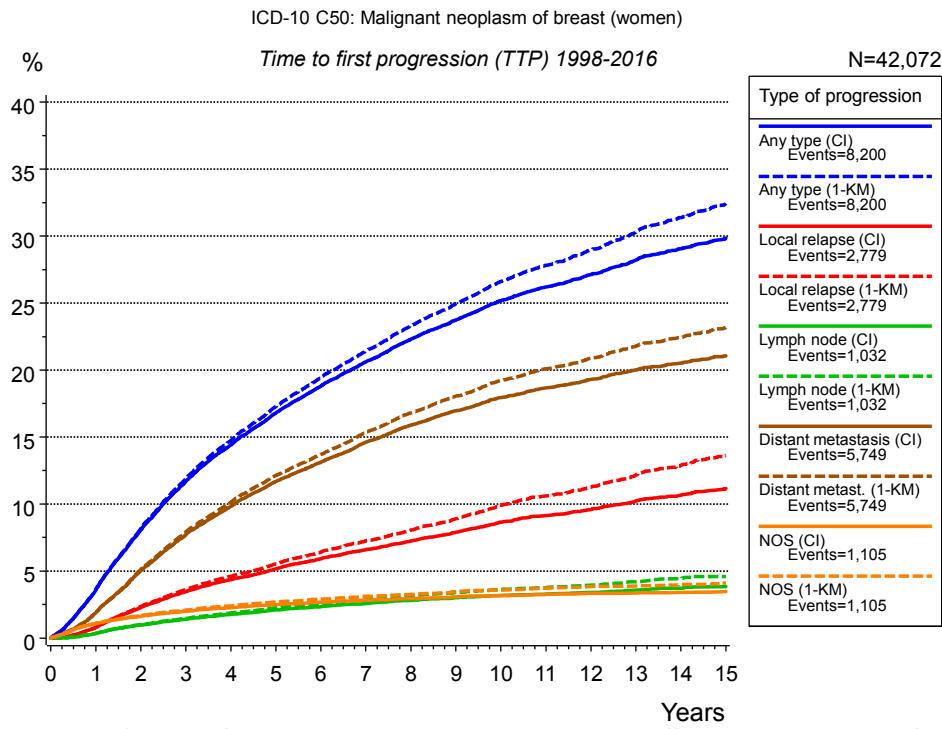


Figure 5a. Time to first progression of 42,072 patients with breast cancer (women) diagnosed between 1998 and 2016 (in solid cancers M0 only) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression						
	Any type (CI)	Any type (1-KM)	Local relapse (CI)	Local relapse (1-KM)	Lymph node (CI)	Lymph node (1-KM)	Distant metastasis (CI)
	n=42,072 %	n=42,072 %	n=42,072 %	n=42,072 %	n=42,072 %	n=42,072 %	n=42,072 %
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	3.6	3.6	0.8	0.8	0.4	0.4	1.9
2	8.1	8.2	2.3	2.4	1.0	1.0	5.0
3	11.7	11.9	3.5	3.6	1.4	1.5	7.7
4	14.4	14.7	4.4	4.6	1.8	1.9	9.8
5	16.8	17.3	5.2	5.5	2.1	2.3	11.7
6	18.8	19.4	5.9	6.4	2.3	2.5	13.1
7	20.6	21.4	6.6	7.3	2.6	2.8	14.6
8	22.3	23.3	7.2	8.1	2.8	3.1	15.9
9	23.8	25.0	7.9	8.9	3.0	3.4	17.0
10	25.2	26.6	8.6	9.9	3.2	3.6	17.9
11	26.2	27.8	9.2	10.6	3.3	3.8	18.7
12	27.1	29.0	9.6	11.3	3.4	3.9	19.3
13	28.2	30.3	10.2	12.2	3.6	4.2	20.0
14	29.1	31.4	10.7	12.9	3.7	4.4	20.5
15	29.9	32.4	11.2	13.6	3.8	4.6	21.1

<i>cont'd</i>	Type of progression		
	Distant metast. (1-KM)	NOS (CI)	NOS (1-KM)
	n=42,072	n=42,072	n=42,072
Years	%	%	%
0	0.0	0.0	0.0
1	1.9	1.1	1.1
2	5.1	1.6	1.7
3	7.9	2.0	2.1
4	10.1	2.3	2.4
5	12.1	2.5	2.7
6	13.7	2.7	2.9
7	15.4	2.8	3.1
8	16.8	2.9	3.3
9	18.1	3.1	3.5
10	19.2	3.2	3.6
11	20.1	3.3	3.7
12	20.9	3.3	3.8
13	21.8	3.4	3.9
14	22.4	3.4	4.0
15	23.2	3.5	4.1

Table 5b. Time to first progression of patients with breast cancer (women) for period 1998-2016 (N=42,072).

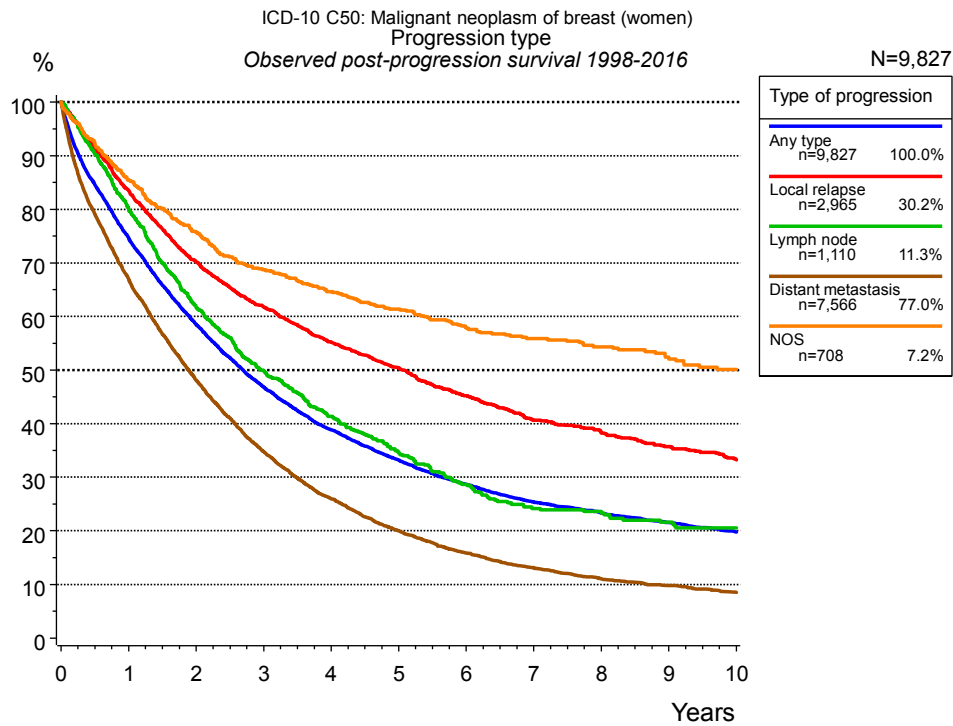


Figure 5c. Observed post-progression survival of 9,827 patients with breast cancer (women) diagnosed between 1998 and 2016. These 9,827 patients with documented progression events during their course of disease represent 21.8 % of the totally 45,112 evaluated cases (incl. M1, n=3,040, 6.7 %). Patients with cancer relapse documented via death certificates only were excluded (n=1,413, 3.1 %). 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=9,827 %	Local relapse n=2,965 %	Lymph node n=1,110 %	Distant metastasis n=7,566 %	NOS n=708 %
0	100.0	100.0	100.0	100.0	100.0
1	74.7	83.5	80.0	67.0	85.4
2	58.5	70.1	61.8	48.1	75.8
3	46.8	61.8	49.8	34.8	68.7
4	38.8	55.3	41.3	26.0	64.6
5	33.2	50.4	34.6	20.0	61.4
6	28.6	45.2	28.7	15.9	58.0
7	25.4	40.6	24.2	13.1	55.9
8	23.3	38.3	23.6	11.1	54.4
9	21.5	35.7	21.6	9.8	52.1
10	19.8	33.2	20.5	8.5	50.1

Table 5d. Observed post-progression survival of patients with breast cancer (women) for period 1998-2016 (N=9,827).

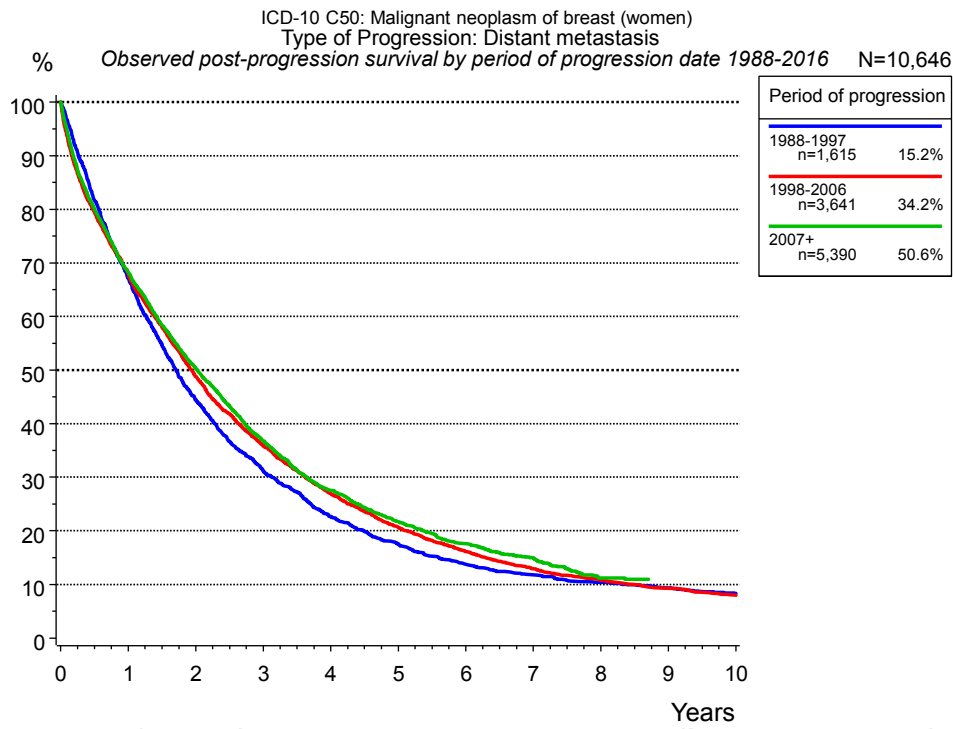


Figure 5e. Observed post-progression (distant metastasis) survival of 10,646 patients with breast cancer (women) diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=1,615 %	1998-2006 n=3,641 %	2007+ n=5,390 %
0	100.0	100.0	100.0
1	67.1	68.1	68.3
2	44.5	48.8	50.3
3	31.2	35.9	36.8
4	22.7	26.9	27.6
5	17.6	20.7	21.7
6	13.7	16.1	17.6
7	11.7	12.9	15.0
8	10.4	10.9	11.2
9	9.4	9.3	11.2
10	8.4	8.0	11.2

Table 5f. Observed post-progression (distant metastasis) survival of patients with breast cancer (women) for period 1988-2016 by period of progression (N=10,646).

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

Recommended Citation

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