



# Überlebenszeiten Kolorektales Karzinom auf Basis der Daten des EKN

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## Project: Long-term prognosis of cancer patient in Germany, dataset (1997-2013):

Registry	Underlying population in 2012 (million)	Diagnosis Period	Cases diagnosed (1997-2013)	Exclusion based on		Available cases (1997-2013)	DCO cases (2009-2013)
				DCO cases	Other		
Brandenburg	2,45	1997-2012	226,796	24,485	3	202,308	7%
Bremen	0,66	1998-2013	66,369	5,613	79	60,677	4%
Hamburg	1,75	1997-2013	168,281	19,134	99	149,048	8%
<b>Lower Saxony</b>	<b>7,79</b>	<b>2003-2013</b>	<b>558,525</b>	<b>63,840</b>	<b>34</b>	<b>494,651</b>	<b>8%</b>
Mecklenburg-Vorpommern	1,60	1997-2012	154,462	15,143	9	139,310	7%
North Rhine-Westphalia <sup>a</sup>	2,57	1997-2013	250,424	20,240	0	230,184	6%
Rhineland-Palatinate <sup>b</sup>	2,16	1998-2013	360,741	57,212	67	303,485	11%
Saarland	0,99	1997-2013	111,680	8,002	1 <sup>e</sup>	102,571	7%
Saxony	4,05	1997-2012	405,593	34,218	7	371,368	5%
Saxony-Anhalt <sup>c</sup>	0,85	1997-2012	215,710	43,707	2	172,001	16%
Schleswig-Holstein <sup>d</sup>	1,35	1999-2013	293,342	49,140	17	244,185	15%
Thüringen	2,17	1997-2012	201,834	28,411	3	173,420	9%
<b>Total</b>	<b>31,00</b>		<b>3,013,757</b>	<b>369,145</b>	<b>320</b>	<b>2,643,208</b>	<b>10.6%</b>

<sup>a</sup> Selected administrative districts: Regierungsbezirk Münster (Regierungsbezirk 055)

<sup>b</sup> Selected administrative district: Cities Ludwigshafen a.R., Koblenz, Trier, Mainz, and Worms and districts Bad Kreuznach, Birkenfeld, Cochem-Zell, Mayen-Koblenz, Rhein-Hunsrück, Bernkastel-Wittlich, Eifelkreis Bitburg-Prüm, Vulkaneifel, Trier-Saarburg, Alzey-Worms, and Mainz-Bingen, Rhein-Pfalz Kreis,

<sup>c</sup> Selected administrative district: Cities Halle and Dessau-Roßlau and districts Anhalt-Bitterfeld, Saalekreis, and Wittenberg

<sup>d</sup> Selected administrative districts: Cities Flensburg, Kiel and Neumünster and districts Nordfriesland, Ostholstein, Plön, Rendsburg-Eckernförde, Schleswig-Flensburg

<sup>e</sup> 1138 errors due to non-convertible ICD-O-2 => ICD-10 codes

Source: **GEKID Cancer Survival Working**

## Publikationen

45 publications in total, 10 since the last meeting in November 2015:

1. **Brenner H, Jansen L.** Timely disclosure of progress in long-term cancer survival: The **boomerang method** substantially improved estimates in a comparative study. *J Clin Epidemiol* 2016; 70:224-232. (IF=3.417)
2. **Chen T, Fallah M, Brenner H, Jansen L, Mai E, Castro F, Katalinic A, Emrich K, Holleczeck B, Geiss K, Eberle A, Sundquist K, Hemminki K** for the GEKID Cancer Survival Working Group. Risk of **second primary cancers in multiple myeloma** survivors in German and Swedish cancer registries. *Scientific Reports* 2016; 6:22084. (IF=5.228)
3. **Eisemann N, Jansen L, Castro FA, Chen T, Eberle A, Nennecke A, Zeissig SR, Brenner H, Katalinic A,** for the GEKID Cancer Survival Working Group. Survival from **non-melanoma skin cancer** in Germany. *Br J Dermatol* 2016; 174:713-714. (IF=4.317)
4. **Holleczeck B, Brenner H.** Implications from under-reporting, death certificate notifications and trace-back on the recorded incidence of a newly established population-based cancer registry. *Methods Inf Med* 2016; 55:182-192. (IF=2.248)
5. **Merz M, Jansen L, Castro FA, Hillengass J, Salwender H, Weisel K, Scheid C, Luttmann S, Emrich K, Holleczeck B, Katalinic A, Nennecke A, Straka C, Langer C, Engelhardt M, Einsele H, Kröger N, Beelen D, Dreger P, Brenner H, Goldschmidt H** for the GEKID Cancer Survival Working Group. Survival of elderly patients with **multiple myeloma** – Effect of **upfront autologous stem cell transplantation**. *Eur J Cancer* 2016; 62:1-8. (IF=5.417)
6. **Pulte D, Castro F, Jansen L, Luttmann S, Holleczeck B, Nennecke A, Rensing M, Katalinic A, Brenner H.** Trends in survival of **chronic lymphocytic leukemia** patients in Germany and the United States in the first decade of the 21st century. *J Hematol Oncol* 2016; 9:28. (IF=6.263)
7. **Pulte D, Jansen L, Castro F, Brenner H.** Changes in survival of older patients with **hematologic malignancies** in the early 21st century. *Cancer* 2016; 122:2031-2040. (IF=5.417)
8. **Pulte D, Jansen L, Castro FA, Krilaviciute A, Katalinic A, Barnes B, Rensing M, Holleczeck B, Luttmann S, Brenner H** for the GEKID Cancer Survival Working Group. Survival in patients with **acute myeloblastic leukemia** in Germany and the United States: Major differences in survival in young adults. *Int J Cancer (in press)*. (IF=5.085)
9. **Pulte D, Jansen L, Brenner H.** Population Level Differences in **Rectal Cancer Survival in Uninsured Patients** Are Partially Explained by Differences in Treatment. *Oncologist (in press)* (IF=4.865)
10. **Winter A, Sirri E, Jansen L, Wawroschek F, Kieschke J, Castro FA, Krilaviciute A, Holleczeck B, Emrich K, Waldmann A, Brenner H** for the GEKID Cancer Survival Working Group. Comparison of **prostate cancer survival** in Germany and the United States: Can differences be attributed to differences in stage distributions? *BJU International (in press)*. (IF=4.387)

## Survival from colorectal cancer in Germany in the early 21st century

O Majek<sup>1,2</sup>, A Gondos<sup>1</sup>, L Jansen<sup>1</sup>, K Emrich<sup>3</sup>, B Holleczeck<sup>4</sup>, A Katalinic<sup>5</sup>, A Nennecke<sup>6</sup>, A Eberle<sup>7</sup>, H Brenner<sup>\*,1</sup>  
and the GEKID Cancer Survival Working Group<sup>8</sup>

**Table 2** Age-specific 5-year relative survival (RS) of colorectal cancer for the period 2002–2006 by sex and modelled trends in age-specific survival

Age group	Sex differences by age								Time trends by age					
	Male			Female			Difference	P value	2002		2006		Change	P value
	N	RS, %	s.e.	N	RS, %	s.e.			RS, %	s.e.	RS, %	s.e.		
15–44	2159	65.5	1.5	1954	71.8	1.5	6.3	<0.01	64.0	1.9	72.0	1.6	8.0	<0.01
45–54	6773	63.9	0.9	4826	67.2	1.0	3.3	<0.01	63.8	1.1	66.4	1.0	2.6	0.15
55–64	21782	64.4	0.5	13200	69.7	0.6	5.2	<0.01	63.3	0.7	68.9	0.6	5.6	<0.01
65–74	32760	63.1	0.5	22824	64.4	0.5	1.3	<0.01	60.6	0.6	66.0	0.5	5.4	<0.01
75+	23230	56.9	0.8	35488	57.6	0.6	0.7	0.10	56.4	0.6	58.8	0.6	2.4	0.01
Overall <sup>a</sup>	86704	61.9	0.3	78292	64.5	0.3	2.6	<0.01	60.6	0.3	65.0	0.3	4.4	<0.01

<sup>a</sup>Age-adjusted relative survival, testing performed using age-adjusted model.

British Journal of Cancer (2012) **106**(11), 1875–1880

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## Survival from colorectal cancer in Germany

○ Majek et al



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**Table 3** Age-adjusted 5-year relative survival (RS) of colorectal cancer in subsites for the period 2002–2006 by morphology

Subsite	Overall		Adenocarcinoma in polyp		Mucinous adenocarcinoma		Other adenocarcinoma		Other	
	N	RS (s.e.)	N (%)	RS (s.e.)	N (%)	RS (s.e.)	N (%)	RS (s.e.)	N (%)	RS (s.e.)
Overall	164 996	63.0 (0.2)	7591 (4.6)	78.0 (1.0)	16 922 (10.3)	59.5 (0.7)	129 127 (78.3)	64.3 (0.2)	11 356 (6.9)	38.9 (0.7)
Appendix	1 103	66.4 (2.9)	15 (1.4)		297 (26.9)		342 (31.0)		449 (40.7)	
Caecum	14 604	61.7 (0.8)	615 (4.2)	76.6 (4.1)	2340 (16.0)	59.3 (1.9)	10 726 (73.4)	62.5 (0.9)	923 (6.3)	43.8 (2.6)
Ascending colon	16 087	66.5 (0.7)	539 (3.4)	77.5 (3.8)	2365 (14.7)	66.4 (1.8)	12 399 (77.1)	67.7 (0.8)	784 (4.9)	34.4 (3.2)
Hepatic flexure	5043	61.2 (1.3)	135 (2.7)		675 (13.4)	66.7 (3.5)	3981 (78.9)	61.7 (1.4)	252 (5.0)	22.8 (4.7)
Transverse colon	7880	63.5 (1.0)	264 (3.4)		1072 (13.6)	61.4 (2.6)	6141 (77.9)	64.8 (1.1)	403 (5.1)	37.0 (4.4)
Right colon	43 614	63.8 (0.4)	1553 (3.6)	75.7 (2.4)	6452 (14.8)	63.0 (1.1)	33 247 (76.2)	64.8 (0.5)	2362 (5.4)	38.6 (1.8)
Splenic flexure	3630	60.3 (1.5)	112 (3.1)		425 (11.7)	63.5 (4.1)	2917 (80.4)	61.2 (1.6)	176 (4.8)	15.2 (4.5)
Descending colon	5135	67.7 (1.2)	241 (4.7)		544 (10.6)	62.2 (3.7)	4142 (80.7)	69.1 (1.4)	208 (4.1)	
Sigmoid colon	38 331	65.3 (0.5)	2083 (5.4)	85.5 (1.7)	3047 (7.9)	57.9 (1.6)	31 370 (81.8)	66.1 (0.5)	1831 (4.8)	37.9 (2.0)
Left colon	47 096	65.2 (0.4)	2436 (5.2)	83.9 (1.6)	4016 (8.5)	58.9 (1.4)	38 429 (81.6)	66.0 (0.5)	2215 (4.7)	36.9 (1.8)
Overlapping colon	1817	58.4 (2.1)	63 (3.5)		263 (14.5)		1400 (77.1)	60.2 (2.3)	91 (5.0)	
Colon, NOS	10 985	55.2 (0.9)	489 (4.5)	80.1 (4.1)	1065 (9.7)	60.1 (2.8)	6970 (63.5)	60.9 (1.1)	2461 (22.4)	26.7 (1.6)
Colon, overall	104 615	63.8 (0.3)	4556 (4.4)	80.5 (1.3)	12 093 (11.6)	61.4 (0.8)	80 388 (76.8)	65.2 (0.3)	7578 (7.2)	37.4 (0.9)
Rectosigmoid	7252	65.2 (1.1)	365 (5.0)		693 (9.6)	59.6 (3.4)	5885 (81.2)	66.7 (1.2)	309 (4.3)	35.9 (4.2)
Rectum	53 129	60.7 (0.4)	2670 (5.0)	73.9 (1.8)	4136 (7.8)	53.8 (1.3)	42 854 (80.7)	61.8 (0.4)	3469 (6.5)	41.9 (1.3)
Rectum and rectosigmoid	60 381	61.2 (0.4)	3035 (5.0)	74.1 (1.7)	4829 (8.0)	54.7 (1.3)	48 739 (80.7)	62.3 (0.4)	3778 (6.3)	41.4 (1.3)

Abbreviation: NOS = not otherwise specified. Unstable estimates of survival (s.e.  $\geq 5\%$  or  $N < 100$  or missing age-specific estimate) were omitted. All percentages represent proportions of row totals. The 'Other' group also included microscopically unverified cases.

**Table 4** Age-adjusted 5-year relative survival (RS) of colorectal cancer in subsites by stage for the period 2002–2006

Subsite	Localised		Regional		Advanced	
	N (%)	RS (s.e.)	N (%)	RS (s.e.)	N (%)	RS (s.e.)
Overall	42 224 (44.2)	89.5 (0.4)	26 425 (27.7)	65.4 (0.5)	26 773 (28.1)	14.9 (0.4)
Appendix	241 (46.2)		66 (12.6)		215 (41.2)	
Caecum	3635 (41.5)	91.5 (1.2)	2500 (28.5)	62.8 (1.8)	2634 (30.0)	14.9 (1.2)
Ascending colon	4571 (46.1)	94.8 (1.0)	2737 (27.6)	70.1 (1.7)	2615 (26.4)	11.6 (1.1)
Hepatic flexure of colon	1440 (45.1)	91.9 (1.9)	807 (25.3)	57.6 (3.1)	943 (29.6)	13.1 (1.9)
Transverse colon	2236 (46.0)	88.0 (1.6)	1210 (24.9)	68.0 (2.5)	1412 (29.1)	15.3 (1.6)
Colon, right	11 882 (44.4)	92.2 (0.7)	7254 (27.1)	66.0 (1.0)	7604 (28.4)	13.7 (0.7)
Splenic flexure of colon	981 (42.2)	89.4 (2.3)	626 (26.9)	67.3 (3.3)	716 (30.8)	13.2 (2.2)
Descending colon	1518 (47.3)	90.9 (2.1)	828 (25.8)	65.2 (3.0)	860 (26.8)	23.0 (2.7)
Sigmoid colon	10 528 (45.9)	90.7 (0.7)	5818 (25.4)	69.7 (1.1)	6571 (28.7)	16.0 (0.8)
Colon, left	13 027 (45.8)	90.6 (0.7)	7272 (25.6)	69.0 (1.0)	8147 (28.6)	16.5 (0.7)
Overlapping lesion of colon	430 (38.8)	93.2 (3.2)	323 (29.2)		354 (32.0)	
Colon, NOS	1268 (32.9)	86.2 (2.3)	852 (22.1)	64.2 (3.0)	1729 (44.9)	15.2 (1.5)
Colon, overall	26 848 (44.3)	91.3 (0.5)	15 767 (26.0)	67.4 (0.7)	18 049 (29.8)	15.3 (0.5)
Rectosigmoid junction	1821 (44.5)	91.6 (1.7)	1138 (27.8)	65.0 (2.6)	1136 (27.7)	15.4 (1.9)
Rectum	13 555 (44.2)	85.1 (0.7)	9520 (31.0)	61.5 (0.9)	7588 (24.7)	14.1 (0.7)
Rectum and rectosigmoid	15 376 (44.2)	85.9 (0.6)	10 658 (30.7)	61.9 (0.9)	8724 (25.1)	14.2 (0.6)

Abbreviation: NOS = not otherwise specified. Unstable estimates of survival (s.e.  $\geq 5\%$  or  $N < 100$  or missing age-specific estimate) were omitted. All percentages represent proportions of row totals (percentage among cases with known stage).



**Table 5** Recent trends in age-adjusted 5-year relative survival (RS) by site and stage according to model-based period analysis, 2002–2006

Site	Stage	2002		2006		Change 2002–2006	P value
		RS, %	s.e.	RS, %	s.e.		
All	Localised	87.9	0.6	90.6	0.5	2.8	<0.01
	Regional	62.5	0.9	67.6	0.8	5.1	<0.01
	Advanced	15.1	0.5	15.7	0.5	0.5	0.71
	Overall	60.6	0.3	65.0	0.3	4.4	<0.01
Colon	Localised	89.1	0.9	92.5	0.6	3.4	<0.01
	Regional	65.0	1.1	69.3	1.0	4.3	0.01
	Advanced	15.2	0.6	16.5	0.6	1.4	0.13
	Overall	61.4	0.4	66.0	0.4	4.6	<0.01
Rectum and rectosigmoid	Localised	84.6	1.1	86.9	1.0	2.4	0.08
	Regional	58.5	1.4	64.5	1.3	6.0	<0.01
	Advanced	15.7	0.9	14.3	0.9	– 1.4	0.08
	Overall	59.0	0.6	63.1	0.5	4.0	<0.01

Overall estimate includes cases without recorded information on clinical stage.

*Die Darstellung der relativen 1-bis-5-  
Jahres-Überlebensraten (RS) in  
Niedersachsen (LS) und in den USA*




# Methodik: Die Kaplan Meier Analyse

Kohortenbeginn 2010

Kohortenende 2015

Intervall Jahr

 Blätter

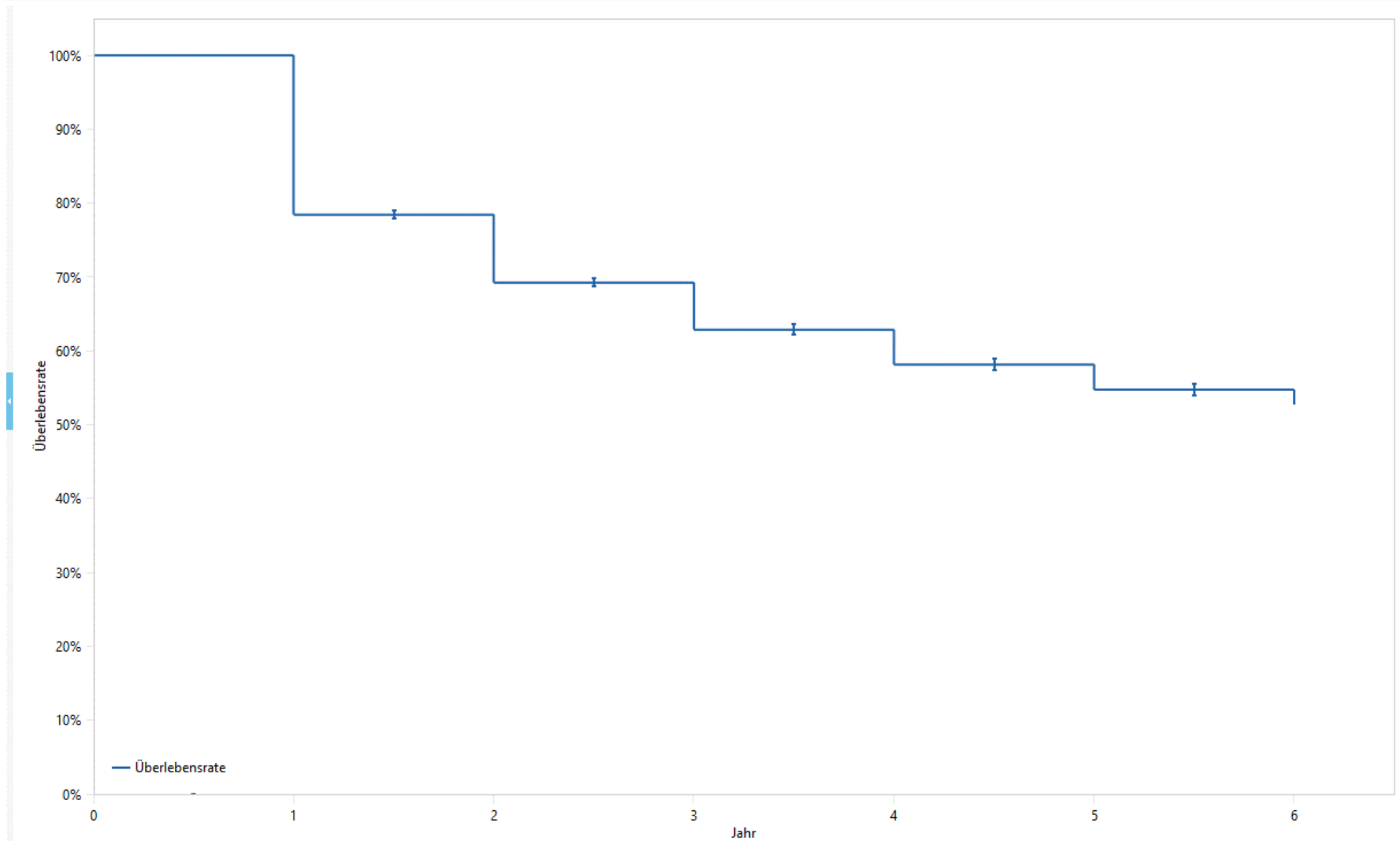
 Kennzahlen

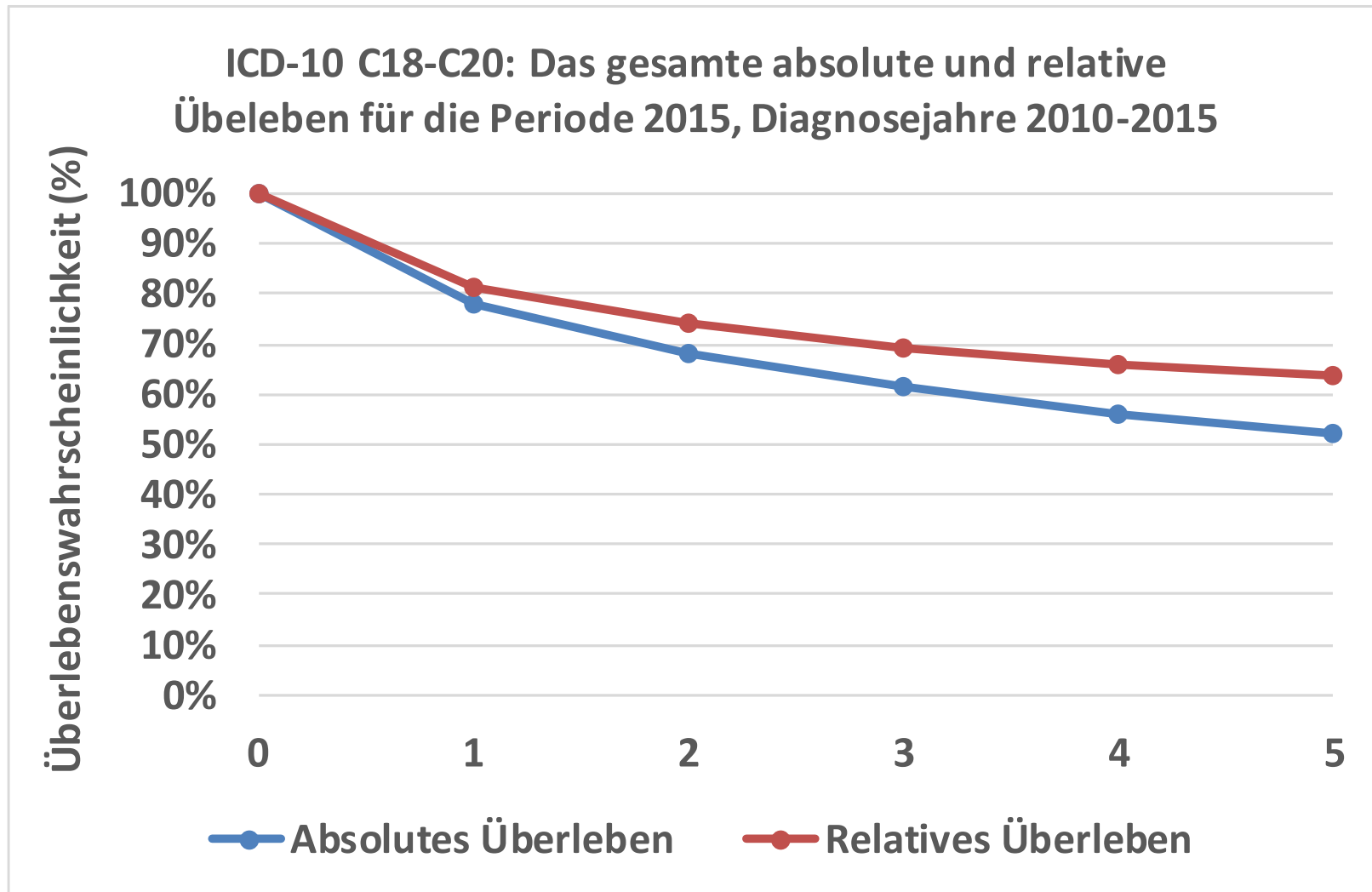
## Anzahl

ZEIT	ÜBERLEBENSRATE	STANDARDFEHLER	KI UG 95%	KI OG 95%
1	79,46 %	0,27 %	79,04 %	79,88 %
2	70,20 %	0,36 %	69,70 %	70,70 %
3	63,59 %	0,44 %	63,04 %	64,14 %
4	58,71 %	0,52 %	58,12 %	59,31 %
5	55,36 %	0,60 %	54,71 %	56,01 %
6	53,23 %	0,70 %	52,50 %	53,96 %

Eingeflossene Fälle 35390

# Methodik: Die Kaplan Meier Analyse





## 5-year relative survival, period analysis 2002-2006

Dx	Follow-up									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1997										
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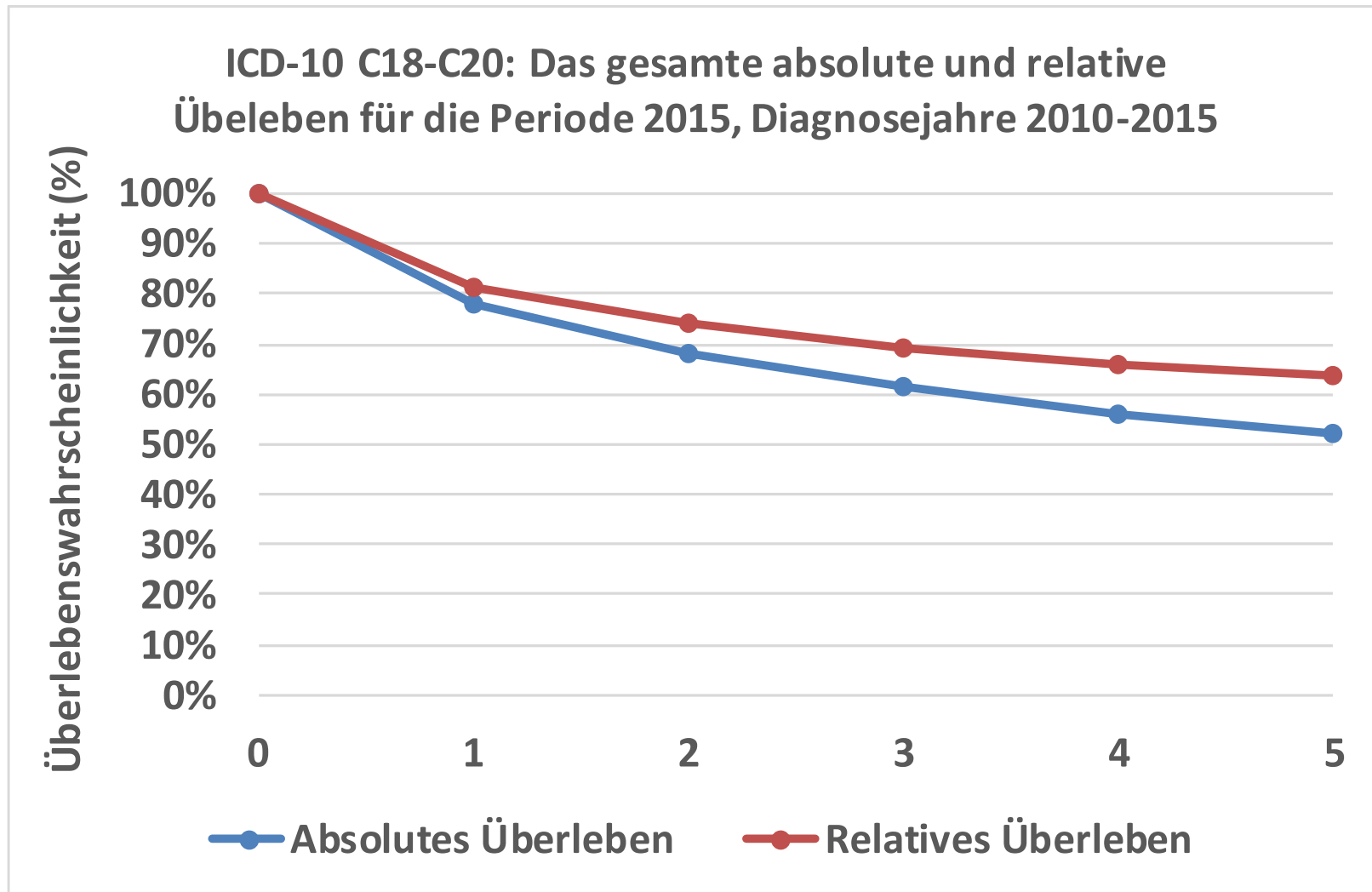
## 5-year relative survival

Dx	Follow-up									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1997		1.	2.	3.	4.	5.				
1998			1.	2.	3.	4.	5.			
1999				1.	2.	3.	4.	5.		
2000					1.	2.	3.	4.	5.	
2001						1.	2.	3.	4.	5.
2002										
2003										
2004										
2005										
2006										

## 5-year relative survival, period analysis 2002-2006

Dx	Follow-up									
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1997						5.				
1998						4.	5.			
1999						3.	4.	5.		
2000						2.	3.	4.	5.	
2001						1.	2.	3.	4.	5.
2002							1.	2.	3.	4.
2003								1.	2.	3.
2004									1.	2.
2005										1.
2006										





## ➤ Datenquelle

- Epidemiologisches Krebsregister Niedersachsen (LS)
- Surveillance, Epidemiology, and End Results (SEER) 18 database (28% der US-Bevölkerung)

## ➤ Überlebenszeitanalysen: Invasiver Primärtumor (ICD-10 C18-C20)

- Periodenanalyse: altersstandardisiertes relatives 5-Jahres-Überleben nach Geschlecht, Altersgruppe, Morhologie und Lokalisation sowie zeitliche Trends
- Ausschluss: death certificate only (DCO) Fälle; 6.1% LS, 1.6% USA und Erkrankte < 15 Jahre.
- Passives Mortalitäts-Follow-up bis Dez. 2015, Erwartetes Überleben (Ederer II Methode, Sterbetafel nach Alter, Geschlecht und Zeit)

# Ergebnisse: Datenqualität nach T-Stadium in LS

T-Stadium	Diagnosejahre 2004 - 2016		
	Diagnose (ICD-10)		
	C18	C19	C20
	Anzahl (%)	Anzahl (%)	Anzahl (%)
1	5.461 (10,6)	404 (12,5)	2.700 (11,5)
2	5.876 (11,4)	426 (13,2)	3.670 (15,6)
3	22.611 (43,7)	1.419 (44,1)	10.529 (44,7)
4	8.998 (17,4)	435 (13,5)	2.199 (9,3)
X	8.781 (17,0)	536 (16,6)	4.442 (18,9)
<b>Gesamt</b>	<b>51.727 (100,0)</b>	<b>3.220 (100,0)</b>	<b>23.540 (100,0)</b>

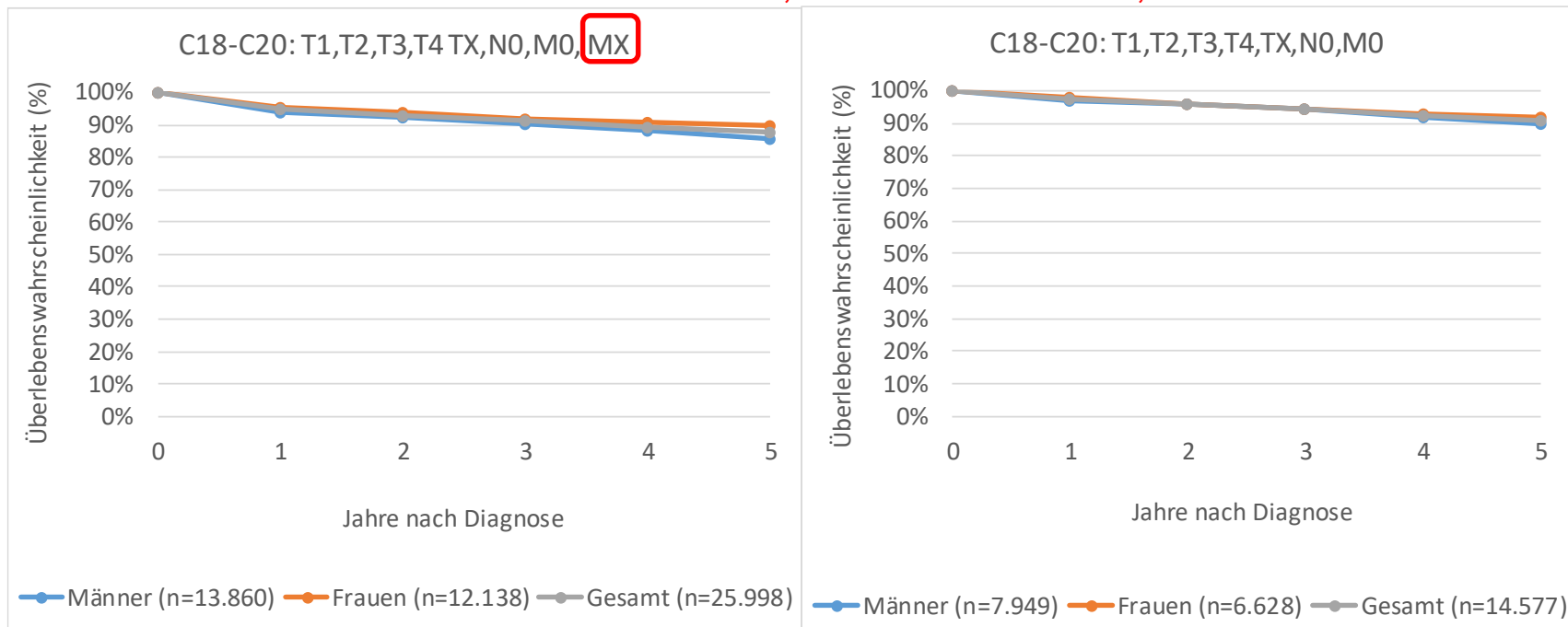
## Ergebnisse: Datenqualität nach Stadium

	Lower Saxony		
Summary Stage	Male N (%)	Female N (%)	Overall N (%)
Localized	3,943 (20.5%)	3,143 (19.0%)	7,086 (19.9%)
Regional	3,662 (19.0%)	3,176 (19.4%)	6,838 (19.2%)
Distant	2,985 (15.5%)	2,232 (13.7%)	5,217 (14.7%)
Unknown	8,655 (45.0%)	7,796 (47.7%)	16,451 (46.2%)
<b>Total</b>	<b>19,245 (54.1%)</b>	<b>16,347 (45.9%)</b>	<b>35,592 (100%)</b>
USA: SEER 18 Regions			
Localized	36,052 (39.0%)	33,361 (38.8%)	69,413 (38.9%)
Regional	32,613 (35.1%)	30,026 (35.1%)	62,639 (35.1%)
Distant	20,387 (21.2%)	18,184 (22.0%)	38,571 (21.6%)
Unknown	3,764 (4.7%)	4,050 (4.1%)	7,814 (4.4%)
<b>Total</b>	<b>92,816 (52.0)</b>	<b>44,150 (48.0%)</b>	<b>178,437 (100.0%)</b>

Data used for survival analysis for the period 2014, years of diagnosis 2009 - 2014

# Ergebnisse: Überlebensraten nach TNM-Stadien

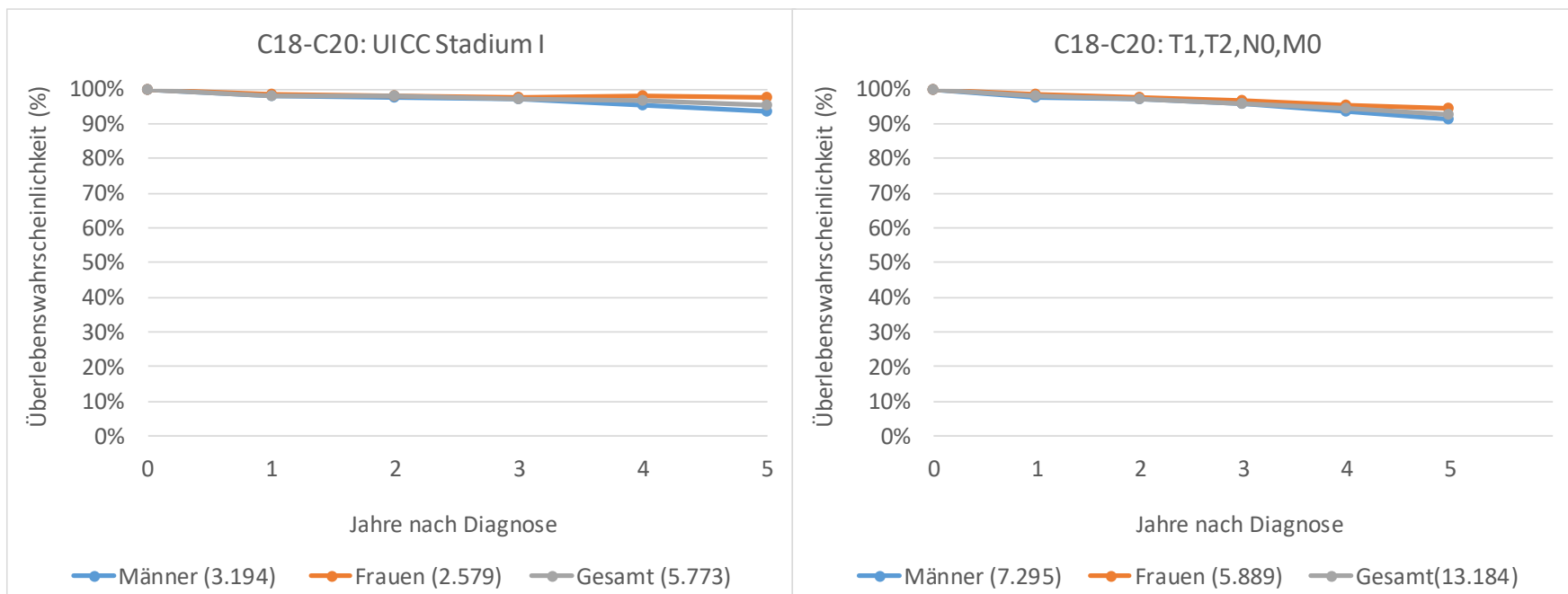
## Relative 5-Jahres-Überlebensraten in LS, altersstandardisiert, Periode 2009-2015



T=1,2,3,4 X; N=0 ; M=0,X				T=1,2,3,4 X; N=0; M=0			
Follow-Up Jahre	Männer (n=13.860)	Frauen (n=12.138)	Gesamt (n=25.998)	Follow-Up Jahre	Männer (n=7.949)	Frauen (n=6.628)	Gesamt (n=14.577)
0	100%	100%	100%	0	100%	100%	100%
1	94%	96%	95%	1	97%	98%	97%
2	92%	94%	93%	2	96%	96%	96%
3	90%	92%	91%	3	94%	94%	94%
4	88%	91%	89%	4	92%	93%	92%
5	86%	90%	88%	5	90%	92%	91%

# Ergebnisse: Überlebensraten nach TNM-Stadien

## Relative 5-Jahres-Überlebensraten in LS, altersstandardisiert, Periode 2009-2015



T=1,2; N=0; M=0 (UICC = Stadium I)

Follow-Up Jahre

	Männer (3.194)	Frauen (2.579)	Gesamt (5.773)
0	100%	100%	100%
1	98%	99%	98%
2	98%	98%	98%
3	97%	98%	97%
4	95%	98%	97%
5	93%	98%	95%

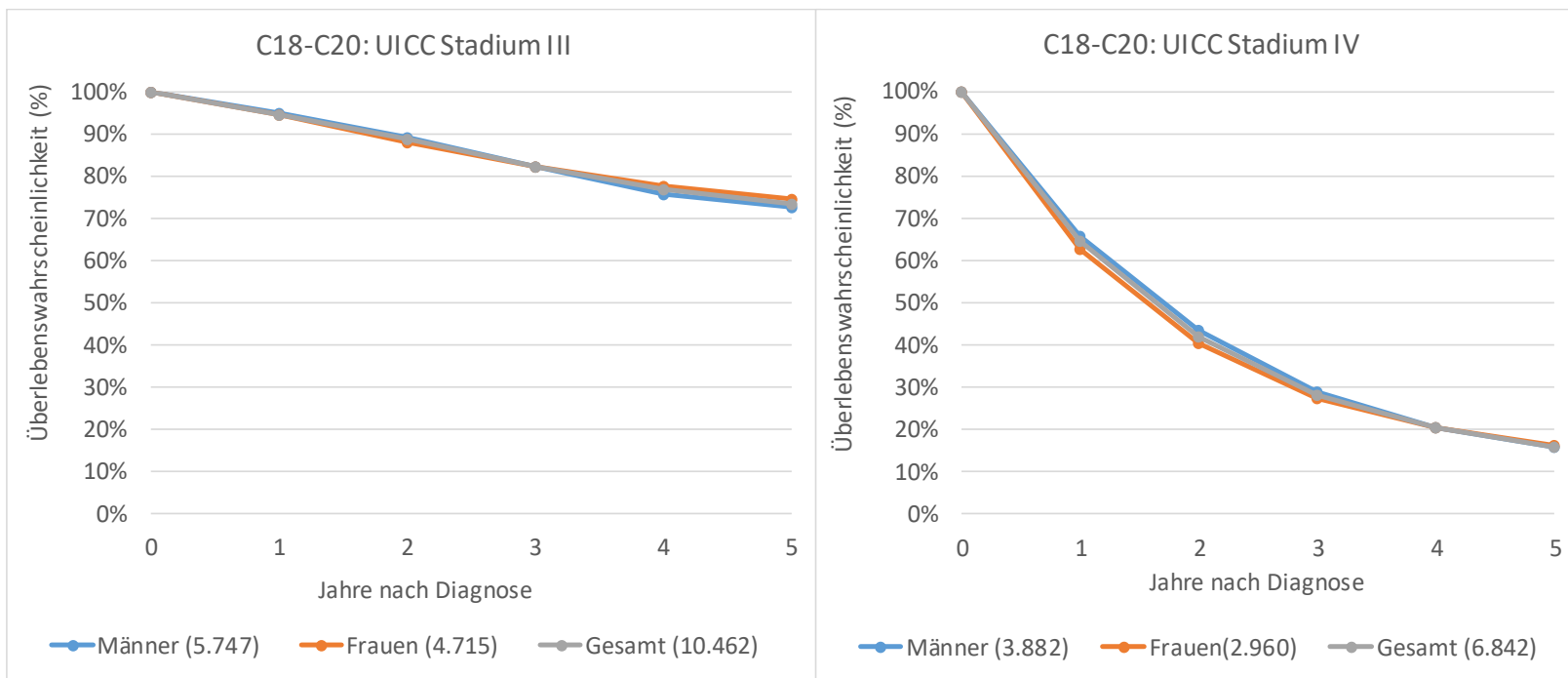
T=1,2,3; N=0; M=0 (UICC = Stadium I + IIa)

Follow-Up Jahre

	Männer (7.295)	Frauen (5.889)	Gesamt (13.184)
0	100%	100%	100%
1	98%	98%	98%
2	97%	97%	97%
3	96%	97%	96%
4	94%	95%	94%
5	91%	95%	93%



## Relative 5-Jahres-Überlebensraten in LS, altersstandardisiert, Periode 2009-2015



T=1,2,3,4 X; N +; M=0 (UICC = Stadium III)

Follow-up Jahre

	Männer (5.747)	Frauen (4.715)	Gesamt (10.462)
0	100%	100%	100%
1	95%	95%	95%
2	89%	88%	89%
3	82%	82%	82%
4	76%	78%	77%
5	73%	75%	74%

T=1,2,3,4 X; N=0,1,2,3,X; M=1 (UICC = Stadium IV)

Follow-up Jahre

	Männer (3.882)	Frauen (2.960)	Gesamt (6.842)
0	100%	100%	100%
1	66%	63%	65%
2	43%	40%	42%
3	29%	27%	28%
4	20%	21%	20%
5	16%	16%	16%

# Ergebnisse: Überlebensraten nach Diagnosen

Five-year relative survival (RS) for colorectal cancer patients by site in LS and the USA, period 2014

Cancer site		LS n	RS (SE)	USA n	RS (SE)	Diff-
<b>Colorectal cancer</b>	<b>Overall<sup>a</sup></b>	<b>25,557</b>	<b>65.1 (0.8)</b>	<b>59,209</b>	<b>63.9 (0.3)</b>	<b>1.2</b>
	Male <sup>a</sup>	13,876	64.4 (1.1)	31,155	62.5 (0.4)	1.9
	Female <sup>a</sup>	11,681	66.3 (1.1)	28,054	65.4 (0.4)	0.9
<b>Colon cancer (ICD-10 C18)</b>	<b>Overall<sup>a</sup></b>	<b>16,672</b>	<b>65.5 (1.0)</b>	<b>40,776</b>	<b>63.3 (0.3)</b>	<b>2.2</b>
	Male <sup>a</sup>	8,440	64.3 (1.4)	20,439	62.2 (0.5)	2.1
	Female <sup>a</sup>	8,232	66.7 (1.4)	20,337	64.5 (0.5)	2.2
<b>Rectosigmoid (ICD 10 C19)</b>	<b>Overall<sup>a</sup></b>	<b>996</b>	<b>68.9 (3.8)</b>	<b>4,398</b>	<b>61.9 (1.0)</b>	<b>7.0</b>
	Male <sup>a</sup>	592	64.5 (5.1)	2,482	60.7 (1.5)	3.8
	Female <sup>a</sup>	404	75.4 (5.6)	1,916	63.6 (1.5)	11.8
<b>Rectum NOS (ICD 10 C20)</b>	<b>Overall<sup>a</sup></b>	<b>7,889</b>	<b>63.3 (1.4)</b>	<b>14,035</b>	<b>64.6 (0.6)</b>	<b>-1.3</b>
	Male <sup>a</sup>	4,844	64.4 (1.9)	8,234	62.7 (0.9)	1,7
	Female <sup>a</sup>	3,045	63.6 (2.1)	5,801	67.3 (0.9)	-3.7
<b>Rectosigmoid &amp; Rectum NOS (ICD 10 C19-C20)</b>	<b>Overall<sup>a</sup></b>	<b>8,885</b>	<b>63.8 (1.3)</b>	<b>18,433</b>	<b>64.0 (0.6)</b>	<b>-0.2</b>
	Male <sup>a</sup>	5,436	64.3 (1.8)	10,716	62.5 (0.8)	1.8
	Female <sup>a</sup>	3,449	64.7 (2.0)	7,717	66.4 (0.8)	-1.7

<sup>a</sup>Age-standardized using five age-groups (15-44, 45-54, 55-64, 65-74, 75+ years), SE = Standard error, Diff. = Difference in 5-year RS between Germany and the USA.

**>95% of cases were histologically verified in both regions**

**Five-year relative survival (RS) for colorectal cancer patients by morphology in LS and the USA, period 2014**

<i>Cancer site/Morphology*</i>		<b>LS</b>	<b>RS (SE)</b>	<b>US</b>	<b>RE (SE)</b>	<b>Diffi-</b>
<b>Colorectal cancer</b>	<b>Overall<sup>a</sup></b>	<b>25,557</b>	<b>65.1 (0.8)</b>	<b>59,209</b>	<b>63.9 (0.3)</b>	<b>1.2</b>
<i>Adenocarcinoma in polyps</i>	Male <sup>a</sup>	1,166	80.8 (3.7)	5,997	80.4 (0.9)	0.4
	Female <sup>a</sup>	932	82.9 (4.1)	5,052	84.9 (0.9)	-2.0
<i>Neuroendocrine carcinoma</i>	Male <sup>a</sup>	196	72.9 (10.0)	1,507	73.9 (2.8)	-1.0
	Female <sup>a</sup>	244	69.2 (8.7)	1,547	77.6 (2.3)	-8.4
<i>Other Adenocarcinoma</i>	Male <sup>a</sup>	11,365	65.3 (1.2)	19,832	59.4 (0.5)	5.9
	Female <sup>a</sup>	9,298	66.9 (1.3)	17,369	62.1 (0.5)	4.8
<i>Mucinous carcinoma</i>	Male <sup>a</sup>	944	52.3 (4.0)	2,205	50.3 (1.5)	2.0
	Female <sup>a</sup>	941	60.4 (4.2)	2,302	58.6 (1.4)	1.8

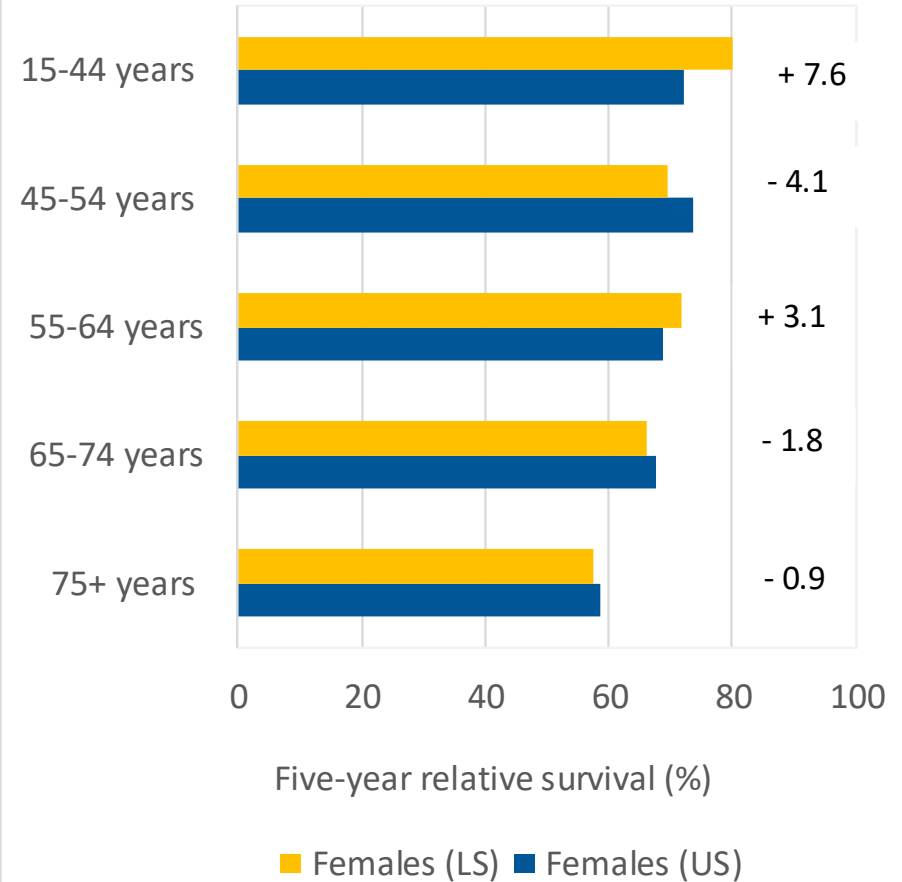
<sup>a</sup>Age-standardized using five age-groups (15-44, 45-54, 55-64, 65-74, 75+ years), SE = Standard error, Diff. = Difference in 5-year RS between Germany and the USA, \*Survival estimates were not calculated for rest of the morphologies.

# Ergebnisse: Überlebensraten nach Alter und Geschlecht

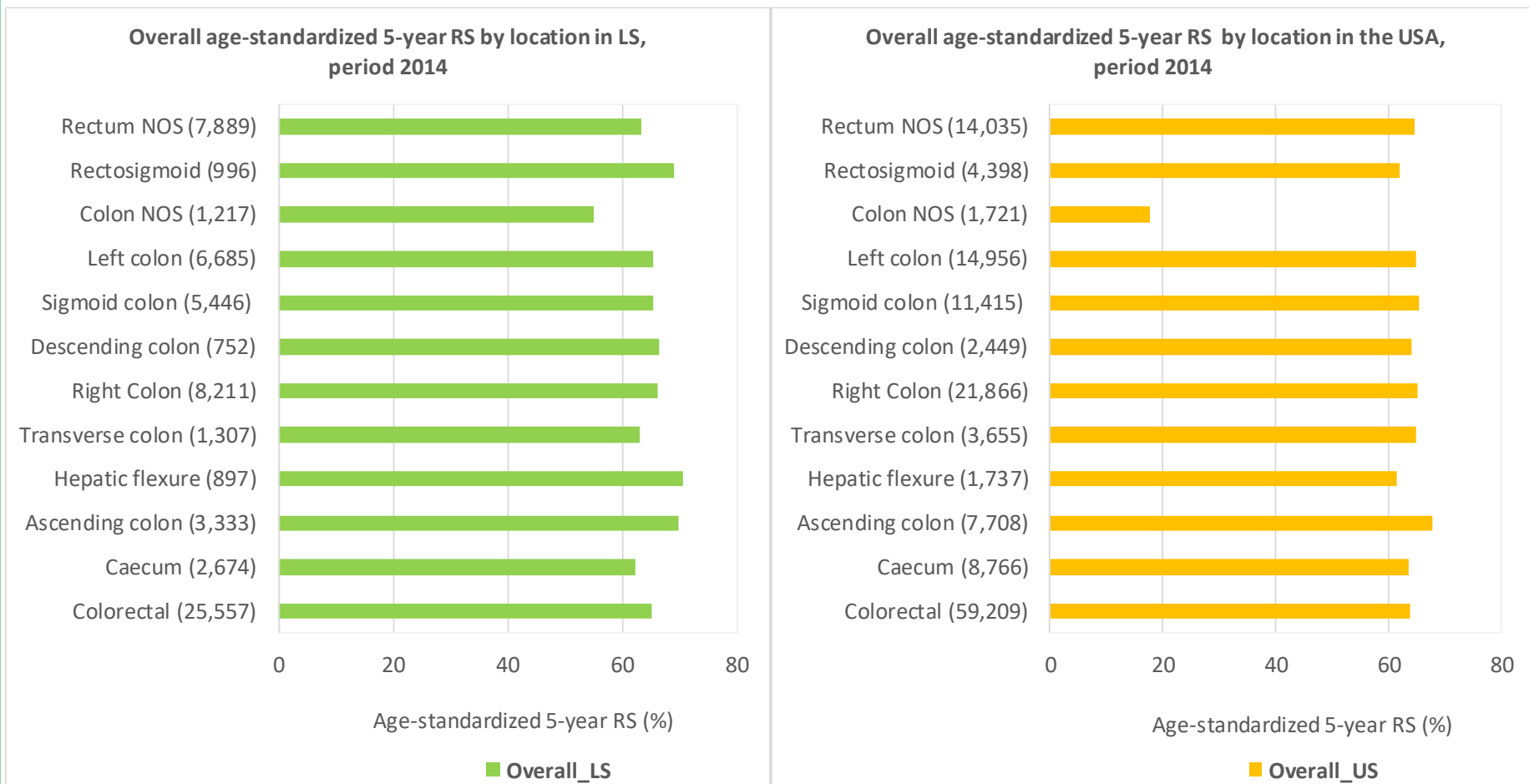
Colorectal cancer: Age group specific 5-year RS for males in LS and the USA, period 2014



Colorectal cancer: Age group specific 5-year RS for females in LS and the USA, period 2014



# Ergebnisse: Überlebensraten nach Lokalisationen



## Ergebnisse: Trends in Überlebensraten nach Lokalisation

Trends in 5-year relative survival (RS) for colorectal cancer patients in LS and the USA, periods 2008 and 2014

Cancer site		LS			US		
		2008 RS (SE)	2014 RS (SE)	Diff-	2008 RS (SE)	2014 RS (SE)	Diff-
<b>Colon</b>	<b>Overall<sup>a</sup></b>	<b>67.1(1.0)</b>	<b>65.5 (1.0)</b>	<b>-1.6</b>	<b>65.8 (0.3)</b>	<b>63.3 (0.3)</b>	<b>-2.5</b>
	Male <sup>a</sup>	66.5 (1.4)	64.3 (1.4)	-2.2	65.2 (0.5)	62.2 (0.5)	-3
	Female <sup>a</sup>	67.2 (1.4)	66.8 (1.4)	-0.4	66.4 (0.5)	64.5 (0.5)	-1.9
<b>Rectosigmoid &amp; Rectum</b>	<b>Overall<sup>a</sup></b>	<b>63.6 (1.3)</b>	<b>63.9 (1.3)</b>	<b>0.3</b>	<b>65.0 (0.5)</b>	<b>64.0 (0.6)</b>	<b>-1</b>
	Male <sup>a</sup>	62.1 (1.8)	64.4 (1.8)	2,3	64.8 (0.7)	62.5 (0.8)	-1.5
	Female <sup>a</sup>	66.5 (1.9)	64.7 (2.0)	-1,8	65.5 (0.8)	66.4 (0.8)	0.9
<b>Colorectal</b>	<b>Overall<sup>a</sup></b>	<b>66.0(0.8)</b>	<b>65.1 (0.8)</b>	<b>-0.9</b>	<b>65.8 (0.3)</b>	<b>63.9 (0.3)</b>	<b>-1.9</b>
	Male <sup>a</sup>	64.7 (1.1)	64.5 (1.1)	-0.2	65.3 (0.4)	62.5( 0.4)	-2.8
	Female <sup>a</sup>	67.1 (1.1)	66.3 (1.1)	-0.8	66.5 (0.4)	65.4( 0.4)	-1.1

<sup>a</sup>Age-standardized using five age-groups (15-44, 45-54, 55-64, 65-74, 75+ years), SE = Standard error, Diff. = Difference in 5-year RS for the two periods i.e. 2014 minus 2008.



Relative 5-Jahres Überlebensraten (RS) für Darmkrebs Patienten nach ICD-10 Diagnosen in LS und in den USA, Periode 2015

Diagnose (ICD-10)	LS		USA		Diff-	
	n	RS (SE)	n	RS (SE)		
<b>Kolorektal (ICD-10 C18-C20)</b>	<b>Gesamt<sup>a</sup></b>	<b>25.493</b>	<b>65,8 (0,8)</b>	<b>89.650</b>	<b>63,9 (0,2)</b>	<b>1,9</b>
	Männer <sup>a</sup>	13.857	64,3(1,1)	47.313	62,6 (0,3)	1,7
	Frauen <sup>a</sup>	11.636	67,6 (1,1)	42.337	65,4 (0,3)	2,2
<b>Kolon (ICD-10 C18)</b>	<b>Gesamt<sup>a</sup></b>	<b>16.632</b>	<b>66,4 (1,0)</b>	<b>61.751</b>	<b>63,4(0,3)</b>	<b>3,0</b>
	Männer <sup>a</sup>	8.442	65,0 (1,4)	31,094	62,5 (0,4)	2,5
	Frauen <sup>a</sup>	8.190	68,0 (1,4)	30,657	64,4 (0,4)	3,6
<b>Rektosigmoid (ICD 10 C19)</b>	<b>Gesamt<sup>a</sup></b>	<b>927</b>	<b>67,4 (4,1)</b>	<b>6.484</b>	<b>61,0 (0,8)</b>	<b>6,4</b>
	Männer <sup>a</sup>	533	64,8 (5,8)	3.710	59,8 (1,2)	5,0
	Frauen <sup>a</sup>	394	72,1 (5,7)	2.774	62,8 (1,2)	9,3
<b>Rektum NOS (ICD 10 C20)</b>	<b>Gesamt<sup>a</sup></b>	<b>7.934</b>	<b>63,4 (1,4)</b>	<b>21.415</b>	<b>64,7 (0,5)</b>	<b>-1,3</b>
	Männer <sup>a</sup>	4.882	61,8(1,8)	12,509	62,7 (0,7)	-0,9
	Frauen <sup>a</sup>	3.052	65,6 (2,1)	8.906	67,7 (0,7)	-2,1
<b>Rektosigmoid &amp; Rektum NOS (ICD 10 C19-C20)</b>	<b>Gesamt<sup>a</sup></b>	<b>8.861</b>	<b>64,0 (1,3)</b>	<b>27.899</b>	<b>63,9 (0,4)</b>	<b>-0,1</b>
	Männer <sup>a</sup>	5.415	62,4 (1,7)	16.219	62,1 (0,6)	0,3
	Frauen <sup>a</sup>	3.446	66,2 (2,0)	11.680	66,5 (0,6)	-0,3

<sup>a</sup>Atersstandardisierte relative 5-Jahres Überlebensraten, SE= Standard Fehler,  
Diff- = Differenzen zwischen Überlebensraten (LS minus USA)

Relative 5-Jahres Überlebensraten (RS) für Darmkrebs Patienten nach UICC-Stadium in LS und in den USA, Periode 2015

UICC-Stadium	Geschlecht	LS		USA	
		n	2015 RS (SE)	n	2015 RS (SE)
Stadium I <sup>b</sup>	Männer <sup>a</sup>	1.621	92,2(3,0)	10.434	90,0 (0,7)
	Frauen <sup>a</sup>	1.319	101,0 (2,4)	9.689	92,1 (0,6)
Stadium II <sup>c</sup>	Männer <sup>a</sup>	2.367	91,1 (2,5)	10.049	81,0 (0,6)
	Frauen <sup>a</sup>	2.100	90,1 (2,5)	9.173	83,0 (0,6)
Stadium III <sup>d</sup>	Männer <sup>a</sup>	2.976	72,5 (2,4)	11.745	66,2 (0,7)
	Frauen <sup>a</sup>	2.424	71,6 (2,4)	10.334	69,0 (0,6)
Stadium IV <sup>e</sup>	Männer <sup>a</sup>	1.524	15,3 (1,8)	10.017	10,8 (0,4)
	Frauen <sup>a</sup>	1.097	17,9 (2,3)	8.560	12,7 (0,5)
Unbekannt <sup>f</sup>	Männer	<b>5.373</b>	---	<b>5.068</b>	--
	Frauen	<b>4.696</b>	---	<b>4.581</b>	--

<sup>a</sup> Altersstandardisierte relative 5-Jahres Überlebensraten, SE= Standard Fehler, <sup>b</sup>T1T2NOMO,

<sup>c</sup>T3T4NOMO, <sup>d</sup>T1T2T3T4TXN+MO, <sup>e</sup>Jedes T Jedes N M1, <sup>f</sup>Überlebensraten wurden nicht berechnet.

Trends der relativen 5-Jahres Überlebensraten (RS) für Darmkrebs Patienten nach UICC-Stadium in LS und in den USA, Periode 2009 und 2015

UICC-Stadium	Geschlecht	LS			USA		
		2009 RS (SE)	2015 RS (SE)	Diff-	2009 RS (SE)	2015 RS (SE)	Diff-
Kolorektal	Männer <sup>a</sup>	62,3 (1,1)	64,3 (1,1)	2	65,2 (0,3)	62,6( 0,3 )	-2,6
	Frauen <sup>a</sup>	65,7 (1,1)	67,6 (1,1)	1,9	66,4 (0,3)	64,4( 0,4)	-2
Stadium I <sup>b</sup>	Männer <sup>a</sup>	95,4 (3,3)	92,2(3,0)	-3,2	90,5 (0,6)	90,0 (0,7)	-0,5
	Frauen <sup>a</sup>	97,4 (2,8)	101,0 (2,4)	3,6	91,1 (0,5)	92,1 (0,6)	1
Stadium II <sup>c</sup>	Männer <sup>a</sup>	87,4 (3,1)	91,1 (2,5)	3,7	81,4 (0,7)	81,0 (0,6)	-0,4
	Frauen <sup>a</sup>	87,6 (2,8)	90,1 (2,5)	2,5	83,1 (0,6)	83,0 (0,6)	-0,1
Stadium III <sup>d</sup>	Männer <sup>a</sup>	65,5 (2,9)	72,5 (2,4)	7	65,9 (0,7)	66,2 (0,7)	0,3
	Frauen <sup>a</sup>	76,4 (2,9)	71,6 (2,4)	-4,8	67,9 (0,6)	69,0 (0,6)	1,1
Stadium IV <sup>e</sup>	Männer <sup>a</sup>	12,8 (1,7)	15,3 (1,8)	2,5	10,5 (0,4)	10,8 (0,4)	0,3
	Frauen <sup>a</sup>	20,4 (2,4)	17,9 (2,3)	-2,5	11,6 (0,5)	12,7 (0,5)	1,1

<sup>a</sup> Altersstandardisierte relative 5-Jahres Überlebensraten, SE= Standard Fehler, <sup>b</sup>T1T2NOMO, <sup>c</sup>T3T4NOMO, <sup>d</sup>T1T2T3T4TXN+MO,

<sup>e</sup>Jedes T Jedes N M1, Diff=- 2015 minus 2009 innerhalb NDS und innerhalb USA

## Ergebnisse: Zusammenfassung

- Das gesamte altersstandardisierte 5-Jahres RS für die Periode 2015 bei Patienten mit Kolon- und Rektumkarzinom betrug 66,4% und 63,4% in LS. In den USA 63,4% und 64,7%.
- Frauen überleben länger, verglichen mit Männern in nahezu allen Untergruppen und beiden Regionen.
- Die Überlebensraten sinken mit zunehmendem Alter der Erkrankten in beiden Regionen.
- Für Adenokarzinome in Polypen wurden die höchsten relative 5-Jahres-Überlebensraten (über 80%) in beiden Regionen gefunden verglichen mit anderen Morphologietypen.

## Ergebnisse: Zusammenfassung

- Die Lokalisation ist ein wichtiger Prognosefaktor, mit einem relative 5-Jahres-Überleben bis zu 70,5% in Niedersachsen für bösartige Tumoren der Flexura hepatica (C18.3).
- Das Überleben für die Periode 2015 ist für alle kolorektale Karzinome in LS etwas höher als für die Periode 2009 (M +2,0 bzw. F +1,9 F Prozentpunkte) und in den USA etwas niedriger (M -2,6 bzw. F -2,0 Prozentpunkte). Bei Berücksichtigung des Stadiums bleibt die Tendenz in LS erhalten, während sich in den USA in dem Zeitraum wenig verändert hat, eventuell eine leichter Anstieg des Überlebens bei den fortgeschrittenen Stadien.

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**IHRE**

**AUFMERKSAMKEIT**

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Table 2. Algorithm for mapping stage at diagnosis from TNM to SEER SS2000 ('localised, regional, distant')<sup>1</sup>

TNM	Dukes'	SEER SS2000
Colorectum (ICD-10: C18-C20)		
M1	D	Distant
N+	C	Regional (lymph nodes)
T4		Regional (direct extension)
T3, T2, T1	B, A	Localised

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# Ergebnisse: Überlebensraten nach Lokalisationen

