

Supplementary Material

Small-area analysis on socioeconomic inequalities in cancer survival for 25 cancer sites in Germany

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Supplementary Tables

Table S1 Overview on years of diagnosis, case numbers and death certificate only proportions by cancer registry

Cancer Registry	Years of Diagnosis	Cases		
		Including DCO	Excluding DCO	% DCO cases
Schleswig-Holstein ^a	1998-2014	141,453	118,356	16.3 %
Lower Saxony	2003-2014	555,553	497,952	10.3 %
North Rhine-Westphalia ^b	1998-2014	236,360	217,738	7.5 %
Rhineland-Palatinate ^c	1998-2014	170,676	144,368	15.4 %
Bavaria ^d	2002-2014	384,433	349,916	9.0 %
Saarland	1998-2014	102,251	97,149	4.1 %
Brandenburg	1998-2014	228,336	208,507	8.7 %
Mecklenburg-Western Pomerania	1998-2014	155,049	143,456	7.5 %
Saxony	1998-2014	402,939	376,507	6.5 %
Thuringia	1998-2014	202,442	179,598	11.3 %

^aDistricts Flensburg, Kiel, Neumünster, North Frisia, East-Holstein, Plön, Rensburg-Eckernförde, Schleswig-Flensburg; ^bRegion Münster; ^cDistricts Koblenz, Bad Kreuznach, Birkenfeld, Cochem-Zell, Mayen-Koblenz, Rhein-Hunsrück-Kreis, Trier, Bernkastel-Wittlich, Eifelkreis Bitburg-Prüm, Vulkaneifel, Trier-Saarburg, Mainz, Worms, Alzey-Worms, Mainz-Bingen; ^dRegions Swabia (Aichach Friedberg, Augsburg city, Augsburg district), Upper Franconia (Bayreuth city, Bayreuth district, Forchheim), Middle Franconia (Erlangen Hochstadt, Erlangen, Nürnberg, Fürth), Upper Palatinate (all districts), Upper Bavaria (all districts except Berchtesgadener Land, Mühldorf am Inn, Landsberg am Lech, Eichstätt, Ingolstadt, Pfaffenhofen a.d. Ilm, Neuburg-Schrobenhausen), and Lower Bavaria (Landshut city, district Landshut); Abbreviation: DCO, death certificate only.

Table S2 Relative excess risks for 5-year age-standardized survival in 2012-2014 by GIMD quintile and cancer for cancer patients in Germany

Cancer site	GIMD Quintiles			
	Relative excess risk of 5-year relative survival (95 % Confidence Intervals) ^a			
	Q2	Q3	Q4	Q5 (most deprived)
Oral	1.06 (0.97-1.16)	1.18 (1.08-1.29)	1.24 (1.14-1.35)	1.36 (1.25-1.48)
Esophagus	1.02 (0.93-1.12)	0.97 (0.88-1.07)	1.09 (0.99-1.20)	1.16 (1.06-1.27)
Stomach	0.99 (0.93-1.06)	1.01 (0.95-1.08)	1.06 (1.00-1.13)	1.11 (1.04-1.18)
Colon and rectum	1.08 (1.03-1.13)	1.13 (1.08-1.19)	1.16 (1.10-1.21)	1.23 (1.18-1.29)
Liver	1.05 (0.96-1.15)	1.13 (1.04-1.23)	1.21 (1.12-1.32)	1.21 (1.11-1.31)
Gallbladder	1.09 (0.97-1.22)	1.17 (1.05-1.31)	1.16 (1.05-1.29)	1.15 (1.04-1.28)
Pancreas	1.03 (0.97-1.08)	1.09 (1.03-1.15)	1.06 (1.00-1.12)	1.12 (1.06-1.18)
Larynx	1.19 (0.97-1.46)	1.01 (0.82-1.24)	1.39 (1.15-1.68)	1.24 (1.02-1.50)
Lung	1.00 (0.97-1.04)	1.05 (1.01-1.08)	1.05 (1.01-1.08)	1.08 (1.05-1.12)
Melanoma	0.95 (0.77-1.18)	1.02 (0.83-1.25)	1.43 (1.18-1.73)	1.34 (1.10-1.63)
Soft tissue	0.89 (0.72-1.11)	0.93 (0.75-1.16)	0.94 (0.76-1.16)	1.05 (0.85-1.29)
Breast	1.00 (0.92-1.08)	1.12 (1.03-1.21)	1.08 (1.00-1.16)	1.20 (1.11-1.29)
Cervix	0.99 (0.83-1.17)	1.01 (0.85-1.19)	1.11 (0.95-1.30)	1.13 (0.96-1.32)
Corpus uteri	0.91 (0.77-1.06)	1.04 (0.90-1.21)	1.07 (0.93-1.24)	1.05 (0.91-1.21)
Ovary	1.19 (1.08-1.32)	1.18 (1.06-1.30)	1.22 (1.10-1.35)	1.36 (1.23-1.50)
Prostate	1.18 (1.02-1.36)	1.46 (1.27-1.67)	1.46 (1.28-1.67)	1.61 (1.41-1.84)
Testis	0.99 (0.48-2.03)	1.05 (0.51-2.18)	1.66 (0.87-3.15)	2.28 (1.23-4.21)
Kidney	0.98 (0.86-1.11)	1.02 (0.90-1.15)	1.11 (0.99-1.25)	1.11 (0.99-1.25)
Bladder	1.00 (0.92-1.09)	0.96 (0.88-1.04)	1.04 (0.96-1.13)	1.02 (0.94-1.11)
Brain	1.08 (0.99-1.18)	1.08 (0.99-1.18)	1.05 (0.96-1.15)	1.06 (0.97-1.15)
Thyroid	1.33 (0.90-1.95)	1.52 (1.03-2.22)	1.79 (1.25-2.56)	2.06 (1.45-2.93)
Hodgkin lymphoma	0.86 (0.59-1.26)	0.96 (0.66-1.40)	1.14 (0.80-1.64)	0.98 (0.68-1.43)
Non-Hodgkin lymphoma	1.01 (0.91-1.12)	1.14 (1.03-1.26)	1.07 (0.97-1.19)	1.21 (1.09-1.34)
Multiple myeloma	1.08 (0.95-1.22)	1.20 (1.06-1.36)	1.13 (1.00-1.28)	1.21 (1.07-1.37)
Leukemia	0.96 (0.87-1.06)	0.97 (0.88-1.08)	0.94 (0.85-1.04)	1.00 (0.91-1.10)
All cancer sites	1.03 (1.01-1.05)	1.08 (1.07-1.10)	1.10 (1.09-1.12)	1.16 (1.14-1.18)

^aReference: Q1 (least deprived); Abbreviations: GIMD, German Index of Multiple Deprivation; ICD-10, International Classification of Diseases Version 10; Q, quintile.

Table S3 Subgroup analysis of 5-year relative survival in 2012-2014 across GIMD quintiles by age and sex for the four most common cancer sites, including only patients with available stage information

Cancer site, subgroup	Number of cases	GIMD Quintiles					Relative excess risk (95 % confidence interval)	
		5-year relative survival (standard error)					Q1-Q5 ^a	Q5 ^b
		Q1	Q2	Q3	Q4	Q5		
Breast cancer								
Age ≤ 65 years	105,940	67.2 (0.4)	66.0 (0.5)	65.9 (0.5)	66.4 (0.4)	65.2 (0.5)	2.0	1.42 (1.26-1.61)
Age > 65 years	80,884	48.3 (0.4)	48.3 (0.4)	47.6 (0.4)	47.9 (0.3)	47.4 (0.4)	0.9	1.13 (1.00-1.29)
Prostate cancer								
Age ≤ 65 years	36,366	67.9 (0.9)	67.2 (0.8)	67.7 (0.7)	66.0 (1.2)	65.7 (0.9)	2.2	1.78 (1.29-2.44)
Age > 65 years	74,612	51.8 (0.6)	52.0 (0.5)	51.2 (0.5)	51.0 (0.4)	51.3 (0.4)	0.5	1.22 (0.95-1.57)
Colorectal cancer								
Men	87,763	65.2 (0.7)	63.8 (0.6)	62.7 (0.6)	63.1 (0.6)	61.6 (0.6)	3.6	1.23 (1.14-1.31)
Women	70,108	67.2 (0.7)	66.9 (0.7)	66.3 (0.7)	66.1 (0.6)	66.0 (0.7)	1.2	1.09 (1.01-1.18)
Age ≤ 65 years	48,201	49.1 (1.0)	47.7 (0.9)	48.6 (0.9)	49.2 (0.9)	46.9 (0.9)	2.2	1.18 (1.08-1.29)
Age > 65 years	109,670	36.3 (0.4)	35.8 (0.4)	35 (0.3)	34.9 (0.3)	34.7 (0.3)	1.6	1.16 (1.09-1.24)
Lung cancer								
Men	71,948	19.9 (0.6)	20.3 (0.6)	18.6 (0.6)	18.2 (0.5)	17.4 (0.5)	2.5	1.09 (1.04-1.14)
Women	32,057	24.0 (0.9)	26.1 (1.0)	24.5 (0.8)	24.1 (0.8)	23.9 (0.8)	0.1	1.02 (0.96-1.09)
Age ≤ 65 years	43,309	15.8 (0.8)	17.2 (0.9)	16.4 (0.8)	16.1 (0.8)	16.6 (0.8)	-0.8	1.06 (1.00-1.12)
Age > 65 years	60,696	11.1 (0.4)	11.5 (0.4)	10.2 (0.3)	10.4 (0.3)	9.9 (0.3)	1.2	1.09 (1.04-1.15)

^aDifference of GIMD quintiles; ^bReference: Q1 (least deprived), adjusted for age at diagnosis; Abbreviations: GIMD, German Index of Multiple Deprivation; n/a, not applicable; Q, quintile.

Table S4 Three-month age-standardized relative survival in 2012-2014 by GIMD quintile and cancer site for cancer patients in Germany

Cancer site	Number of cases	GIMD Quintiles					Q1-Q5 ^a
		3-months relative survival (standard error)					
		Q1 (least deprived)	Q2	Q3	Q4	Q5 (most deprived)	
Oral	15,825	95.2 (0.5)	95.1 (0.4)	94.7 (0.4)	95.0 (0.4)	93.6 (0.5)	1.6
Esophagus	7,487	87.6 (0.8)	88.5 (0.8)	87.7 (0.8)	86.7 (0.8)	85.9 (0.8)	1.7
Stomach	18,096	89.0 (0.5)	88.7 (0.5)	88.2 (0.5)	88.1 (0.5)	86.8 (0.5)	2.2
Colon and rectum	69,332	95.0 (0.2)	94.7 (0.2)	94.5 (0.2)	94.3 (0.2)	94.0 (0.2)	1.0
Liver	9,154	81.4 (1.0)	80.0 (1.0)	79.4 (1.0)	77.1 (1.0)	77.6 (0.9)	3.8
Gallbladder	5,701	84.0 (1.2)	82.4 (1.2)	82.5 (1.1)	82.4 (1.0)	81.9 (1.1)	2.1
Pancreas	17,983	80.8 (0.7)	78.9 (0.7)	78.3 (0.7)	78.2 (0.6)	77.3 (0.6)	3.5
Larynx	4,020	97.5 (0.7)	97.0 (0.7)	96.5 (0.8)	96.6 (0.7)	95.7 (0.7)	1.8
Lung	57,411	83.9 (0.4)	83.1 (0.4)	82.7 (0.3)	82.2 (0.3)	81.6 (0.3)	2.3
Melanoma	23,747	100 (0.1)	100.0 (0.1)	99.9 (0.1)	99.8 (0.1)	99.6 (0.1)	0.4
Soft tissue	3,157	96.6 (0.8)	96.1 (0.8)	96.7 (0.7)	96.2 (0.7)	94.0 (1.0)	2.6
Breast	78,031	99.3 (0.1)	99.2 (0.1)	99.2 (0.1)	99.1 (0.1)	99.1 (0.1)	0.2
Cervix	5,197	97.3 (0.6)	97.0 (0.6)	95.7 (0.6)	95.3 (0.6)	96.2 (0.6)	1.1
Corpus uteri	12,161	97.9 (0.3)	98.2 (0.3)	97.8 (0.3)	98.0 (0.3)	97.8 (0.3)	0.1
Ovary	7,975	91.5 (0.7)	90.1 (0.7)	90.3 (0.7)	89.7 (0.7)	89.6 (0.7)	1.9
Prostate	69,340	99.7 (0.1)	99.7 (0.1)	99.4 (0.1)	99.5 (0.1)	99.5 (0.1)	0.2
Testis	4,650	98.4 (1.1)	98.8 (1.0)	98.3 (1.0)	98.0 (1.0)	98.5 (0.9)	-0.1
Kidney	18,153	96.5 (0.4)	96.8 (0.3)	96.6 (0.3)	96.1 (0.3)	95.6 (0.3)	0.9
Bladder	18,604	95.4 (0.4)	95.4 (0.4)	95.2 (0.4)	94.5 (0.4)	94.6 (0.4)	0.8
Brain	7,325	90.9 (0.6)	90.7 (0.6)	90.1 (0.6)	89.8 (0.6)	89.8 (0.6)	1.1
Thyroid	6,122	98.2 (0.4)	97.6 (0.5)	97.6 (0.5)	97.3 (0.5)	97.3 (0.5)	0.9
Hodgkin lymphoma	2,362	98.7 (0.5)	98.2 (0.5)	97.7 (0.6)	97.8 (0.5)	98.2 (0.5)	0.5
Non-Hodgkin lymphoma	16,834	94.4 (0.4)	94.1 (0.4)	93.5 (0.4)	93.9 (0.4)	93.6 (0.4)	0.8
Multiple myeloma	7,095	95.8 (0.6)	94.7 (0.5)	94.2 (0.5)	94.6 (0.5)	94.3 (0.5)	1.5
Leukemia	13,444	92.7 (0.5)	92.5 (0.5)	91.7 (0.5)	92.2 (0.5)	92.5 (0.5)	0.2
All cancer sites ^b	499,206	93.9 (0.1)	93.6 (0.1)	93.2 (0.1)	93.0 (0.1)	92.8 (0.1)	1.1

^aDifference of GIMD quintiles; ^bAnalyses for all cancer sites combined are weighted (survival rates) for case mix. Abbreviations: GIMD, German Index of Multiple Deprivation; Q, quintile.

Table S5 One-year age-standardized relative survival in 2012-2014 by GIMD quintile and cancer site for cancer patients in Germany

Cancer site	Number of cases	GIMD Quintiles					Q1-Q5 ^a
		1-year relative survival (standard error)					
		Q1 (least deprived)	Q2	Q3	Q4	Q5 (most deprived)	
Oral	20,372	78.4 (0.9)	78.3 (0.8)	76.6 (0.8)	76.7 (0.8)	75.1 (0.8)	3.3
Esophagus	9,384	55.4 (1.3)	53.1 (1.2)	53.7 (1.2)	51.4 (1.2)	50.6 (1.2)	4.8
Stomach	23,455	61.9 (0.8)	62.1 (0.8)	62.1 (0.7)	60.4 (0.7)	59.5 (0.7)	2.4
Colon and rectum	90,640	85.4 (0.3)	84.5 (0.3)	84.0 (0.3)	83.6 (0.3)	82.8 (0.3)	2.6
Liver	11,481	48.9 (1.3)	48.0 (1.3)	45.8 (1.2)	43.3 (1.1)	43.2 (1.1)	5.7
Gallbladder	7,301	55.5 (1.7)	53.4 (1.6)	53.2 (1.3)	51.1 (1.3)	52.9 (1.4)	2.6
Pancreas	22,407	42.3 (0.9)	41.1 (0.8)	38.8 (0.8)	40.1 (0.8)	37.3 (0.8)	5.0
Larynx	5,289	86.8 (1.4)	83.4 (1.5)	85.3 (1.3)	84.9 (1.3)	84.9 (1.2)	1.9
Lung	72,233	48.8 (0.5)	48.6 (0.5)	47.7 (0.4)	47.0 (0.4)	45.8 (0.4)	3.0
Melanoma	30,789	99.1 (0.2)	99.0 (0.2)	98.5 (0.2)	98.2 (0.2)	98.3 (0.2)	0.8
Soft tissue	4,057	86.6 (1.4)	87.5 (1.3)	87.9 (1.2)	87.6 (1.2)	85.2 (1.4)	1.4
Breast	99,009	96.7 (0.2)	96.6 (0.2)	96.2 (0.2)	95.9 (0.2)	95.8 (0.2)	0.9
Cervix	6,835	85.3 (1.1)	85.9 (1.1)	84.7 (1.1)	83.7 (1.0)	83.6 (1.1)	1.7
Corpus uteri	15,932	91.9 (0.6)	92.7 (0.5)	92.4 (0.5)	92.3 (0.5)	92.1 (0.5)	-0.2
Ovary	10,278	76.9 (1.0)	73.9 (1.0)	73.4 (0.9)	72.6 (1.0)	71.8 (1.0)	5.1
Prostate	91,033	97.7 (0.3)	97.6 (0.2)	97.2 (0.2)	96.9 (0.5)	96.9 (0.2)	0.8
Testis	6,021	95.2 (1.7)	95.7 (1.6)	95.4 (1.4)	94.1 (1.5)	93.1 (1.7)	2.1
Kidney	23,320	87.9 (0.6)	88.5 (0.5)	88.5 (0.5)	86.9 (0.5)	87.5 (0.5)	0.4
Bladder	23,461	79.9 (0.7)	79.2 (0.7)	79.3 (0.7)	77.9 (0.7)	77.6 (0.7)	2.3
Brain	9,320	62.3 (1.0)	60.0 (1.0)	59.8 (1.0)	60.6 (1.0)	60.6 (0.9)	1.7
Thyroid	8,433	95.2 (0.7)	94.6 (0.7)	94.0 (0.7)	92.3 (0.7)	92.2 (0.7)	3.0
Hodgkin lymphoma	3,004	92.9 (1.0)	94.5 (0.9)	92.5 (0.9)	92.5 (0.9)	93.5 (0.9)	-0.6
Non-Hodgkin lymphoma	21,764	82.9 (0.6)	82.9 (0.6)	81.9 (0.6)	82.3 (0.6)	81.4 (0.6)	1.5
Multiple myeloma	9,178	85.6 (1.0)	84.3 (0.9)	82.6 (0.9)	84.0 (0.8)	81.1 (0.9)	4.5
Leukemia	17,299	76.4 (0.8)	76.3 (0.8)	76.2 (0.7)	76.2 (0.7)	76.1 (0.7)	0.3
All cancer sites ^b	642,295	80.0 (0.1)	79.6 (0.1)	79.0 (0.1)	78.5 (0.1)	77.9 (0.1)	2.1

^aDifference of GIMD quintiles; ^bAnalyses for all cancer sites combined are weighted (survival rates) for case mix. Abbreviations: GIMD, German Index of Multiple Deprivation; Q, quintile.

Table S6 Five-year conditional on one-year age-standardized relative survival in 2012-2014 by GIMD quintile and cancer site for cancer patients in Germany

Cancer site	Number of cases	GIMD Quintiles					Q1-Q5 ^a
		5-year conditional on 1-year relative survival (standard error)					
		Q1 (least deprived)	Q2	Q3	Q4	Q5 (most deprived)	
Oral	40,971	65.4 (1.2)	66.9 (1.2)	64.8 (1.2)	62.5 (1.2)	60.5 (1.2)	4.9
Esophagus	18,629	44.4 (1.9)	43.9 (2.0)	47.0 (1.9)	43.4 (1.9)	40.6 (1.9)	3.8
Stomach	48,850	54.6 (1.1)	54.5 (1.1)	54.0 (1.0)	54.3 (1.0)	51.1 (1.0)	3.5
Colon and rectum	190,434	76.3 (0.4)	75.3 (0.4)	74.9 (0.4)	74.7 (0.4)	74.2 (0.4)	2.1
Liver	22,069	39.1 (1.9)	36.7 (1.8)	36.4 (1.8)	33.0 (1.7)	33.9 (1.7)	5.2
Gallbladder	14,645	43.7 (2.3)	43.7 (2.4)	40.0 (2.2)	45.1 (2.1)	40.5 (2.1)	3.2
Pancreas	42,841	29.1 (1.3)	30.0 (1.4)	27.0 (1.3)	30.5 (1.3)	28.0 (1.3)	1.1
Larynx	11,021	74.8 (2.0)	74.7 (2.0)	74.3 (1.9)	67.8 (1.9)	69.8 (1.8)	5.0
Lung	143,935	39.2 (0.7)	39.4 (0.7)	37.2 (0.7)	38.2 (0.7)	37.7 (0.7)	1.5
Melanoma	60,379	93.7 (0.4)	94.1 (0.4)	94.2 (0.4)	92.5 (0.4)	93.1 (0.4)	0.6
Soft tissue	8,024	77.3 (1.9)	77.4 (1.9)	77.0 (1.9)	76.9 (1.9)	79.1 (1.9)	-1.8
Breast	205,897	87.6 (0.4)	87.4 (0.3)	86.7 (0.3)	87.4 (0.3)	86.6 (0.3)	1.0
Cervix	14,538	76.0 (1.5)	76.4 (1.5)	77.4 (1.4)	75.0 (1.3)	75.1 (1.5)	0.9
Corpus uteri	33,449	85.5 (0.9)	86.1 (0.9)	84.8 (0.8)	84.5 (0.8)	84.9 (0.8)	0.6
Ovary	21,945	56.6 (1.4)	53.6 (1.4)	54.8 (1.4)	54.1 (1.4)	50.6 (1.4)	6.0
Prostate	194,052	91.7 (0.5)	91.1 (0.5)	90.7 (0.5)	90.4 (0.7)	89.7 (0.7)	2.0
Testis	12,700	96.0 (2.4)	96.2 (1.9)	97.5 (1.9)	98.6 (1.8)	98.1 (2.4)	-2.1
Kidney	47,578	86.3 (0.8)	85.3 (0.8)	84.8 (0.7)	84.6 (0.7)	84.9 (0.7)	1.4
Bladder	46,880	69.9 (1.0)	70.2 (1.0)	71.0 (0.9)	69.6 (0.9)	70.0 (0.9)	-0.1
Brain	18,710	41.2 (1.5)	41.0 (1.6)	39.3 (1.5)	41.8 (1.5)	43.7 (1.7)	-2.5
Thyroid	17,869	95.7 (0.8)	96.9 (0.9)	95.4 (0.9)	96.6 (0.8)	94.5 (1.0)	1.2
Hodgkin lymphoma	6,078	91.7 (1.4)	91.0 (1.4)	92.1 (1.3)	90.8 (1.4)	90.0 (1.5)	1.7
Non-Hodgkin lymphoma	43,743	82.8 (0.9)	83.1 (0.8)	81.3 (0.8)	82.0 (0.8)	79.7 (0.8)	3.1
Multiple myeloma	18,157	62.3 (1.5)	62.6 (1.4)	60.1 (1.4)	61.5 (1.3)	62.6 (1.4)	-0.3
Leukemia	34,506	73.1 (1.2)	76.0 (1.1)	75.3 (1.0)	76.1 (1.0)	74.2 (1.0)	-1.1
All cancer sites ^b	1,317,900	72.0 (0.2)	71.9 (0.2)	71.1 (0.2)	71.1 (0.2)	70.4 (0.2)	1.6

^aDifference of GIMD quintiles; ^bAnalyses for all cancer sites combined are weighted (survival rates) for case mix. Abbreviations: GIMD, German Index of Multiple Deprivation; Q, quintile.

Table S7 Relative excess risks for 5-year age-standardized relative survival in 2012-2014 by GIMD quintile and cancer site for cancer patients in Germany, adjusted for federal state

Cancer site	GIMD Quintiles			
	Relative excess risk of 5-year relative survival (95 % Confidence Intervals) ^a			
	Q2	Q3	Q4	Q5 (most deprived)
Oral	1.05 (0.95-1.15)	1.17 (1.07-1.28)	1.19 (1.09-1.31)	1.32 (1.20-1.45)
Esophagus	0.99 (0.90-1.09)	0.93 (0.85-1.03)	1.00 (0.91-1.11)	1.05 (0.94-1.16)
Stomach	0.94 (0.87-1.00)	0.95 (0.88-1.01)	0.97 (0.91-1.04)	0.99 (0.93-1.07)
Colon and rectum	1.03 (0.98-1.09)	1.08 (1.03-1.13)	1.07 (1.02-1.13)	1.14 (1.08-1.20)
Liver	0.99 (0.90-1.09)	1.06 (0.97-1.16)	1.09 (0.99-1.20)	1.08 (0.98-1.19)
Gallbladder	1.06 (0.94-1.19)	1.14 (1.01-1.28)	1.10 (0.98-1.23)	1.07 (0.95-1.21)
Pancreas	0.99 (0.94-1.05)	1.05 (0.99-1.11)	1.01 (0.95-1.07)	1.07 (1.01-1.14)
Larynx	1.27 (1.03-1.57)	1.07 (0.87-1.33)	1.49 (1.21-1.83)	1.37 (1.10-1.70)
Lung	0.99 (0.95-1.02)	1.03 (0.99-1.07)	1.03 (1.00-1.07)	1.07 (1.03-1.11)
Melanoma	0.94 (0.76-1.16)	0.98 (0.79-1.22)	1.25 (1.01-1.55)	1.13 (0.90-1.42)
Soft tissue	0.90 (0.72-1.13)	0.93 (0.74-1.17)	0.95 (0.75-1.20)	1.03 (0.81-1.31)
Breast	1.00 (0.92-1.08)	1.12 (1.03-1.21)	1.08 (0.99-1.18)	1.20 (1.10-1.31)
Cervix	0.99 (0.83-1.17)	1.00 (0.83-1.19)	1.11 (0.93-1.32)	1.16 (0.96-1.39)
Corpus uteri	0.91 (0.78-1.07)	1.07 (0.91-1.25)	1.10 (0.93-1.29)	1.08 (0.91-1.28)
Ovary	1.14 (1.02-1.26)	1.12 (1.01-1.25)	1.14 (1.02-1.27)	1.22 (1.09-1.37)
Prostate	1.15 (1.00-1.33)	1.41 (1.23-1.63)	1.43 (1.24-1.66)	1.62 (1.40-1.88)
Testis	0.84 (0.40-1.76)	1.03 (0.49-2.17)	1.41 (0.71-2.81)	1.74 (0.86-3.51)
Kidney	0.94 (0.83-1.08)	0.99 (0.86-1.13)	1.06 (0.93-1.21)	1.02 (0.89-1.17)
Bladder	0.97 (0.89-1.06)	0.94 (0.86-1.02)	1.00 (0.92-1.10)	0.99 (0.91-1.09)
Brain	1.07 (0.98-1.17)	1.07 (0.97-1.17)	1.04 (0.94-1.14)	1.04 (0.94-1.15)
Thyroid	1.13 (0.75-1.70)	1.20 (0.80-1.82)	1.24 (0.83-1.85)	1.58 (1.05-2.37)
Hodgkin lymphoma	0.82 (0.55-1.21)	0.91 (0.61-1.34)	1.00 (0.67-1.51)	0.89 (0.58-1.37)
Non-Hodgkin lymphoma	1.01 (0.90-1.12)	1.13 (1.02-1.26)	1.05 (0.94-1.18)	1.19 (1.06-1.33)
Multiple myeloma	1.09 (0.96-1.25)	1.20 (1.05-1.37)	1.15 (1.00-1.32)	1.23 (1.07-1.41)
Leukemia	0.99 (0.90-1.10)	0.99 (0.90-1.10)	1.00 (0.90-1.11)	1.08 (0.96-1.20)
All cancer sites	1.01 (0.99-1.03)	1.05 (1.03-1.07)	1.06 (1.04-1.08)	1.11 (1.09-1.13)

^aReference: Q1 (least deprived); Abbreviations: GIMD, German Index of Multiple Deprivation; ICD-10, International Classification of Diseases Version 10; Q, quintile.

Table S8 Relative excess risks for 5-year age-standardized relative survival in 2012-2014 by GIMD quintile and cancer site for cancer patients in Germany, adjusted for East/West Germany

Cancer site	GIMD Quintiles			
	Relative excess risk of 5-year relative survival (95 % Confidence Intervals) ^a			
	Q2	Q3	Q4	Q5 (most deprived)
Oral	1.04 (0.95-1.14)	1.16 (1.06-1.27)	1.19 (1.09-1.30)	1.30 (1.19-1.42)
Esophagus	0.99 (0.90-1.09)	0.94 (0.85-1.03)	1.00 (0.90-1.10)	1.05 (0.95-1.15)
Stomach	0.98 (0.92-1.05)	1.00 (0.93-1.07)	1.03 (0.96-1.10)	1.06 (0.99-1.14)
Colon and rectum	1.06 (1.01-1.11)	1.11 (1.06-1.16)	1.10 (1.05-1.16)	1.17 (1.11-1.23)
Liver	1.03 (0.94-1.12)	1.09 (1.00-1.19)	1.13 (1.03-1.23)	1.12 (1.02-1.22)
Gallbladder	1.06 (0.95-1.19)	1.14 (1.02-1.27)	1.10 (0.98-1.23)	1.08 (0.97-1.22)
Pancreas	1.02 (0.96-1.08)	1.08 (1.02-1.14)	1.03 (0.97-1.10)	1.09 (1.03-1.16)
Larynx	1.19 (0.97-1.46)	1.01 (0.82-1.25)	1.39 (1.14-1.70)	1.24 (1.01-1.52)
Lung	1.00 (0.97-1.04)	1.05 (1.02-1.09)	1.05 (1.02-1.09)	1.09 (1.05-1.13)
Melanoma	0.91 (0.73-1.12)	0.95 (0.77-1.17)	1.21 (0.98-1.48)	1.12 (0.91-1.39)
Soft tissue	0.89 (0.71-1.10)	0.93 (0.75-1.16)	0.93 (0.74-1.17)	1.03 (0.83-1.30)
Breast	1.00 (0.92-1.08)	1.12 (1.04-1.21)	1.09 (1.01-1.18)	1.21 (1.12-1.32)
Cervix	0.99 (0.83-1.17)	1.01 (0.85-1.19)	1.11 (0.93-1.31)	1.12 (0.95-1.33)
Corpus uteri	0.91 (0.78-1.07)	1.06 (0.91-1.23)	1.10 (0.94-1.29)	1.08 (0.92-1.27)
Ovary	1.18 (1.06-1.30)	1.16 (1.05-1.28)	1.18 (1.06-1.31)	1.30 (1.17-1.45)
Prostate	1.19 (1.03-1.37)	1.48 (1.29-1.70)	1.51 (1.31-1.74)	1.68 (1.46-1.93)
Testis	0.92 (0.45-1.91)	0.98 (0.47-2.04)	1.42 (0.72-2.78)	1.88 (0.96-3.66)
Kidney	0.97 (0.85-1.10)	1.01 (0.89-1.14)	1.09 (0.96-1.24)	1.08 (0.95-1.23)
Bladder	1.00 (0.92-1.09)	0.96 (0.88-1.04)	1.03 (0.95-1.12)	1.01 (0.93-1.10)
Brain	1.07 (0.98-1.17)	1.08 (0.99-1.18)	1.04 (0.95-1.15)	1.05 (0.95-1.15)
Thyroid	1.19 (0.80-1.75)	1.35 (0.92-1.99)	1.40 (0.95-2.04)	1.54 (1.05-2.26)
Hodgkin lymphoma	0.81 (0.55-1.20)	0.92 (0.63-1.34)	1.01 (0.69-1.49)	0.85 (0.57-1.28)
Non-Hodgkin lymphoma	1.00 (0.90-1.12)	1.13 (1.02-1.25)	1.05 (0.94-1.17)	1.19 (1.07-1.32)
Multiple myeloma	1.07 (0.94-1.21)	1.19 (1.05-1.35)	1.11 (0.97-1.26)	1.19 (1.04-1.35)
Leukemia	0.98 (0.89-1.09)	1.00 (0.91-1.11)	1.01 (0.91-1.12)	1.08 (0.97-1.20)
All cancer sites	1.03 (1.01-1.04)	1.07 (1.06-1.09)	1.08 (1.07-1.10)	1.13 (1.11-1.15)

^aReference: Q1 (least deprived); Abbreviations: GIMD, German Index of Multiple Deprivation; ICD-10, International Classification of Diseases Version 10; Q, quintile.

Table S9 Trend analysis for 5-year age-standardized relative survival by GIMD quintile and cancer site for cancer patients in Germany, period 2003-2005 and 2012-2014, including only registries providing data for all years of diagnosis 1998-2014

Cancer site	Period 2003-2005				Period 2012-2014			
	5-year relative survival (standard error)		Relative excess risk (95 % confidence interval) ^a		5-year relative survival (standard error)		Relative excess risk (95 % confidence interval) ^a	
	Q1	Q5	Q1-Q5 ^b	Q5 (most deprived)	Q1	Q5	Q1-Q5 ^b	Q5 (most deprived)
Oral	44.1 (2.0)	43.3 (1.3)	0.8	1.17 (1.02-1.34)	49.7 (1.6)	46.1 (1.0)	3.6	1.40 (1.21-1.62)
Esophagus	19.5 (1.9)	15.4 (1.1)	4.1	1.18 (1.00-1.38)	25.2 (1.7)	21.1 (1.1)	4.1	1.15 (1.00-1.33)
Stomach	28.1 (1.2)	27.4 (0.7)	0.7	1.08 (0.98-1.19)	31.8 (1.2)	30.8 (0.8)	1.0	1.06 (0.96-1.18)
Colon and rectum	58.8 (0.7)	57.3 (0.5)	1.5	1.19 (1.11-1.28)	64.8 (0.6)	61.9 (0.4)	2.9	1.22 (1.14-1.32)
Liver	13.5 (1.6)	10.3 (1.0)	3.2	1.22 (1.04-1.42)	17.0 (1.7)	15.3 (1.0)	1.7	1.11 (0.97-1.27)
Gallbladder	17.3 (2.1)	16.4 (1.3)	0.9	1.09 (0.93-1.29)	30.7 (2.6)	21.6 (1.5)	9.1	1.37 (1.14-1.64)
Pancreas	9.2 (1.0)	7.6 (0.6)	1.6	1.13 (1.01-1.25)	14.7 (1.1)	11.4 (0.7)	3.3	1.11 (1.01-1.21)
Larynx	62.7 (3.4)	58.3 (2.2)	4.4	1.37 (0.98-1.92)	64.3 (2.8)	60.4 (1.9)	3.9	1.33 (0.96-1.85)
Lung	15.0 (0.5)	13.7 (0.4)	1.3	1.13 (1.07-1.19)	20.3 (0.6)	17.9 (0.4)	2.4	1.10 (1.05-1.16)
Melanoma	87.6 (1.1)	85.1 (0.8)	2.5	1.95 (1.38-2.76)	94.2 (0.7)	91.5 (0.5)	2.7	2.07 (1.38-3.08)
Soft tissue	57.3 (3.2)	56.3 (2.2)	1.0	0.96 (0.70-1.33)	68.3 (3.0)	68.2 (2.2)	0.1	0.95 (0.69-1.30)
Breast	80.1 (0.6)	79.6 (0.5)	0.5	1.16 (1.03-1.30)	84.2 (0.5)	83.5 (0.4)	0.7	1.17 (1.03-1.32)
Cervix	62.9 (2.3)	61.8 (1.3)	1.1	1.10 (0.83-1.46)	68.4 (2.2)	63.9 (1.4)	4.5	1.32 (0.99-1.75)
Corpus uteri	78.1 (1.5)	78.6 (0.9)	-0.5	0.93 (0.73-1.18)	79.0 (1.4)	78.6 (0.9)	0.4	1.06 (0.83-1.35)
Ovary	35.6 (1.5)	36.8 (1.0)	-1.2	1.15 (0.99-1.34)	42.2 (1.7)	37.5 (1.1)	4.7	1.35 (1.15-1.60)
Prostate	82.8 (1.0)	82.2 (0.7)	0.6	1.49 (1.23-1.80)	89.9 (1.0)	87.8 (0.7)	2.1	1.84 (1.44-2.35)
Testis	82.1 (2.0)	86.0 (3.0)	-3.9	2.51 (1.05-5.99)	90.8 (3.0)	89.5 (2.6)	1.3	2.80 (0.85-9.28)
Kidney	69.3 (1.5)	67.8 (0.9)	1.5	1.05 (0.88-1.25)	74.4 (1.3)	74.4 (0.8)	0.0	1.05 (0.87-1.26)
Bladder	50.7 (1.5)	56.1 (1.0)	-5.4	0.86 (0.75-0.98)	56.9 (1.3)	54.4 (0.9)	2.5	1.10 (0.97-1.25)
Brain	24.1 (1.7)	26.1 (1.2)	-2.0	0.86 (0.74-0.99)	31.3 (1.5)	31.0 (1.1)	0.3	1.09 (0.95-1.25)
Thyroid	87.9 (2.0)	86.9 (1.2)	1.0	2.19 (1.00-4.79)	91.7 (1.5)	88.1 (1.1)	3.6	2.87 (1.31-6.27)
Hodgkin lymphoma	81.5 (2.4)	81.3 (1.5)	0.2	1.90 (0.97-3.71)	85.9 (2.1)	84.7 (1.5)	1.2	1.21 (0.66-2.22)
Non-Hodgkin lymphoma	56.2 (1.5)	55.9 (1.0)	0.3	1.15 (0.99-1.35)	71.6 (1.2)	66.0 (0.8)	5.6	1.59 (1.33-1.90)
Multiple myeloma	40.9 (2.1)	37.6 (1.5)	3.3	1.34 (1.10-1.65)	56.9 (1.9)	51.4 (1.4)	5.5	1.47 (1.19-1.82)
Leukemia	45.3 (1.7)	49.1 (1.1)	-3.8	1.06 (0.90-1.25)	58.0 (1.5)	58.6 (1.0)	-0.6	1.05 (0.89-1.22)
All cancer sites ^c	53.9 (0.3)	53.3 (0.2)	0.6	1.14 (1.11-1.17)	60.4 (0.3)	58.0 (0.2)	2.4	1.18 (1.15-1.22)

^aReference: Q1 (least deprived), adjusted for age at diagnosis; ^bDifference of GIMD quintiles; ^cAnalyses for all cancer sites combined are weighted (survival rates) or adjusted (relative excess risks) for case mix.

Supplementary Figures

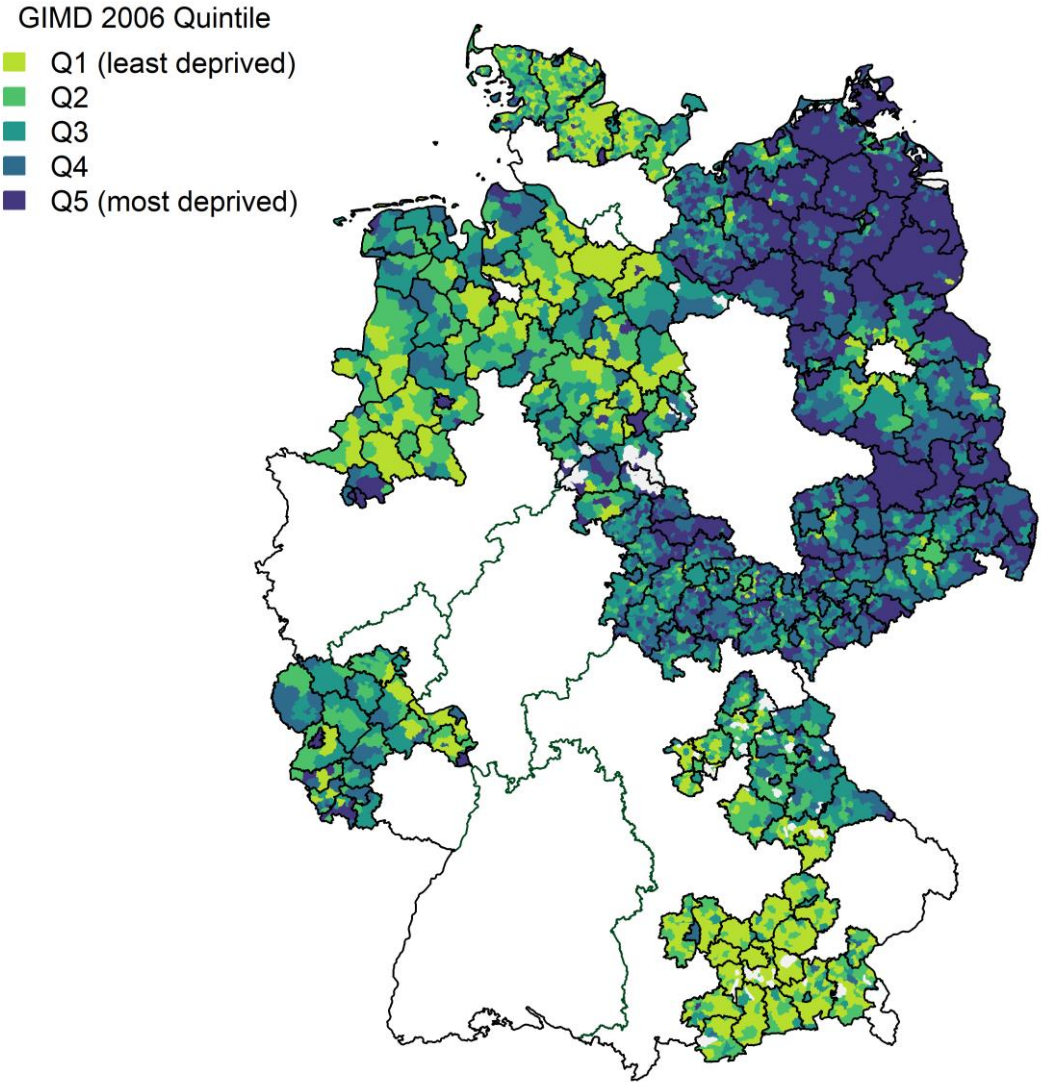


Figure S1 Distribution of GIMD quintiles across German regions included in the analysis on area-based deprivation differences in cancer survival. White areas were not included in analyses. Abbreviations: GIMD, German Index of Multiple Deprivation; Q, quintile

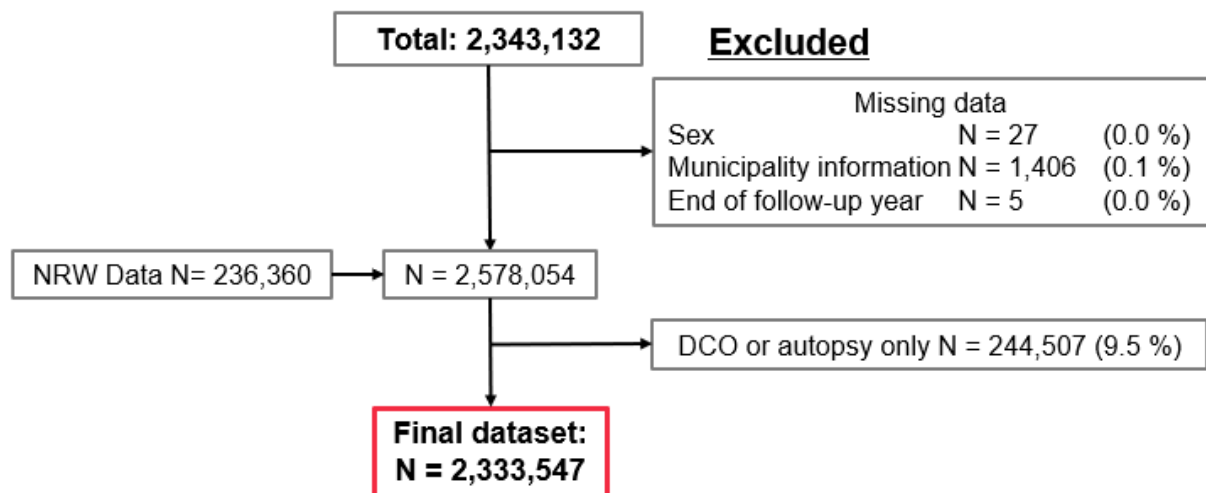


Figure S1 Flow diagram of exclusions for the analysis on area-based deprivation differences in cancer survival. NRW data was categorized (person years and number of deaths by GIMD quintile, year of diagnosis, year of follow-up, age, sex and stage at diagnosis) and contained no missing data. Abbreviations: DCO, death certificate only; GIMD, German Index of Multiple Deprivation; N, number of observations; NRW, North Rhine-Westphalia