

Figure S1 Patient inclusion flow chart. Patient inclusion flow chart. Other metastases: include but are not limited to the adrenal gland, bone marrow, pleura, malignant pleural effusion, peritoneum, and skin.

Table S1 Median survival of patients with different metastatic sites

Met.type	Numbers	Overall survival (months)		Disease-specific survival (months)	
		Median	95% CI	Median	95% CI
Met.liver	3,054	6	6–7	9	8–9
Met.bone	669	5	5–6	7	6–8
Met.brain	73	5	4–8	7	5–18
Met.lung	501	6	5–7	9	7–10

CI, confidence interval; Met., metastasis.

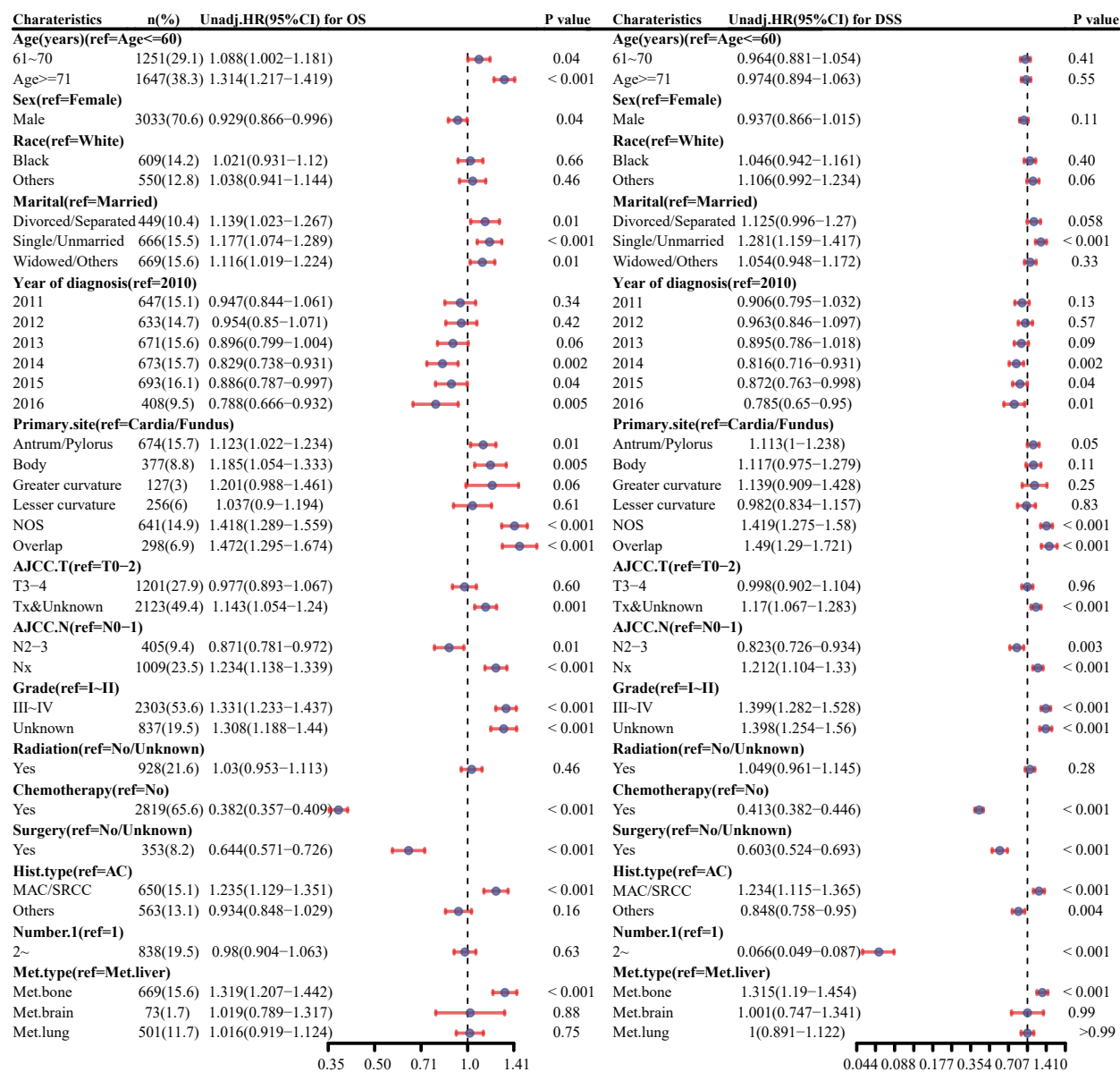


Figure S2 Results of univariate Cox regression analysis. In the primary cohort, we performed univariate Cox regression analysis for OS and DSS separately, and plotted the forest plot. AC, adenocarcinoma; Unadj.HR, unadjusted hazard ratio; AJCC, American Joint Commission on Cancer; CI, confidence interval; DSS, disease-specific survival; Hist.type, histopathologic type; MAC, mucinous adenocarcinoma; Met., metastasis; NOS, not otherwise specified; OS, overall survival; ref, reference; SRCC, signet ring cell carcinoma.

Table S2 Comparison of baseline information before and after PSM

Variables	Before PSM			After PSM		
	Met.others (n=3,628)	Met.bone (n=669)	P	Met.others (n=605)	Met.bone (n=605)	P
Age(years), n (%)			<0.001			0.55
≤60	1,105 (30.5)	294 (43.9)		238 (39.3)	254 (42.0)	
61–70	1,067 (29.4)	184 (27.5)		169 (27.9)	169 (27.9)	
≥71	1,456 (40.1)	191 (28.6)		198 (32.7)	182 (30.1)	
Sex, n (%)			<0.001			0.85
Female	1,025 (28.3)	239 (35.7)		211 (34.9)	207 (34.2)	
Male	2,603 (71.7)	430 (64.3)		394 (65.1)	398 (65.8)	
Race, n (%)			<0.001			0.42
White	2,635 (72.6)	503 (75.2)		446 (73.7)	455 (75.2)	
Black	548 (15.1)	61 (9.1)		73 (12.1)	59 (9.8)	
Others	445 (12.3)	105 (15.7)		86 (14.2)	91 (15.0)	
Marital, n (%)			0.09			0.37
Married	2,131 (58.7)	382 (57.1)		324 (53.6)	343 (56.7)	
Divorced/separated	383 (10.6)	66 (9.9)		55 (9.1)	62 (10.2)	
Single/unmarried	541 (14.9)	125 (18.7)		114 (18.8)	108 (17.9)	
Widowed/others	573 (15.8)	96 (14.3)		112 (18.5)	92 (15.2)	
Year of diagnosis, n (%)			0.27			0.79
2010	494 (13.6)	78 (11.7)		93 (15.4)	75 (12.4)	
2011	558 (15.4)	89 (13.3)		75 (12.4)	84 (13.9)	
2012	520 (14.3)	113 (16.9)		97 (16.0)	99 (16.4)	
2013	567 (15.6)	104 (15.5)		90 (14.9)	95 (15.7)	
2014	573 (15.8)	100 (14.9)		91 (15.0)	90 (14.9)	
2015	574 (15.8)	119 (17.8)		108 (17.9)	104 (17.2)	
2016	342 (9.4)	66 (9.9)		51 (8.4)	58 (9.6)	
Primary site, n (%)			<0.001			0.98
Cardia/fundus	1,682 (46.4)	242 (36.2)		227 (37.5)	238 (39.3)	
Antrum/pylorus	582 (16.0)	92 (13.8)		84 (13.9)	79 (13.1)	
Body	309 (8.5)	68 (10.2)		56 (9.3)	57 (9.4)	
Greater curvature	106 (2.9)	21 (3.1)		23 (3.8)	21 (3.5)	
Lesser curvature	219 (6.0)	37 (5.5)		42 (6.9)	36 (6.0)	
NOS	488 (13.5)	153 (22.9)		121 (20.0)	125 (20.7)	
Overlap	242 (6.7)	56 (8.4)		52 (8.6)	49 (8.1)	
AJCC T stage, n (%)			0.01			0.99
T0–2	840 (23.2)	133 (19.9)		124 (20.5)	123 (20.3)	
T3–4	1,031 (28.4)	170 (25.4)		163 (26.9)	164 (27.1)	
Tx & unknown	1,757 (48.4)	366 (54.7)		318 (52.6)	318 (52.6)	
AJCC N stage, n (%)			0.27			0.53
N0–1	2,443 (67.3)	440 (65.8)		416 (68.8)	399 (66)	
N2–3	348 (9.6)	57 (8.5)		54 (8.9)	55 (9.1)	
Nx	837 (23.1)	172 (25.7)		135 (22.3)	151 (25.0)	
Grade, n (%)			<0.001			0.69
I–II	1,094 (30.2)	63 (9.4)		63 (10.4)	62 (10.2)	
III–IV	1,844 (50.8)	459 (68.6)		420 (69.4)	409 (67.6)	
Unknown	690 (19.0)	147 (22.0)		122 (20.2)	134 (22.1)	
Radiation, n (%)			<0.001			0.95
No/unknown	2,947 (81.2)	422 (63.1)		401 (66.3)	399 (66.0)	
Yes	681 (18.8)	247 (36.9)		204 (33.7)	206 (34.0)	
Chemotherapy, n (%)			0.88			0.43
No	1,250 (34.5)	228 (34.1)		224 (37.0)	210 (34.7)	
Yes	2,378 (65.5)	441 (65.9)		381 (63.0)	395 (65.3)	
Surgery, n (%)			<0.001			>0.99
No/unknown	3,307 (91.2)	637 (95.2)		574 (94.9)	574 (94.9)	
Yes	321 (8.8)	32 (4.8)		31 (5.1)	31 (5.1)	
Histological type, n (%)			<0.001			0.74
AC	2,737 (75.4)	347 (51.9)		349 (57.7)	344 (56.9)	
MAC/SRCC	395 (10.9)	255 (38.1)		199 (32.9)	196 (32.4)	
Others	496 (13.7)	67 (10.0)		57 (9.4)	65 (10.7)	
Numbers of sites, n (%)			0.59			0.77
1	2,926 (80.7)	533 (79.7)		476 (78.7)	481 (79.5)	
≥2	702 (19.3)	136 (20.3)		129 (21.3)	124 (20.5)	

PSM, propensity score matching; NOS, not otherwise specified; AJCC, American Joint Commission on Cancer; AC, adenocarcinoma; MAC, mucinous adenocarcinoma; SRCC, signet ring cell carcinoma; Met., metastasis; Met.others, metastasis to lung, liver, brain.

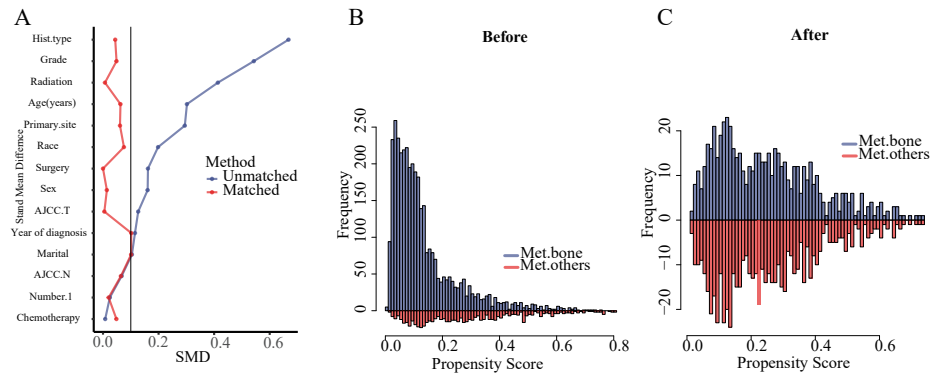


Figure S3 Before and after outcomes of patients' propensity matching scores. We have made a comparison of the data before and after matching. (A) The standardized mean differences before and after matching, and the standardized mean differences after matching were < 0.1 , suggesting a good match. The histograms before (B) and after (C) matching show good symmetry and balanced distribution of scores between the two groups. AJCC, American Joint Commission on Cancer; Hist.type, histopathologic type; Met., metastasis; SMD, standardized mean difference.

Table S3 Results of univariate Cox regression analysis after PSM

Variables	OS		DSS	
	HR (95% CI)	P value	HR (95% CI)	P value
Age (61–70 vs. ≤60 years)	1.122 (0.969–1.3)	0.12	0.971 (0.826–1.141)	0.71
Age (≥71 vs. ≤60 years)	1.344 (1.166–1.55)	<0.001	0.923 (0.781–1.091)	0.34
Sex (male vs. female)	0.953 (0.841–1.08)	0.45	0.986 (0.855–1.137)	0.84
Race (black vs. white)	1.119 (0.922–1.359)	0.25	1.313 (1.065–1.62)	0.01
Race (others vs. white)	0.906 (0.76–1.081)	0.27	1.043 (0.86–1.265)	0.66
Marital (divorced/separated vs. married)	0.987 (0.8–1.219)	0.90	0.956 (0.75–1.219)	0.71
Marital (single/unmarried vs. married)	1.174 (1–1.38)	0.05	1.314 (1.103–1.567)	0.002
Marital (widowed/others vs. married)	1.146 (0.969–1.355)	0.11	1.02 (0.837–1.244)	0.84
Year of diagnosis (2011 vs. 2010)	1.051 (0.843–1.31)	0.65	0.992 (0.772–1.275)	0.94
Year of diagnosis (2012 vs. 2010)	0.951 (0.771–1.173)	0.64	0.922 (0.727–1.169)	0.50
Year of diagnosis (2013 vs. 2010)	0.816 (0.658–1.011)	0.06	0.82 (0.644–1.043)	0.10
Year of diagnosis (2014 vs. 2010)	0.849 (0.684–1.054)	0.13	0.85 (0.666–1.084)	0.19
Year of diagnosis (2015 vs. 2010)	0.861 (0.696–1.066)	0.16	0.834 (0.656–1.062)	0.14
Year of diagnosis (2016 vs. 2010)	0.677 (0.487–0.941)	0.02	0.684 (0.471–0.992)	0.04
Primary site (antrum/pylorus vs. cardia/fundus)	1.305 (1.079–1.579)	0.006	1.275 (1.027–1.582)	0.02
Primary site (body vs. cardia/fundus)	1.285 (1.034–1.599)	0.02	1.136 (0.878–1.47)	0.33
Primary site (greater curvature vs. cardia/fundus)	0.959 (0.682–1.349)	0.81	0.878 (0.588–1.309)	0.52
Primary site (lesser curvature vs. cardia/fundus)	1.2 (0.928–1.552)	0.16	1.097 (0.812–1.483)	0.54
Primary site (NOS vs. cardia/fundus)	1.271 (1.079–1.496)	0.004	1.276 (1.062–1.534)	0.009
Primary site (overlap vs. cardia/fundus)	1.432 (1.14–1.798)	0.002	1.569 (1.224–2.011)	<0.001
AJCC T stage (T3–4 vs. T0–2)	1.069 (0.898–1.271)	0.45	1.168 (0.958–1.423)	0.12
AJCC T stage (Tx & unknown vs. T0–2)	1.337 (1.142–1.565)	<0.001	1.412 (1.177–1.693)	<0.001
AJCC N stage (N2–3 vs. N0–1)	0.819 (0.665–1.01)	0.06	0.794 (0.625–1.008)	0.05
AJCC N stage (Nx vs. N0–1)	1.213 (1.042–1.412)	0.01	1.184 (0.995–1.408)	0.05
Grade (III–IV vs. I–II)	1.211 (0.988–1.483)	0.06	1.297 (1.024–1.644)	0.03
Grade (unknown vs. I–II)	1.376 (1.094–1.731)	0.006	1.489 (1.141–1.942)	0.003
Radiation (yes vs. no/unknown)	0.928 (0.818–1.053)	0.24	0.893 (0.773–1.032)	0.12
Chemotherapy (yes vs. no)	0.398 (0.351–0.452)	<0.001	0.45 (0.389–0.52)	<0.001
Surgery (yes vs. no/unknown)	0.592 (0.45–0.779)	<0.001	0.562 (0.408–0.773)	<0.001
Histological type (MAC/SRCC vs. AC)	1.04 (0.913–1.186)	0.55	1.064 (0.918–1.233)	0.41
Histological type (others vs. AC)	0.935 (0.76–1.15)	0.52	0.873 (0.686–1.111)	0.26
Numbers of sites (≥2 vs. 1)	1.071 (0.925–1.239)	0.36	0.096 (0.062–0.148)	<0.001
Met.bone vs. Met.others	1.187 (1.053–1.339)	0.005	1.208 (1.054–1.385)	0.007

PSM, propensity score matching; NOS, not otherwise specified; AJCC, American Joint Commission on Cancer; MAC, mucinous adenocarcinoma; SRCC, signet ring cell carcinoma; AC, adenocarcinoma; Met., metastasis; Met.others, metastasis to lung, liver, brain; OS, overall survival; DSS, disease-specific survival; HR, hazard ratio; CI, confidence interval.

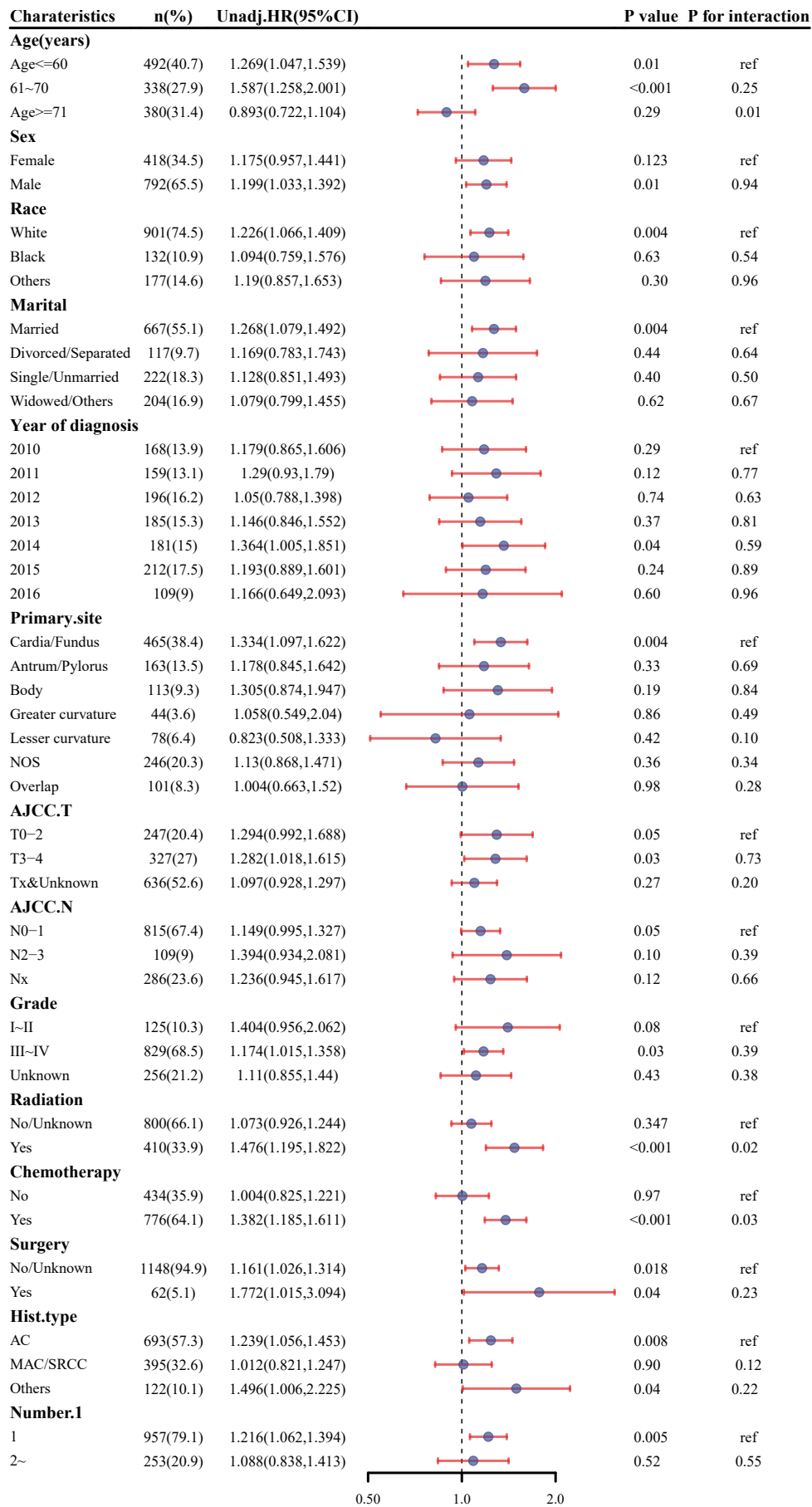


Figure S4 Results of subgroup analysis of bone metastases on OS. We performed a subgroup univariate Cox regression analysis with bone metastasis as the independent variable on the data after PSM. We calculated the interaction between subgroups and bone metastasis and plotted the forest plot. AC, adenocarcinoma; AJCC, American Joint Commission on Cancer; CI, confidence interval; Hist.type, histopathologic type; NOS, not otherwise specified; MAC, mucinous adenocarcinoma; OS, overall survival; ref, reference; PSM, propensity score matching; SRCC, signet ring cell carcinoma; Unadj.HR, unadjusted hazard ratio.

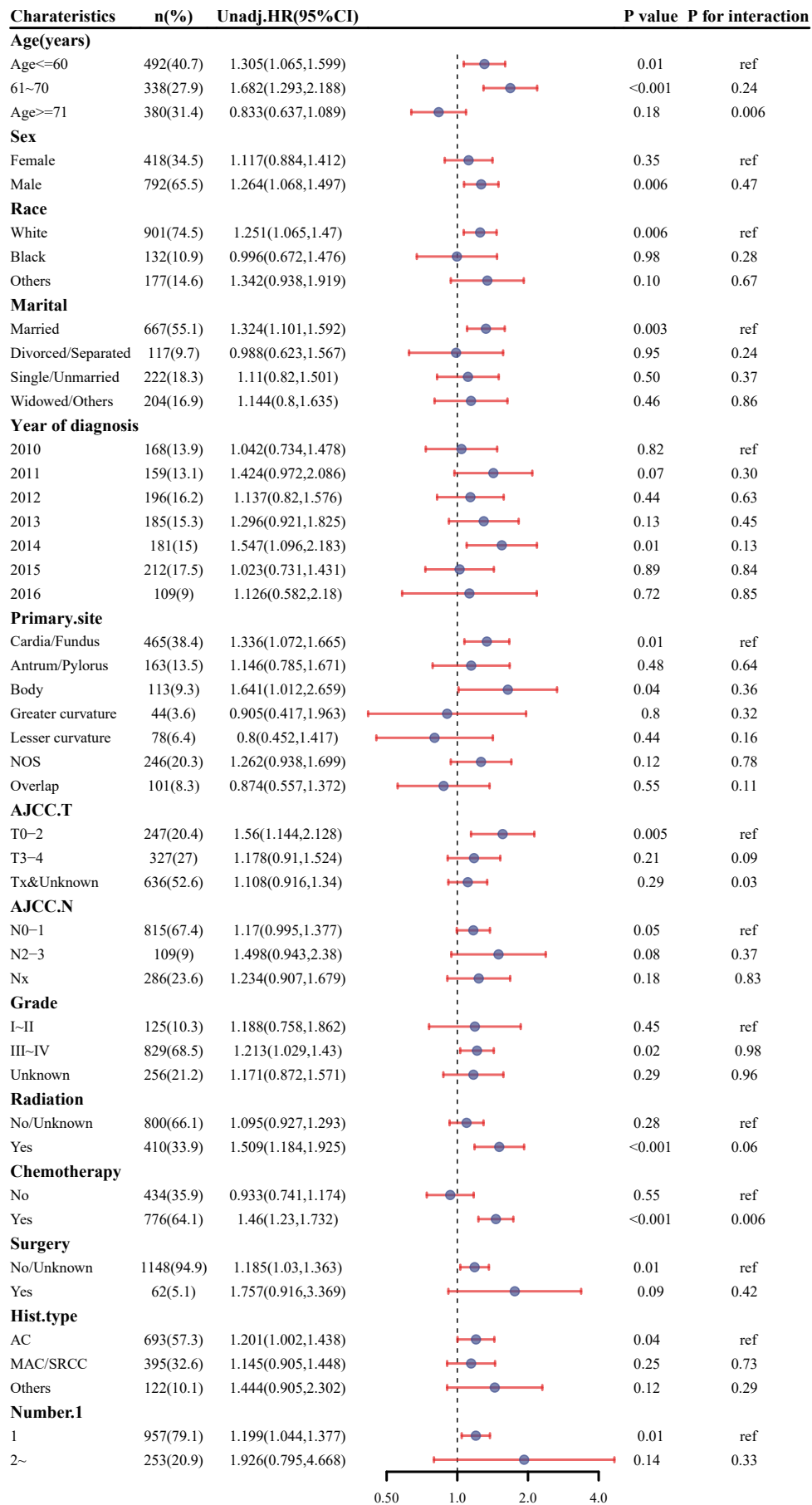


Figure S5 Results of subgroup analysis of bone metastases on DSS. We performed a subgroup univariate Cox regression analysis on the data after PSM. In this analysis, we used bone metastasis as the independent variable and DSS as the outcome variable and calculated the interaction between different factors and DSS. AC, adenocarcinoma; AJCC, American Joint Commission on Cancer; CI, confidence interval; DSS, disease-specific survival; Hist.type, histopathologic type; NOS, not otherwise specified; MAC, mucinous adenocarcinoma; ref, reference; PSM, propensity score matching; SRCC, signet ring cell carcinoma; Unadj.HR, unadjusted hazard ratio.