Association of marital status and all-cause mortality of metastatic breast cancer patients: A population-based study

Supplementary materials

Table 1 Gray's test and Fine–Gray proportional subdistribution hazard method analysis of breast cancer-specific survival (BCSS) for patients with metastatic breast cancer, and sensitivity analysis.

Figure. S1 Percentage of missing variables.

Figure. S2 Kaplan-Meier survival curves of overall survival(A) and breast cancer-specific survival(B) on sensitivity analysis. We excluded all patients with missing covariable data (n=3744) and those who survived less than 1 month (n=792) after diagnosis. The final sample size for inclusion in the sensitivity analysis was 11977 patients, 5616 married and 6361 unmarried patients.

Figure. S3 Kaplan-Meier survival curves of breast cancer-specific survival (BCSS) in different distant organ metastasis subgroup (A: without distant organ metastasis; B: bone metastasis; C: liver metastasis; D: brain metastasis; E: lung metastasis; F: multiple organ metastasis) and overall survival (OS) in different distant organ metastasis subgroup (G: without distant organ metastasis; H: bone metastasis; I: liver metastasis; J: brain metastasis; K: lung metastasis; L:multiple organ metastasis) MBC patients according to marital status.

Table S1 Gray's test and Fine–Gray proportional subdistribution hazard method analysis of breast cancer-specific survival (BCSS) for patients with metastatic breast cancer, and sensitivity analysis.

Characteristic (n)	Univariable analysis		Multivariable analysis	
	Gray's test	*p*-value	SHR (95% CI)	*p*-value
BCSS				
Marital status	118.579	<0.001		<0.001
Unmarried (8949)			Reference	
Married (7564)			0.840 (0.799-0.883)	
Ages	12.086	0.001		0.845
<65 (9811)			Reference	
>=65 (6702)			1.005 (0.954-1.060)	
Race	75.228	<0.001		<0.001
White (12407)			Reference	
Black (2764)			1.168 (1.095-1.245)	<0.001
Other (1296)			1.016 (0.929-1.112)	0.727
Unknown (46)			0.500 (0.245-1.022)	0.057
Grade	262.687	<0.001		<0.001
I (1170)			Reference	
II (6017)			1.331 (1.194-1.483)	<0.001
III (6755)			1.809 (1.621-2.020)	<0.001
IV (99)			2.240 (1.685-2.979)	<0.001
Unknown (2472)			1.499 (1.330-1.669)	<0.001
Subtype	622.276	<0.001		<0.001
HR(-) & HER2(-) (2018)			Reference	
HR(-) & HER2(+) (1306)			0.500 (0.448-0.558)	<0.001
HR(+) & HER2(-) (9201)			0.496 (0.458-0.536)	<0.001
HR(+) & HER2(+) (2489)			0.418 (0.381-0.458)	<0.001

Unknown (1499)			0.565 (0.506-0.630)	<0.001
Chemotherapy	76.829	<0.001		<0.001
No (7465)			Reference	
Yes (9048)			0.845 (0.798-0.894)	
Radiation	18.592	<0.001		NI
No (10937)				
Yes (5207)				
Unknown (369)				
Surgery	462.431	<0.001		<0.001
No surgery (10951)			Reference	
Partial mastectomy (1554)			0.629 (0.575-0.688)	<0.001
Simple mastectomy (1308)			0.581 (0.526-0.642)	<0.001
Radical mastectomy (2542)			0.734 (0.685-0.785)	<0.001
Unknown (158)			1.021 (0.823-1.266)	0.850
Distant organ metastasis	702.044	<0.001		<0.001
No (1990)			Reference	
One site (9374)			1.246 (1.147-1.354)	<0.001
Multiple sites (4959)			1.937 (1.774-2.115)	<0.001
Unknown (190)			1.393 (1.109-1.748)	0.004

Note: Distant organ metastasis only included bone, liver, lung, and brain metastases in the SEER database (2010-2015). NI: not included in the multivariable survival analysis. SHR: subdistribution hazard ratio. Patients with an unknown cause of death were classified as dying of tumor-related-cause. There were 7484 deaths from tumors, 2519 deaths from other causes, and 6,510 survivors at the follow-up endpoint.

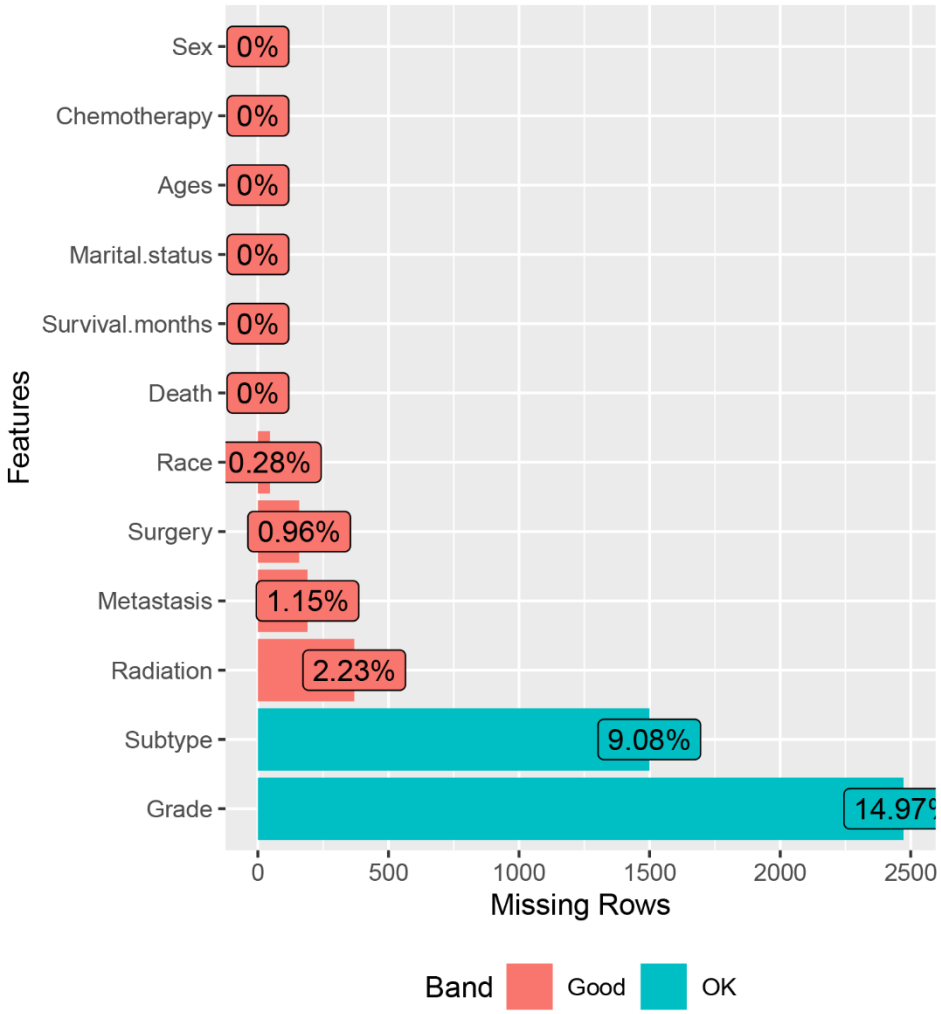


Figure. S1 Percentage of missing variables.

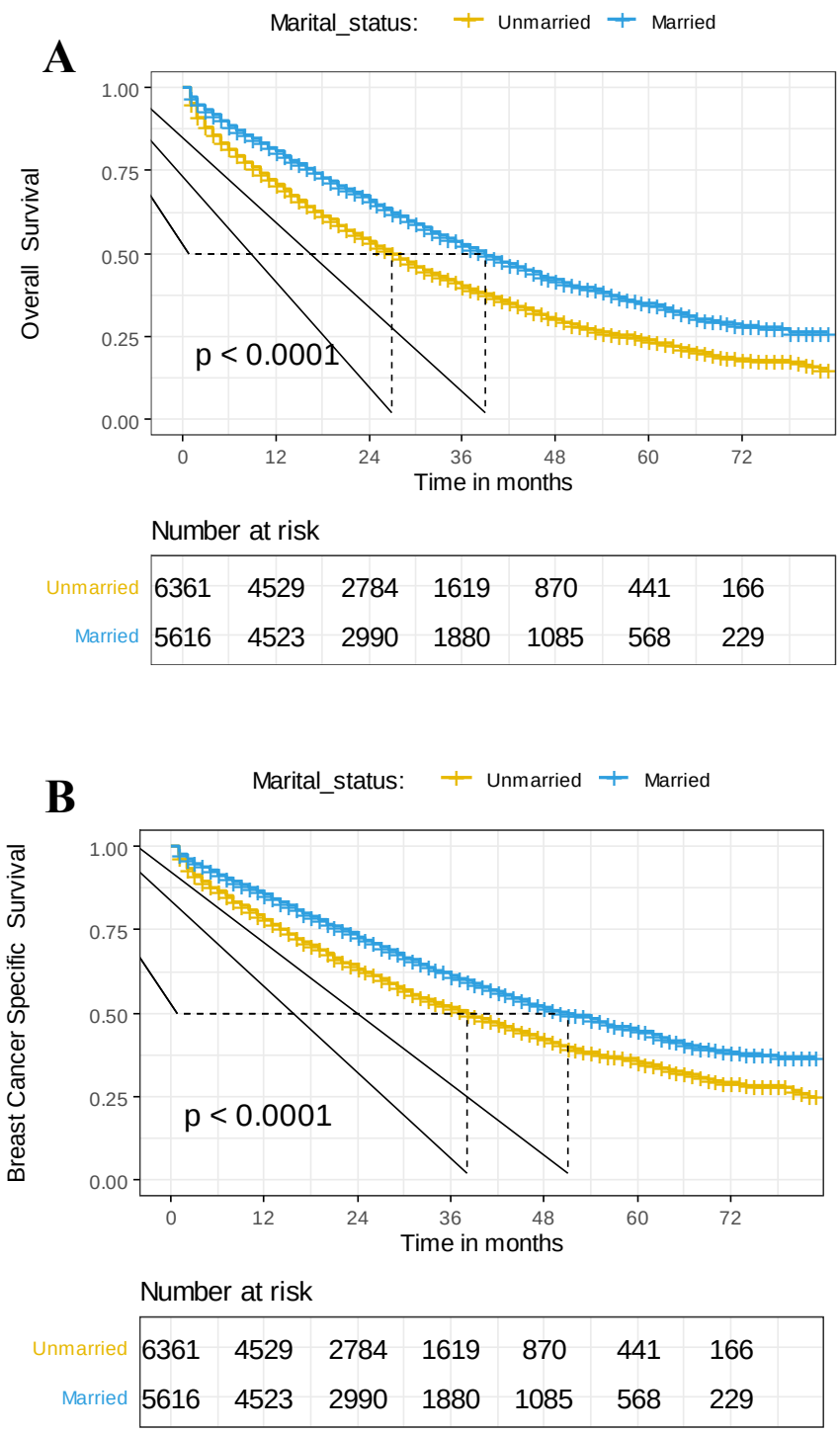
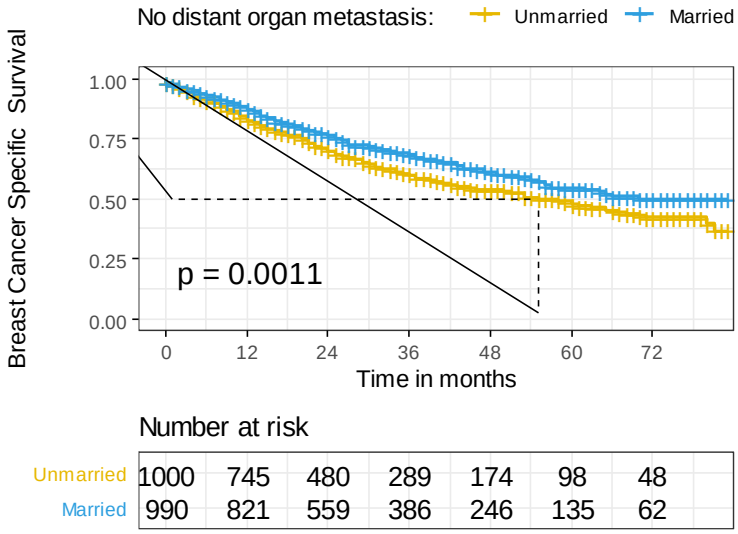


Figure. S2 Kaplan-Meier survival curves of overall survival(A) and breast cancer-specific survival(B) on sensitivity analysis. We excluded all patients with missing covariable data (n=3744) and those who survived less than 1 month (n=792) after diagnosis. The final sample size for inclusion in the sensitivity analysis was 11977 patients, 5616 married and 6361 unmarried patients.

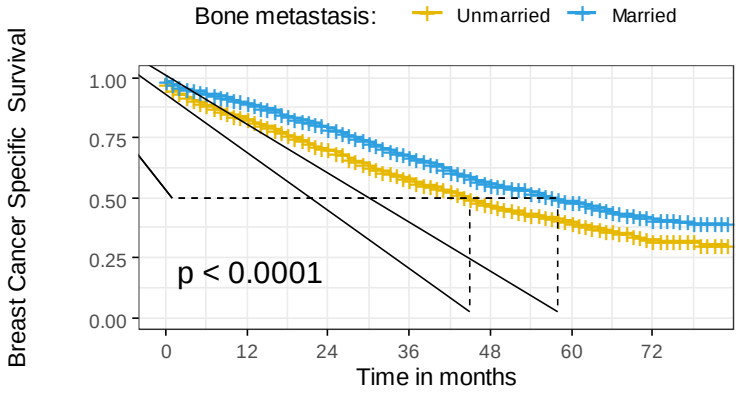
A



Number at risk

Unmarried	1000	745	480	289	174	98	48
Married	990	821	559	386	246	135	62

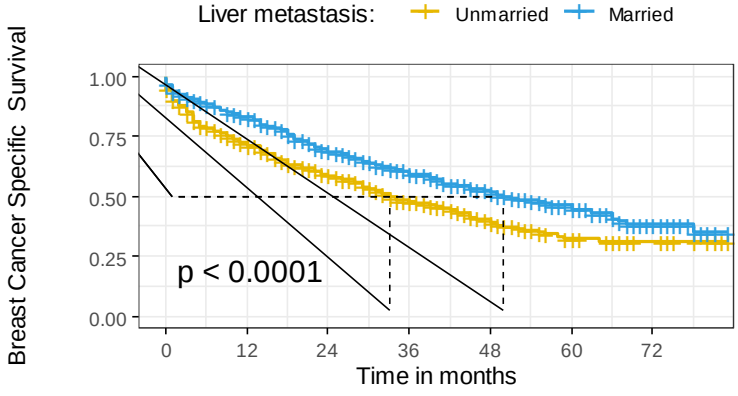
B



Number at risk

Unmarried	3376	2557	1655	996	519	261	88
Married	2984	2516	1727	1104	629	338	140

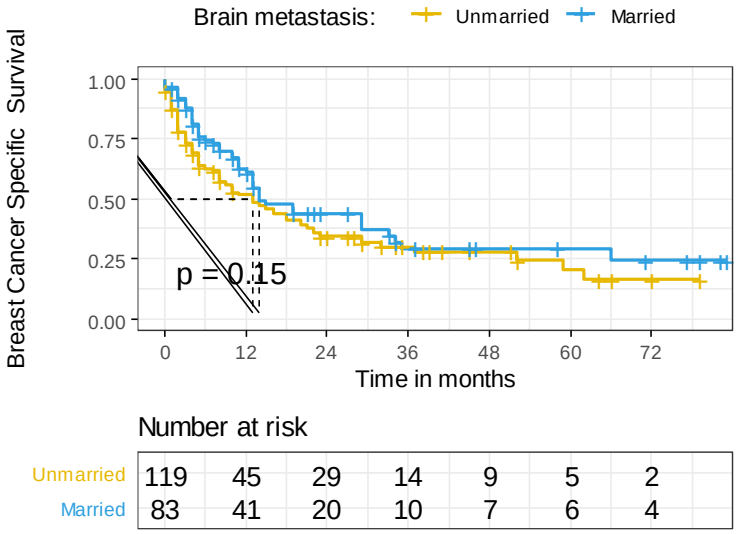
C



Number at risk

Unmarried	592	380	224	128	72	33	17
Married	574	436	298	198	120	57	21

D



Number at risk

Unmarried	119	45	29	14	9	5	2
Married	83	41	20	10	7	6	4

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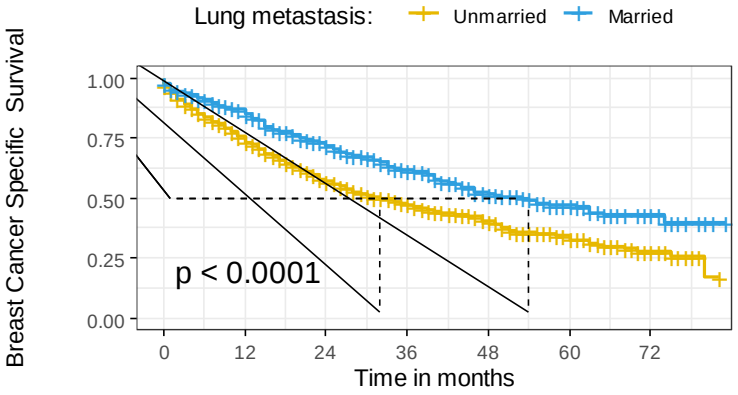
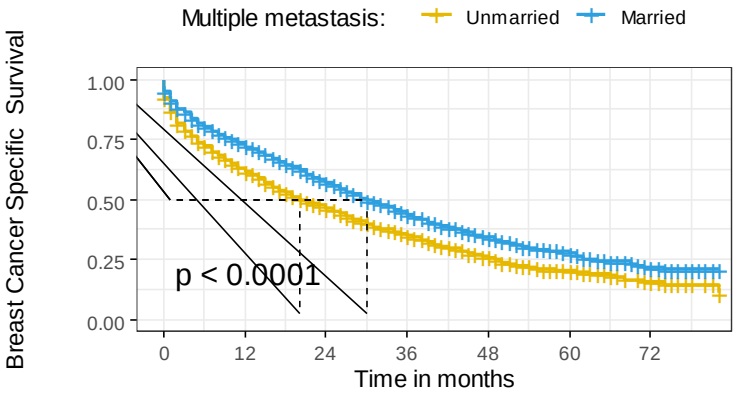


Number at risk

Unmarried	982	645	362	210	122	63	19
Married	664	520	330	194	106	49	19

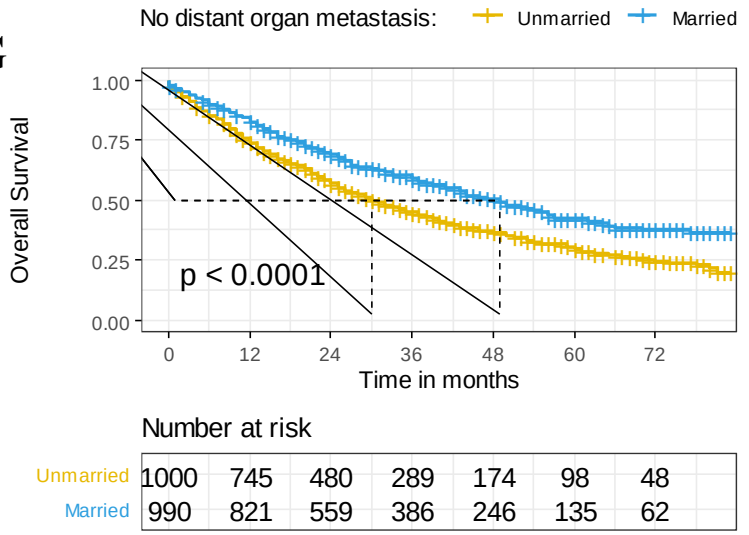
F



Number at risk

Unmarried	2773	1503	846	449	212	99	38
Married	2186	1438	880	501	251	127	43

G



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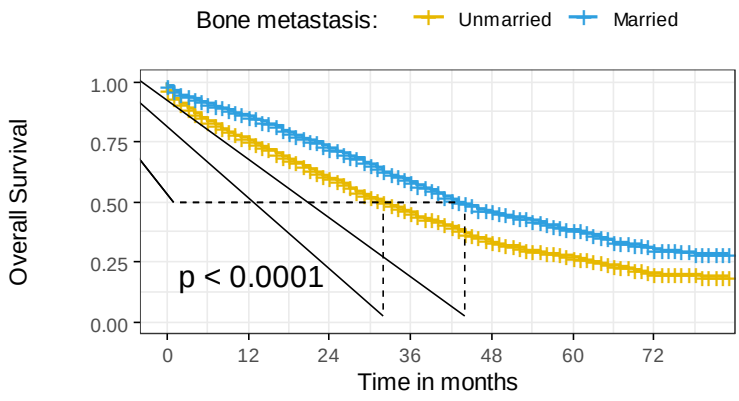

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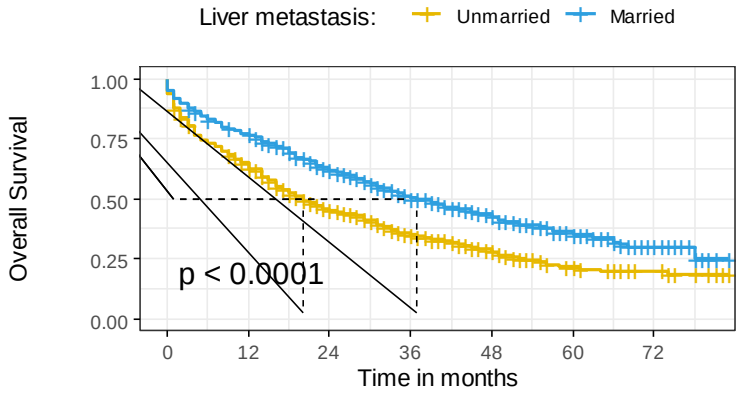

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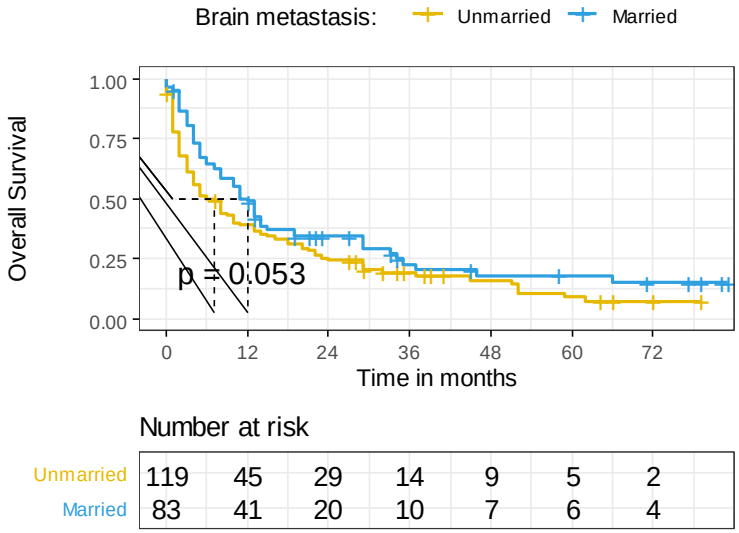

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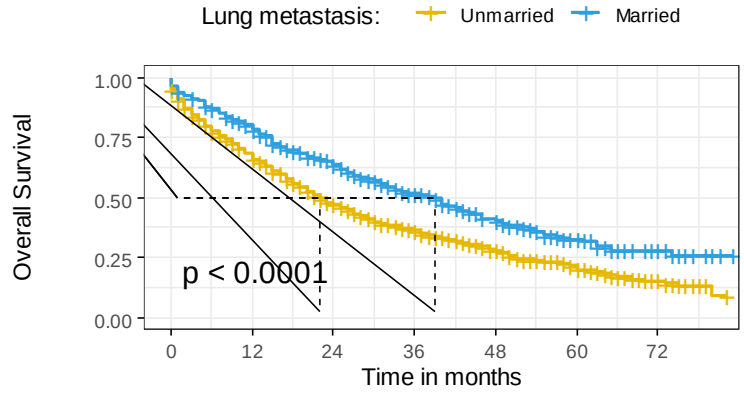

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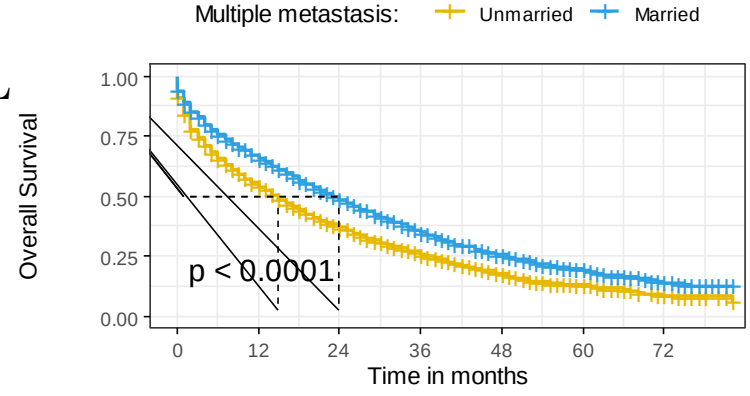

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