

# Population-based study of effectiveness of neoadjuvant radiotherapy on survival in US rectal cancer patients according to age

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## **SUPPLEMENTARY TABLE, FIGURE LEGENDS AND ABERRATION**

**Supplementary Table S1:** HR and 95% CI of neoadjuvant radiation in subgroups of significant covariates.

**Supplementary Table S2:** Comparison of clinical characteristics between patients with or without neoadjuvant radiotherapy in younger.

**Supplementary Table S3:** Clinic pathological items of rectum cancer patients according to age groups.

**Supplementary Table S4:** Multivariate survival analysis of prognostic factors in stage II and III patients, respectively.

**Supplementary Figure 1:** Distribution and incidence of rectal cancer by age. A): Distribution in different age interval in our propensity score matched cohort. B): Percentage of rectal cancer patients in younger ( $\leq 50$ ) and older groups ( $> 50$ ). C): Trend of incidence rates (per 100,000) of rectal cancer in younger group (read solid line) and older groups (blue dotted line) from 1992 to 2012.

**Supplementary Figure 2:** Disease-specific Survival curves of neoadjuvant radiation in all significant covariates group. A1~A4: 5 year disease specific survival curves between neoadjuvant radiation and control in four different grade groups(A1:well;A2:moderately;A3:Poorly;A4: undifferentiated). B1~B2: 5 year disease specific survival curves between neoadjuvant radiation and control in different lymph node resected groups(B1: $> 12$ ;B2: $\leq 12$ ). C1~C2: 5 year disease specific survival curves between neoadjuvant radiation and control in different histological type groups(C1:Mucinous;C2: Non-mucinous). D1~D2: 5 year disease specific survival curves between neoadjuvant radiation and control in different tumor size groups (D1: $> 5$ ;C2: $\leq 5$ ). 5 year disease specific survival curves between neoadjuvant radiation and control in different age groups((E1: $\leq 50$ ;E2: $> 50$ )).

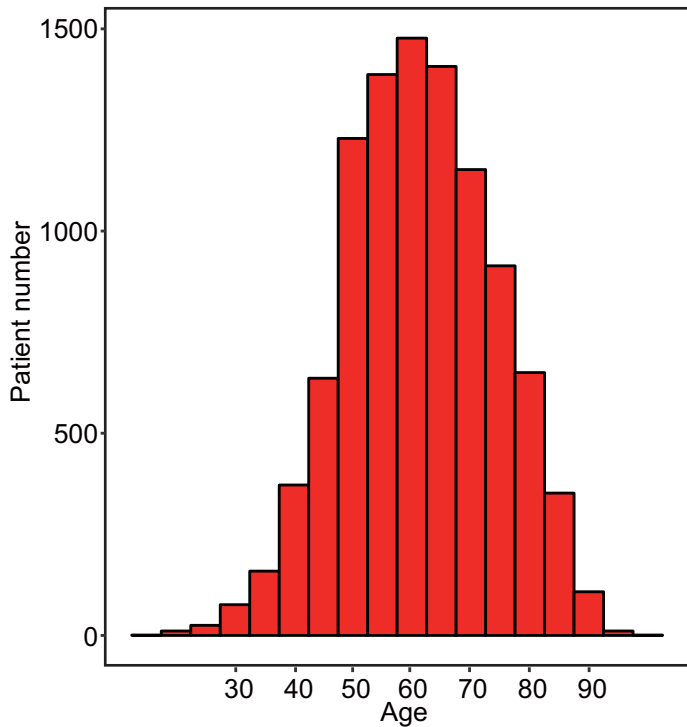
**Supplementary Figure 3:** Cancer-specific Survival curves of neoadjuvant radiation for short-term( $\leq 3$ , ST) and long term( $> 3$ , LT) group in younger and older patients. A) Cancer-specific survival for ST in younger patients. B) Cancer-specific survival for ST in older patients. C) Cancer-specific survival for LT in younger patients. D) Cancer-specific survival for LT in older patients. All figures also report HR of neoadjuvant radiation in different situation.

### **Aberration**

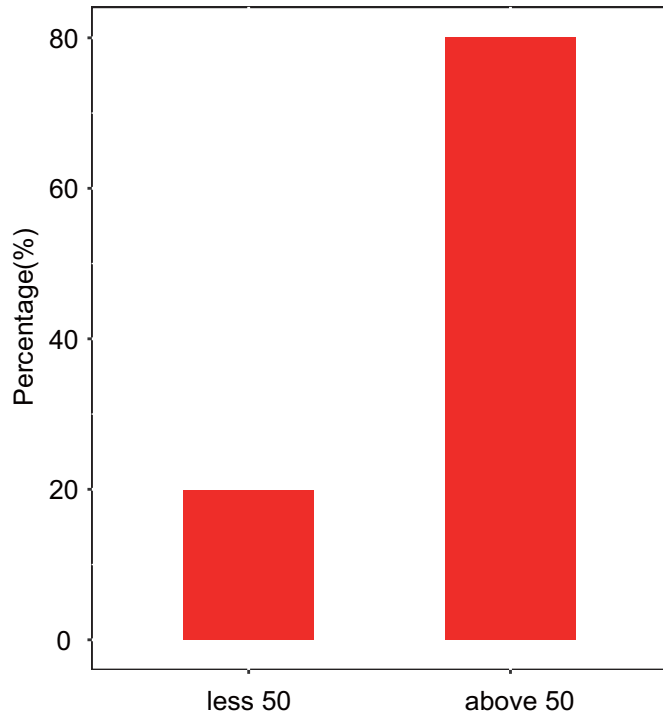
SEER	Surveillance, Epidemiology, and End Result
MSI	MicroSatellite Instability
CRC	ColoRectal Cancer
S.D	Standardized Difference

CSS	Cancer-Specific Survival
RCTs	Randomized Controlled Trials
TME	Total Mesorectal Excision
HR	Hazard Ratio
RR	Risk Ratio

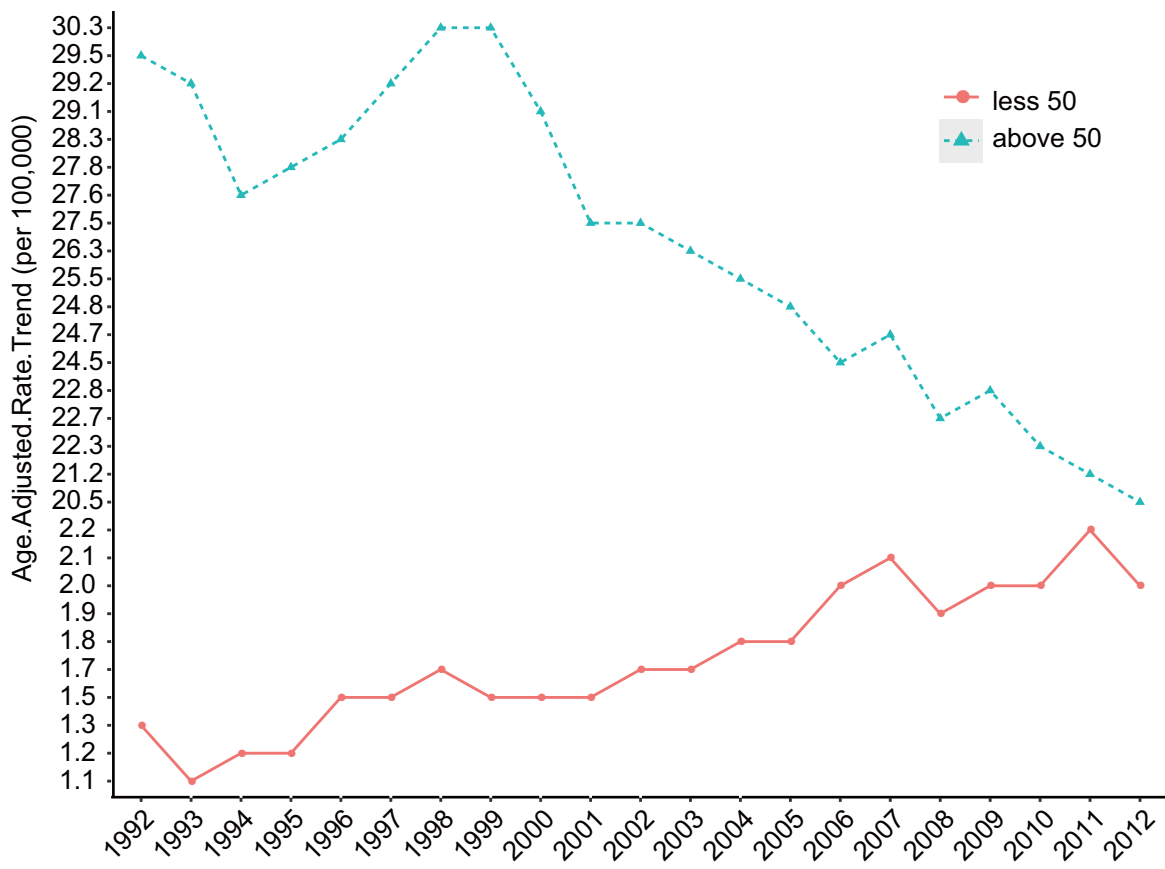
A



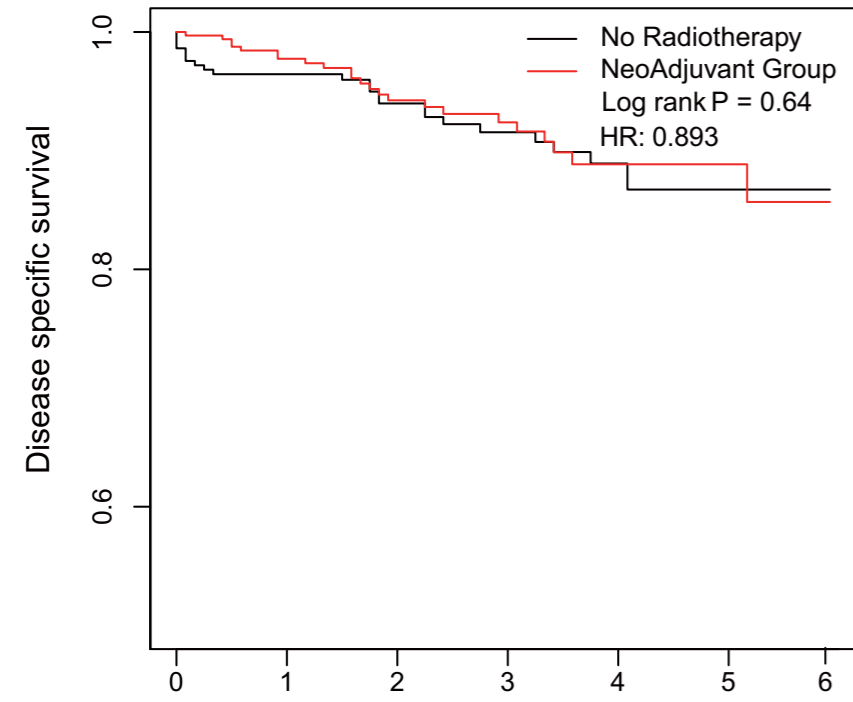
B



C

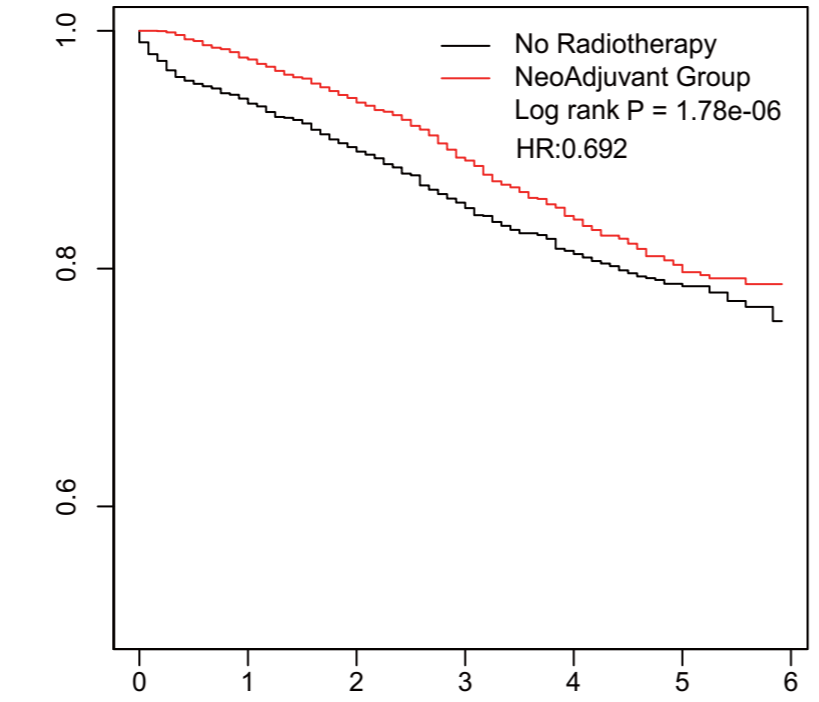


A1 Grade: Well



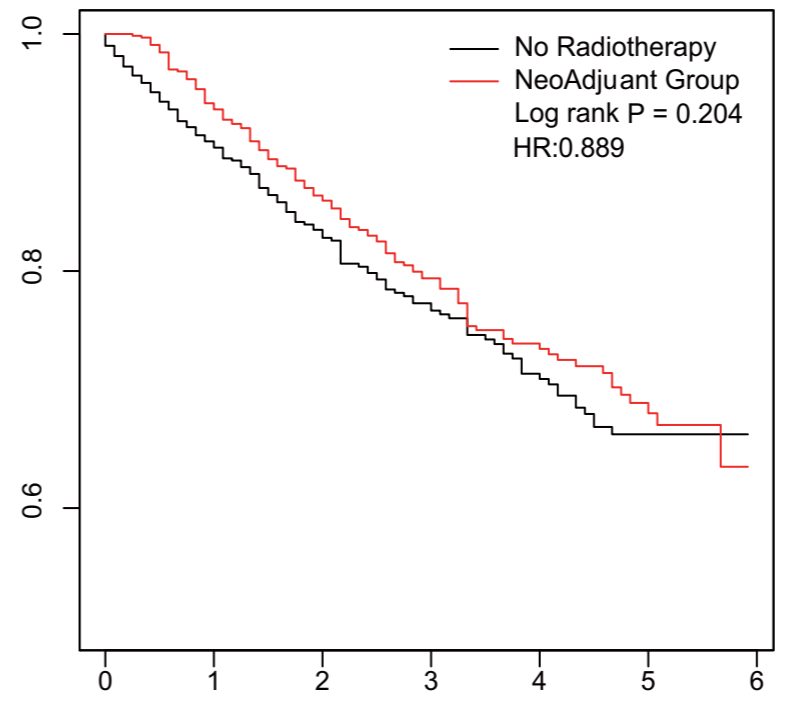
No. at risk						
No Radiotherapy	291	226	176	121	87	37
NeoAdjuvant Group	340	276	182	127	72	36

A2 Grade: Moderately



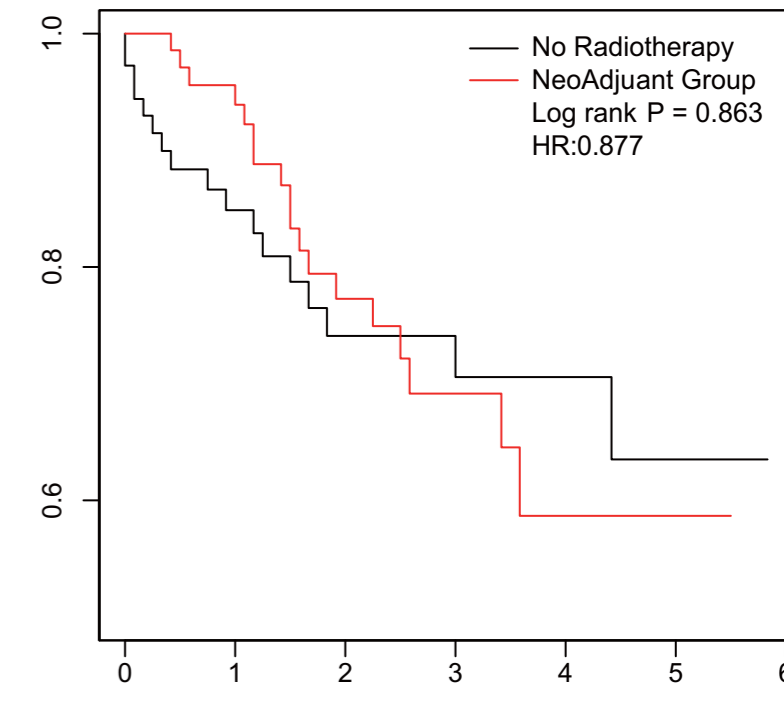
No. at risk						
No Radiotherapy	3917	2880	2147	1475	895	382
NeoAdjuvant Group	3881	2959	2188	1422	826	389

A3 Grade: Poorly



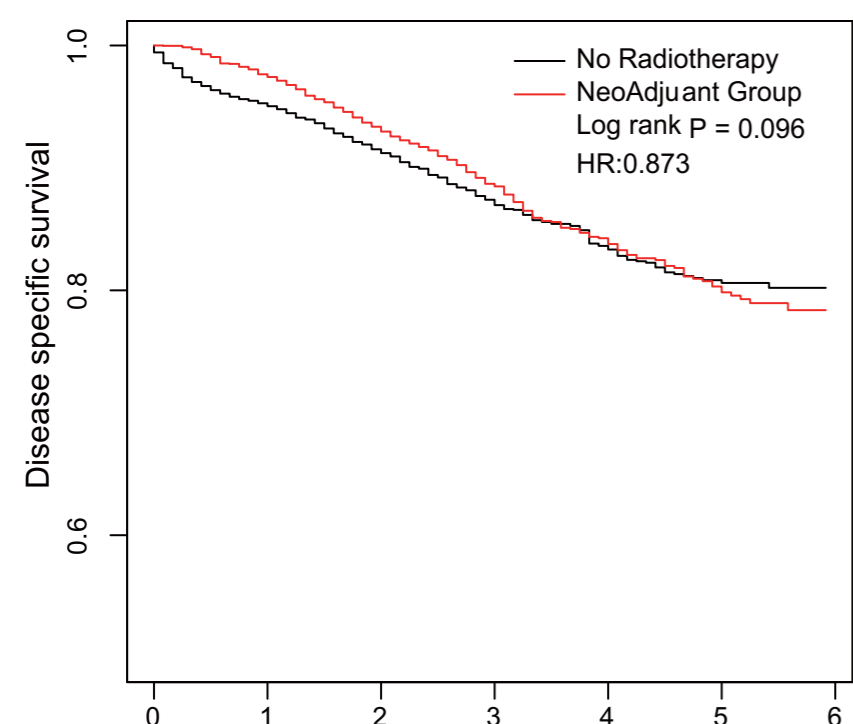
No. at risk						
No Radiotherapy	703	515	369	250	160	83
NeoAdjuvant Group	686	545	399	277	165	79

A4 Grade: Undifferentiated



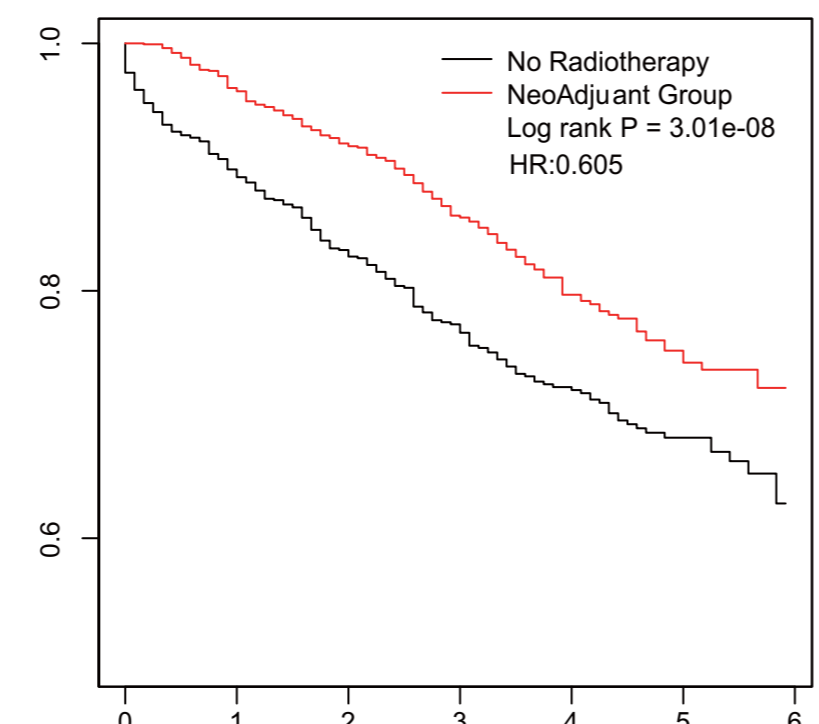
No. at risk						
No Radiotherapy	73	47	31	21	13	8
NeoAdjuvant Group	77	57	35	18	8	2

B1 Lymph node resected(> 12)



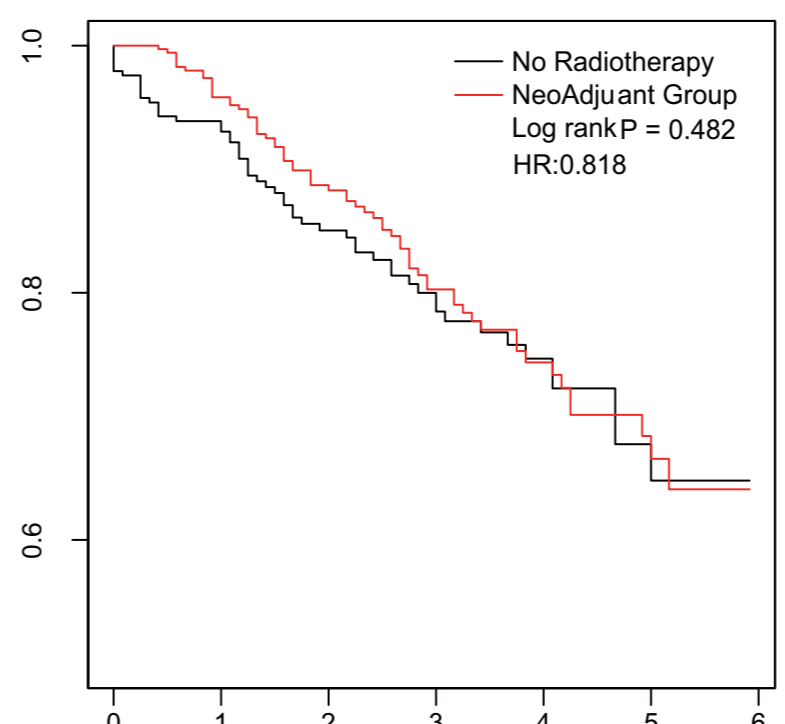
No. at risk						
No Radiotherapy	3712	2755	2052	1394	847	356
NeoAdjuvant Group	3456	2630	1893	1241	707	336

B2 Lymph node resected(<= 12)



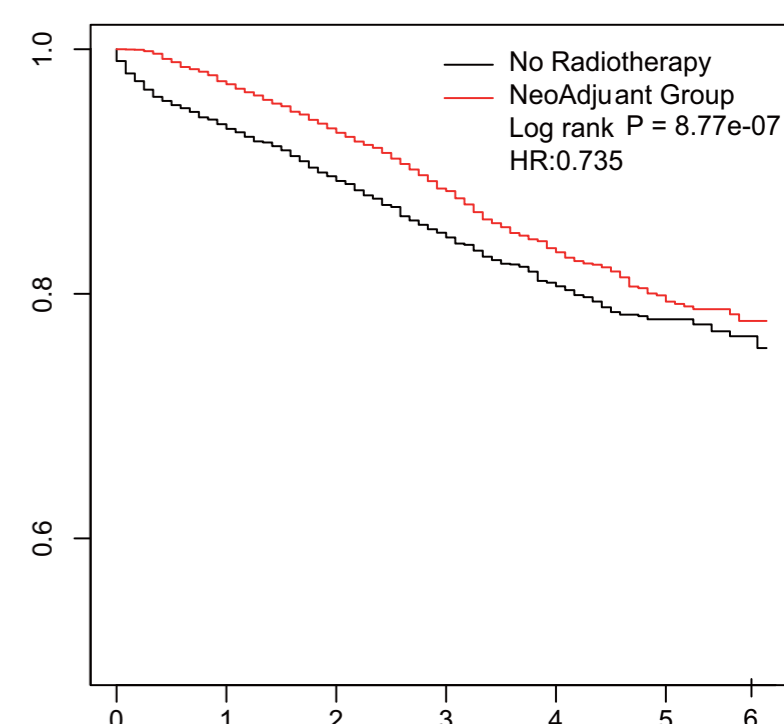
No. at risk						
No Radiotherapy	1181	853	630	454	300	150
NeoAdjuvant Group	1360	1089	819	542	334	155

C1 Histological type:Mucinous



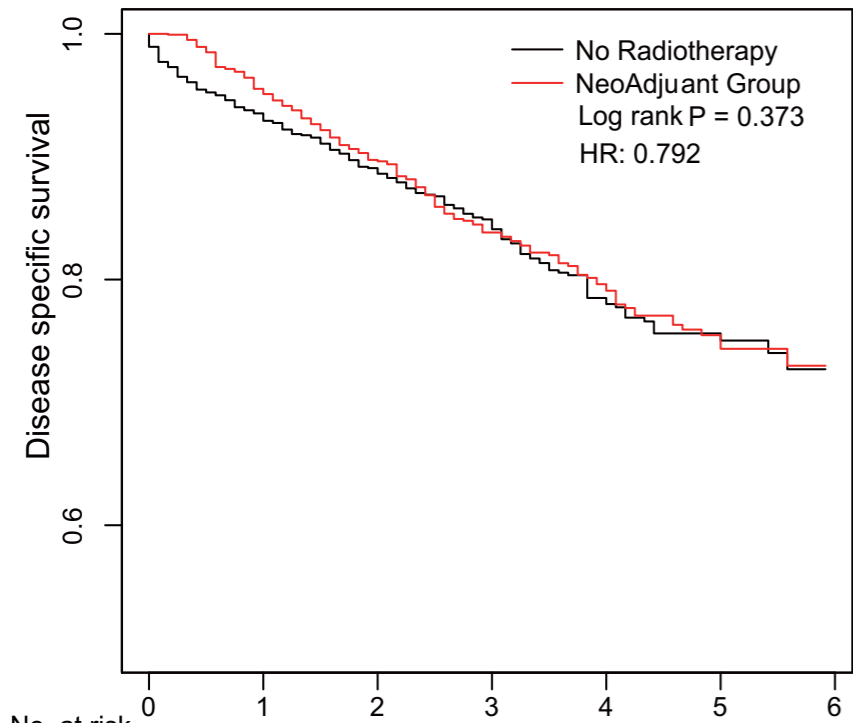
No. at risk						
No Radiotherapy	291	221	152	106	64	23
NeoAdjuvant Group	373	302	210	133	75	37

C2 Histological type:Non-mucinous



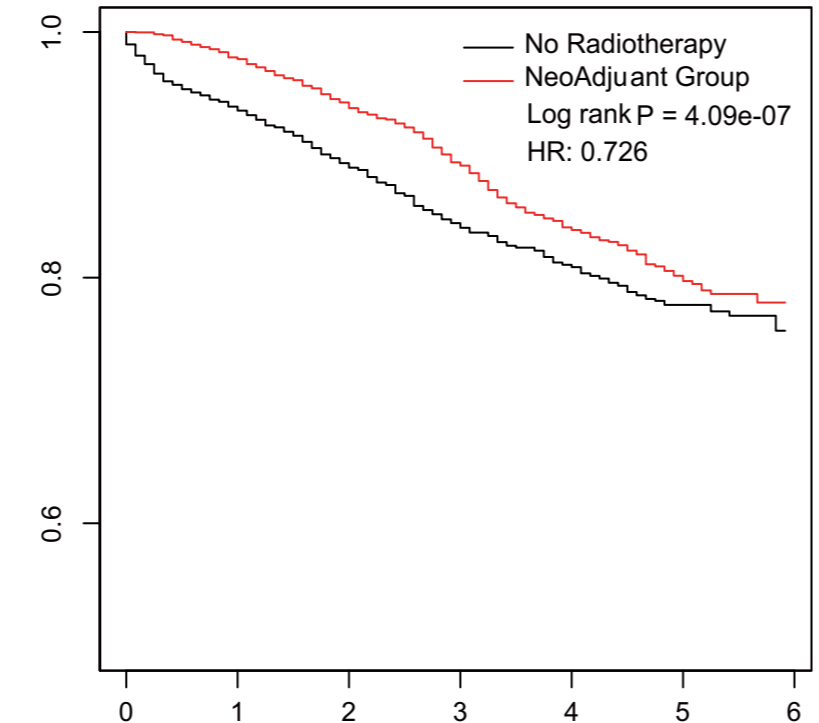
No. at risk						
No Radiotherapy	4658	3424	2558	1750	1086	486
NeoAdjuvant Group	4585	3514	2582	1702	993	468

D1 Tumor Size(> 5cm)



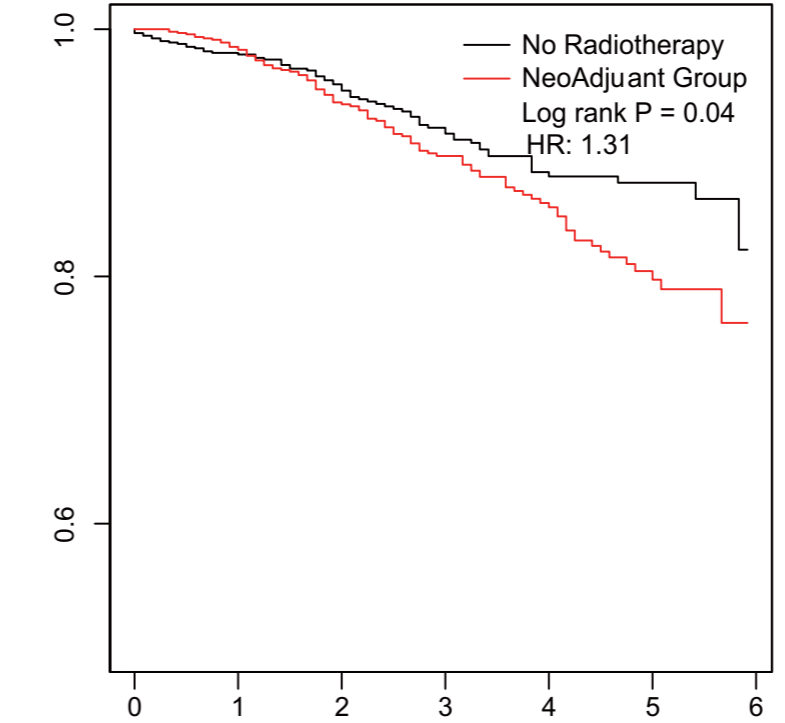
No. at risk						
No Radiotherapy	1517	1083	783	531	317	130
NeoAdjuvant Group	1519	1122	773	500	300	136

D2 Tumor Size(<= 5cm)



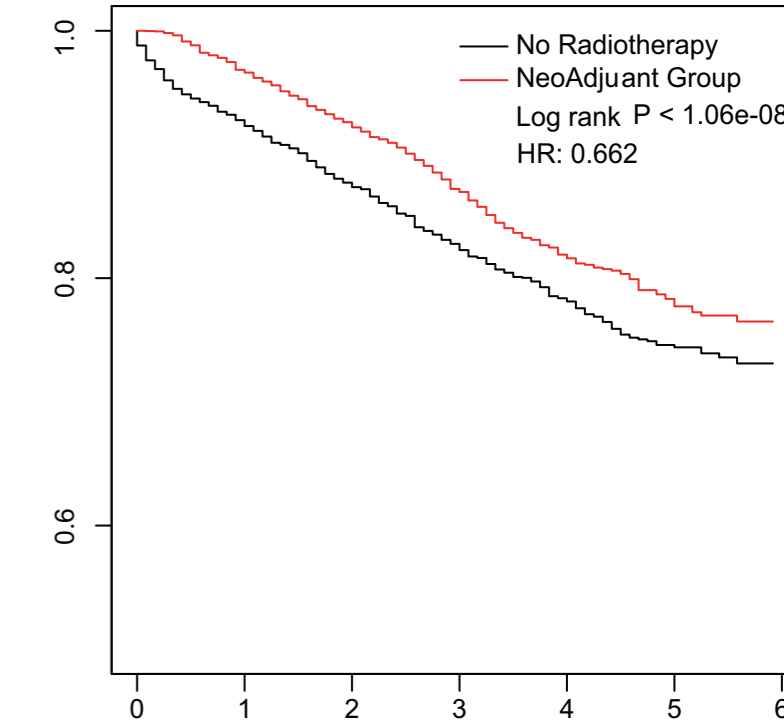
No. at risk						
No Radiotherapy	3467	2585	1940	1336	838	380
NeoAdjuvant Group	3465	2715	2031	1344	771	370

E1 Age(<= 50)



No. at risk						
No Radiotherapy	956	754	563	386	253	116
NeoAdjuvant Group	1027	827	601	408	246	116

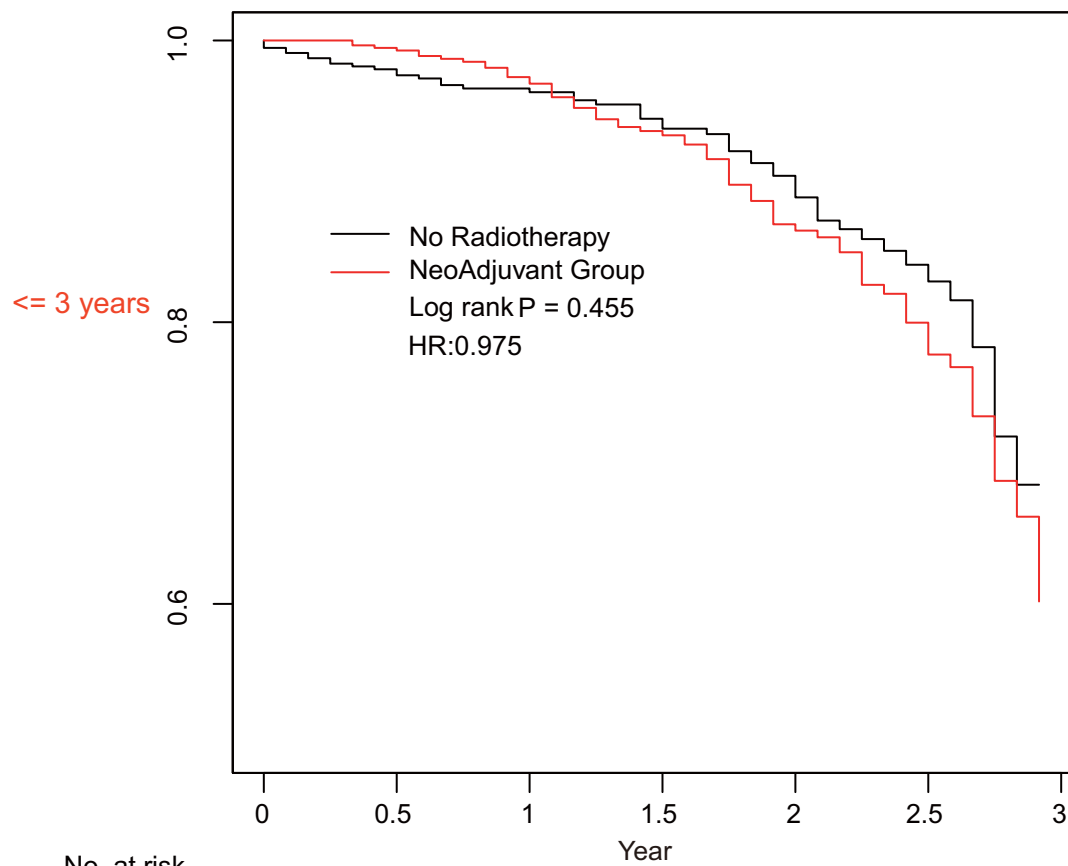
E2 Age(> 50)



No. at risk						
No Radiotherapy	4028	2914	2160	1481	902	394
NeoAdjuvant Group	3957	3010	2203	1436	825	390

Younger

A

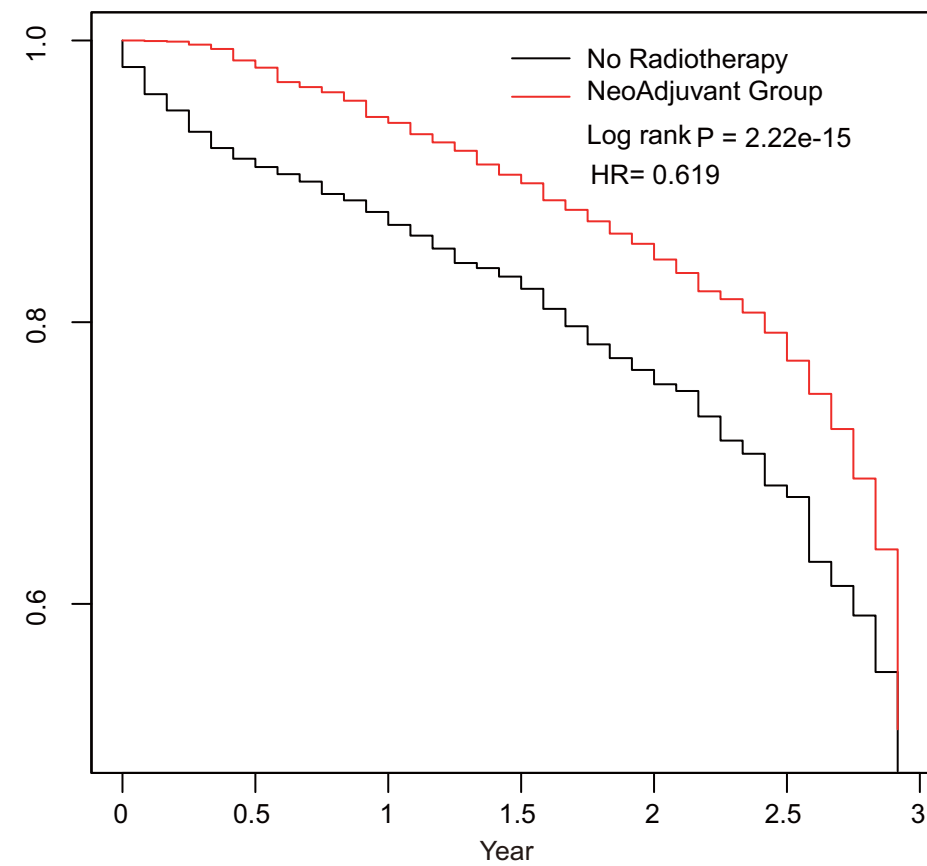


No. at risk

No Radiotherapy	570	460	368	268	177	71
NeoAdjuvant Group	619	536	419	308	193	106

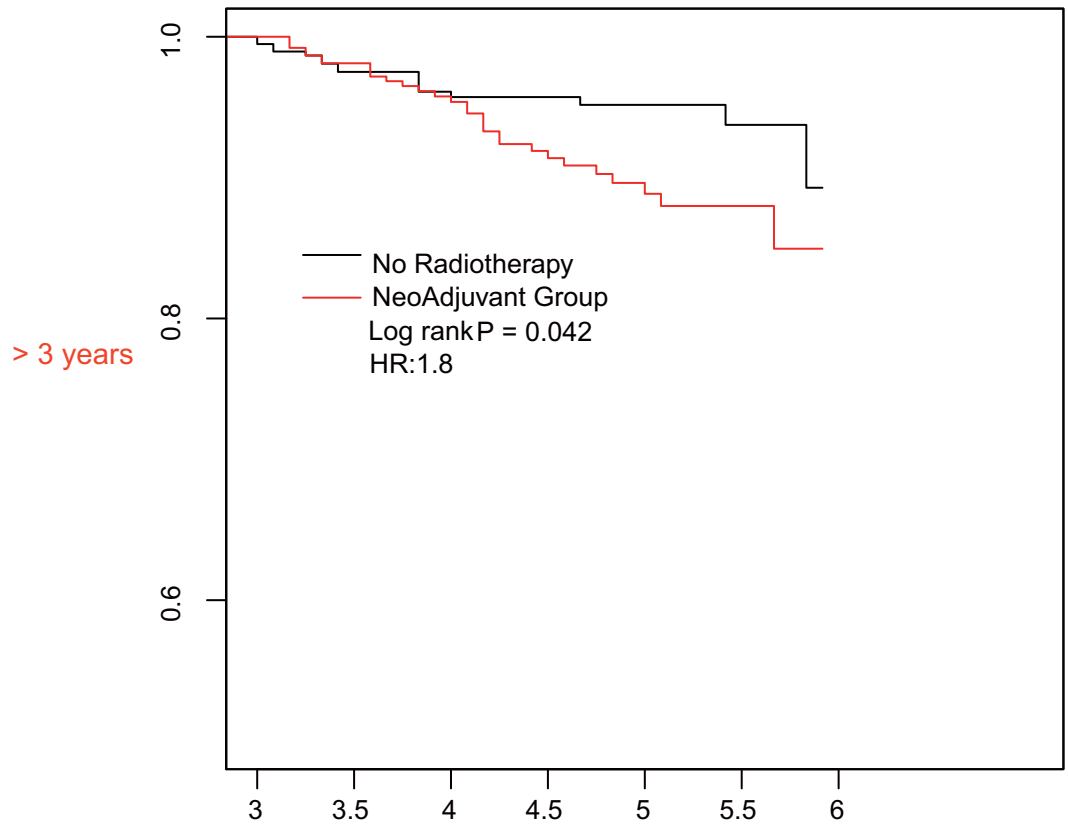
Older

B



	2547	1864	1433	1055	679	334
	2521	2113	1574	1190	767	399

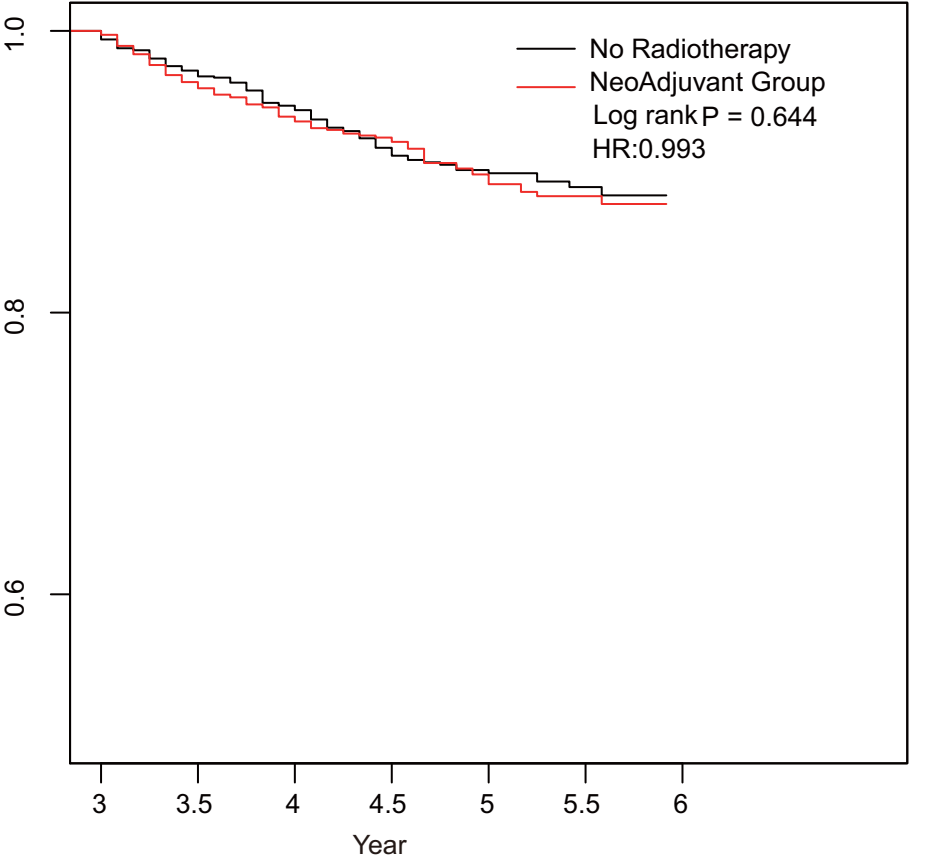
C



No. at risk

No Radiotherapy	386	320	253	195	116	60
NeoAdjuvant Group	408	323	246	179	116	54

D



	1481	1174	902	652	394	184
	1436	1101	825	605	390	195