

Supplementary Materials

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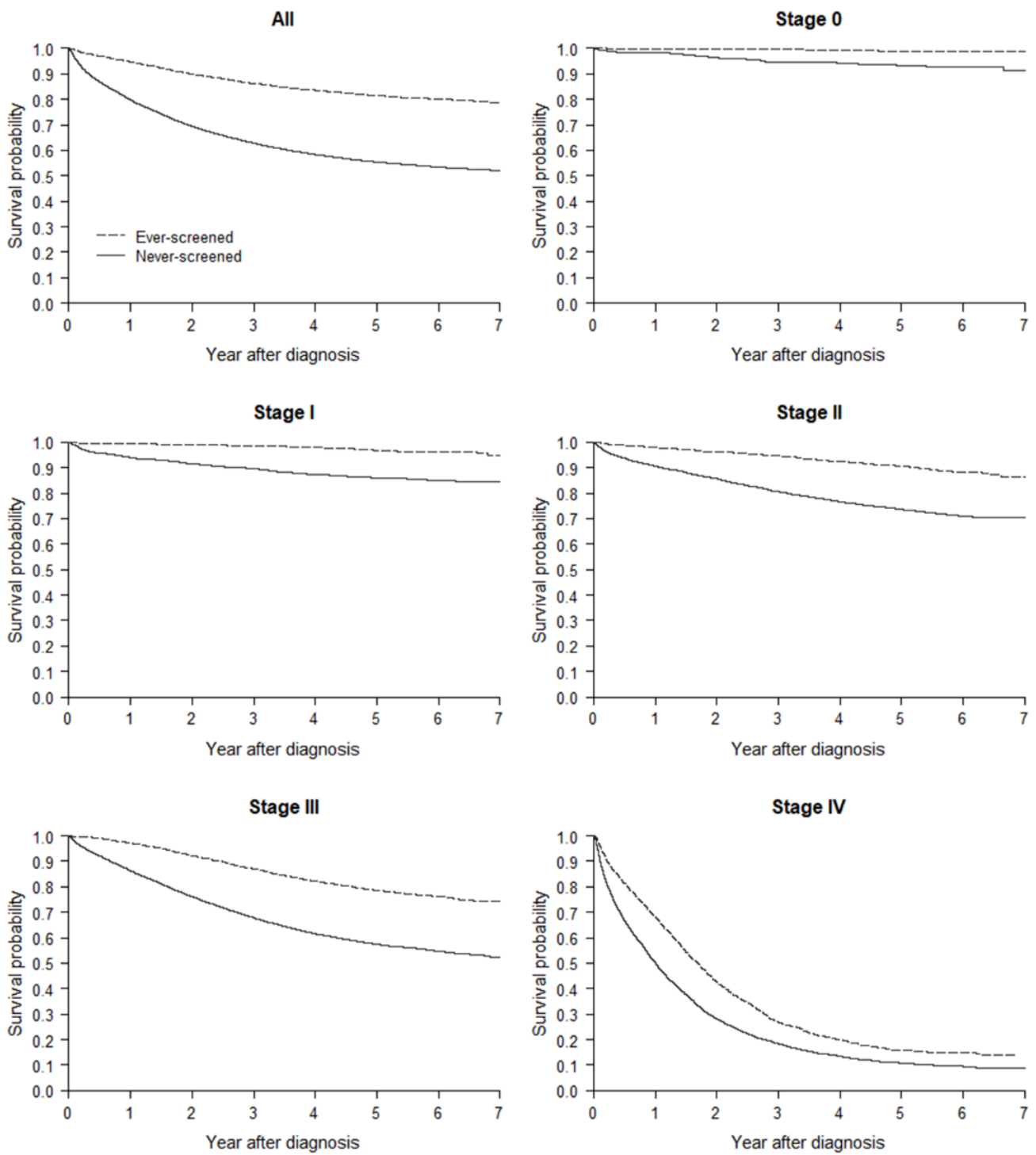
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Supplementary Figure S1. Survival of Ever-screened and Never-screened Colorectal Cancer Patients.

Supplementary Table S1. Hazard Rates and Hazard Ratios of Colorectal Cancer Death by Ever-screened and Never-screened Patients.

Screening history	Number of Patients (%)	Person-years	Number of death	Hazard rates, per 100 person-years	Crude hazard ratio (95%CI) ^a	Adjusted hazard ratio (95%CI) ^b
All ^a						
Never-screened	18540 (57.8)	60562.0	7699	12.7	1.00 (Reference)	1.00 (Reference)
Ever-screened	13559 (42.2)	62270.3	2491	4.0	0.34 (0.32 – 0.35)	0.68 (0.65 – 0.72)
Stage 0 ^b						
Never-screened	1044 (31.4)	4598.8	63	1.4	1.00 (Reference)	1.00 (Reference)
Ever-screened	2279 (68.6)	11816.4	24	0.2	0.15 (0.09 – 0.24)	0.28 (0.15 – 0.54)
Stage I ^b						
Never-screened	2524 (40.2)	10799.1	327	3.0	1.00 (Reference)	1.00 (Reference)
Ever-screened	3755 (59.8)	19404.9	125	0.6	0.22 (0.18 – 0.27)	0.54 (0.40 – 0.72)
Stage II ^b						
Never-screened	4498 (65.9)	18109.5	1120	6.2	1.00 (Reference)	1.00 (Reference)
Ever-screened	2326 (34.1)	11417.4	233	2.0	0.34 (0.29 – 0.39)	0.58 (0.49 – 0.69)
Stage III ^b						
Never-screened	5655 (61.8)	20137.8	2257	11.2	1.00 (Reference)	1.00 (Reference)
Ever-screened	3490 (38.2)	16129.5	746	4.6	0.42 (0.39 – 0.46)	0.60 (0.55 – 0.67)
Stage IV ^b						
Never-screened	4819 (73.8)	6916.8	3932	56.8	1.00 (Reference)	1.00 (Reference)
Ever-screened	1709 (26.2)	3502.1	1363	38.9	0.71 (0.67 – 0.75)	0.85 (0.79 – 0.91)

Abbreviations: AJCC, The American Joint Committee on Cancer

^a Adjusted for colorectal cancer AJCC stage (0, I, II, III, and IV), colorectal cancer site, hospital levels, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

^b Adjusted for colorectal cancer site, hospital for diagnosis, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

Supplementary Table S2. Adjusted Hazard Ratios of the Screening History Using Different Colorectal Cancer Staging Systems.

Screening history	Adjusted hazard ratio (95%CI) ^a using		
	AJCC (including substages) ^b	Dukes ^b	SEER ^b
FIT-positive			
With a follow-up examination	1.00 (Reference)	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.34 (1.21–1.49)	1.41 (1.27–1.56)	1.45 (1.30–1.61)
FIT-negative	1.57 (1.43–1.72)	1.63 (1.49–1.79)	1.65 (1.50–1.81)
Never-screened	1.66 (1.55–1.77)	1.77 (1.66–1.90)	1.84 (1.72–1.97)

Abbreviations: FIT, fecal immunochemical test; AJCC, The American Joint Committee on Cancer; SEER, The Surveillance, Epidemiology and End Results

^a Adjusted for colorectal cancer stage, colorectal cancer site, hospital levels, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

^b AJCC substages (stage 0, I, II-A, II-B, II-C, III-A, III-B, III-C, IV-A, IV-B, and IV-C), Dukes' stage (A, B, C, and D), and SEER stage (localized, regional, and distant)

Supplementary Table S3. Hazard Rates and Hazard Ratios for Colorectal Cancer Death in Different Categories of Time to Diagnosis from the Last Fecal Immunochemical Testing among the Ever-screened Patients.

Time to diagnosis from the last FIT	Number of patients (%)	Person-years	Number of death	Hazard rates, per 100 person-years	Crude hazard ratio (95%CI) ^a	Adjusted hazard ratio (95%CI) ^b
FIT-positive, with a follow-up examination						
≤ 3 months	6898 (21.5)	33726.4	918	2.7	1.00 (Reference)	1.00 (Reference)
3-6 months	734 (2.3)	3529.3	86	2.4	0.89 (0.71–1.11)	1.03 (0.83–1.29)
6-12 months	410 (1.3)	1894.8	62	3.3	1.18 (0.91–1.53)	0.95 (0.73–1.23)
> 12 months	755 (2.4)	3340.0	155	4.6	1.66 (1.40–1.97)	1.31 (1.10–1.55)
FIT-positive, without a follow-up examination						
≤ 3 months	421 (1.3)	1873.2	94	5.0	1.82 (1.48–2.26)	1.44 (1.16–1.78)
3-6 months	176 (0.6)	730.6	49	6.7	2.37 (1.78–3.16)	1.52 (1.14–2.03)
6-12 months	307 (1.0)	1329.0	71	5.3	1.91 (1.50–2.43)	1.28 (1.00–1.63)
> 12 months	922 (2.9)	3591.8	291	8.1	2.79 (2.44–3.18)	1.48 (1.30–1.69)
FIT-negative						
≤ 3 months	237 (0.7)	905.9	82	9.1	3.16 (2.52–3.96)	2.29 (1.82–2.87)
3-6 months	168 (0.5)	736.9	34	4.6	1.65 (1.18–2.33)	1.57 (1.12–2.22)
6-12 months	353 (1.1)	1471.5	100	6.8	2.40 (1.96–2.95)	1.84 (1.50–2.26)
> 12 months	2178 (6.8)	9140.9	549	6.0	2.12 (1.90–2.35)	1.59 (1.43–1.77)
Never-screened	18540 (57.8)	60562.0	7699	12.7	4.27 (3.99–4.58)	1.82 (1.69–1.96)

Abbreviations: FIT, fecal immunochemical test; AJCC, The American Joint Committee on Cancer

^a Simple Cox regression model

^b Adjusted for colorectal cancer AJCC stage (0, I, II, III, and IV), colorectal cancer site, hospital levels, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression model

Supplementary Table S4. Comparison of the Effect of Correction for Competing Risk, Lead-time Bias, and Length Bias.

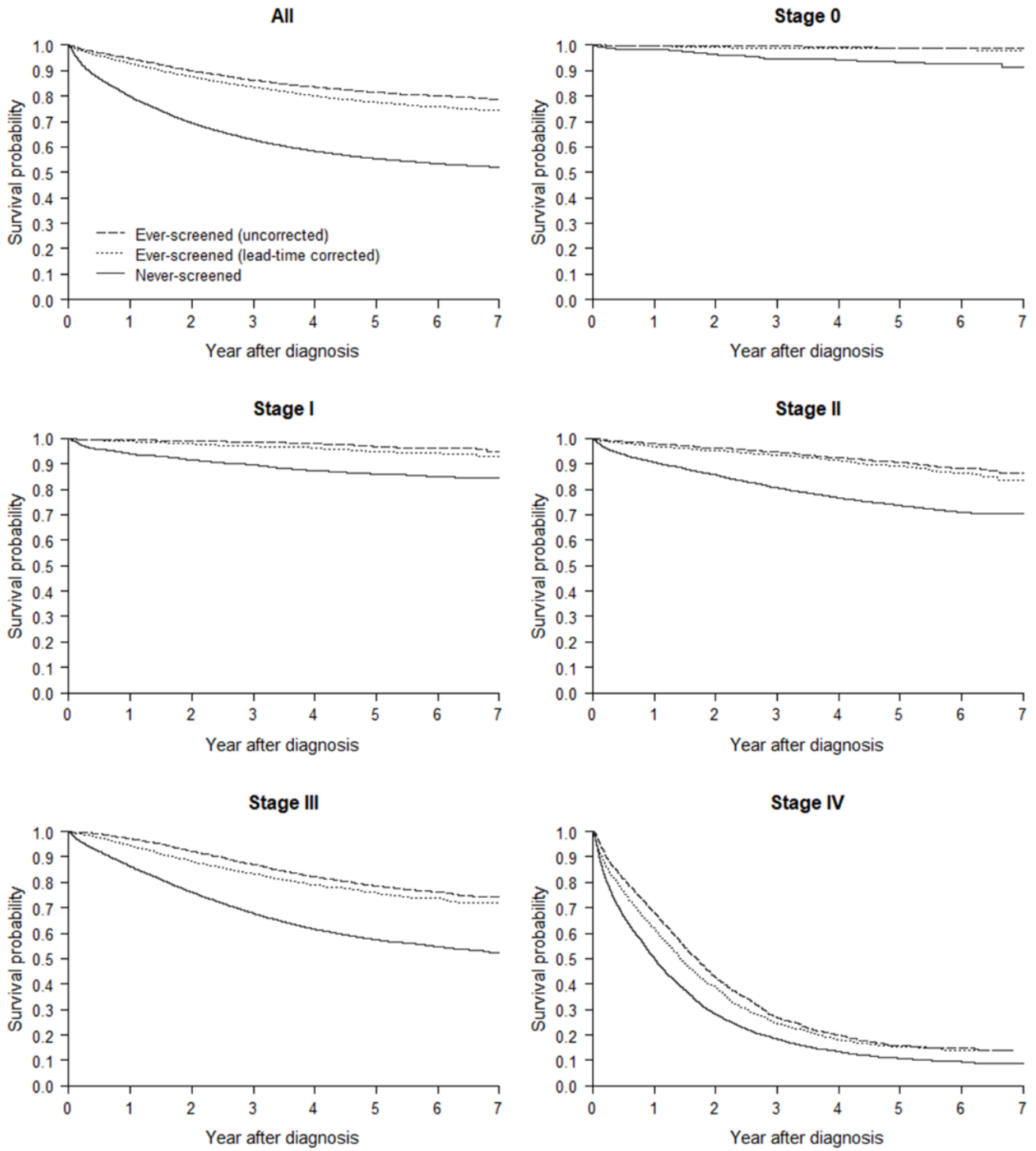
Models	Crude hazard ratio (95%CI)^a	Adjusted hazard ratio (95%CI)^b
Model 1 (Cox hazards model)		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	2.24 (2.02 – 2.49)	1.40 (1.26 – 1.56)
FIT-negative		
Never-screened	4.06 (3.82 – 4.31)	1.76 (1.65 – 1.89)
Model 2 (Fine-Gray model)		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	2.19 (1.98 – 2.43)	1.38 (1.25 – 1.52)
FIT-negative		
Never-screened	3.70 (3.48 – 3.92)	1.69 (1.58 – 1.80)
Model 3 (lead-time bias corrected from model 1)		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.71 (1.54 – 1.89)	1.10 (0.98 – 1.21)
FIT-negative		
Never-screened	3.08 (2.90 – 3.27)	1.37 (1.28 – 1.47)
Model 4 (length bias corrected from model 1)		
FIT-positive		
With a follow-up examination	1.00 (Reference)	
Without a follow-up examination	1.87 (1.18 – 2.15) ^c	
FIT-negative		
Never-screened	3.53 (3.15 – 3.62) ^c	

Abbreviations: AJCC, The American Joint Committee on Cancer; FIT, fecal immunochemical test

^a Simple Cox regression model

^b Adjusted for colorectal cancer AJCC stage, colorectal cancer site, hospital levels, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression model

^c Model for approximate relative hazard for length bias correction, absolute value range provided from sensitivity analysis instead of 95% confidence intervals (correspond to Supplementary Table 7 to Table 9)



Supplementary Figure S2. Survival of Ever-screened and Never-screened Colorectal Cancer Patients, Before and After Correction for Lead-time Bias.

Supplementary Table S5. Sensitivity Analysis for Length Bias Correction Providing Relative Risk and Approximate Relative Hazard of Those FIT-positive without a Follow-up Examination Compared to Those FIT-positive with a Follow-up Examination.

Relative screen detection and fatality rate	Mixing fraction	Screen detection probability	Symptomatic tumor fatality rate	True relative risk ^a	Approximate relative hazard ^b
0.90	0.90	0.82	0.28	1.98	2.15
0.90	0.80	0.81	0.28	1.97	2.15
0.90	0.70	0.80	0.28	1.97	2.14
0.90	0.60	0.79	0.28	1.96	2.14
0.90	0.50	0.78	0.29	1.96	2.14
0.80	0.90	0.81	0.28	1.94	2.11
0.80	0.80	0.79	0.28	1.90	2.06
0.80	0.70	0.77	0.28	1.88	2.03
0.80	0.60	0.75	0.28	1.86	2.02
0.80	0.50	0.74	0.29	1.86	2.02
0.70	0.90	0.79	0.27	1.87	2.01
0.70	0.80	0.76	0.27	1.78	1.91
0.70	0.70	0.73	0.27	1.72	1.85
0.70	0.60	0.71	0.27	1.69	1.81
0.70	0.50	0.68	0.28	1.68	1.80
0.60	0.90	0.78	0.26	1.75	1.87
0.60	0.80	0.73	0.25	1.60	1.69
0.60	0.70	0.69	0.25	1.50	1.58
0.60	0.60	0.65	0.26	1.45	1.52
0.60	0.50	0.62	0.27	1.44	1.51
0.50	0.90	0.75	0.24	1.58	1.67
0.50	0.80	0.69	0.23	1.36	1.41
0.50	0.70	0.64	0.22	1.24	1.27
0.50	0.60	0.59	0.23	1.17	1.20
0.50	0.50	0.55	0.24	1.15	1.18

^a True relative risk (median, range): 1.75 (1.15 - 1.98)

^b Approximate relative hazard (median, range): 1.87 (1.18 - 2.15)

Supplementary Table S6. Sensitivity Analysis for Length Bias Correction Providing Relative Risk and Approximate Relative Hazard of Those FIT-negative Compared to Those FIT-positive with a Follow-up Examination.

Relative screen detection and fatality rate	Mixing fraction	Screen detection probability	Symptomatic tumor fatality rate	True relative risk ^a	Approximate relative hazard ^b
0.90	0.90	0.74	0.26	1.87	2.01
0.90	0.80	0.73	0.26	1.86	2.01
0.90	0.70	0.73	0.27	1.86	2.00
0.90	0.60	0.72	0.27	1.86	2.00
0.90	0.50	0.71	0.27	1.86	2.00
0.80	0.90	0.73	0.26	1.84	1.98
0.80	0.80	0.71	0.27	1.82	1.96
0.80	0.70	0.70	0.27	1.80	1.94
0.80	0.60	0.68	0.27	1.79	1.93
0.80	0.50	0.67	0.28	1.79	1.93
0.70	0.90	0.72	0.26	1.79	1.92
0.70	0.80	0.69	0.26	1.73	1.86
0.70	0.70	0.66	0.27	1.69	1.81
0.70	0.60	0.64	0.27	1.67	1.79
0.70	0.50	0.62	0.28	1.66	1.78
0.60	0.90	0.70	0.25	1.71	1.83
0.60	0.80	0.66	0.25	1.60	1.70
0.60	0.70	0.62	0.26	1.53	1.62
0.60	0.60	0.59	0.26	1.49	1.58
0.60	0.50	0.56	0.27	1.48	1.57
0.50	0.90	0.68	0.24	1.59	1.68
0.50	0.80	0.62	0.24	1.42	1.48
0.50	0.70	0.58	0.24	1.32	1.37
0.50	0.60	0.54	0.25	1.27	1.31
0.50	0.50	0.50	0.26	1.25	1.29

^a True relative risk (median, range): 1.71 (1.25 - 1.87)

^b Approximate relative hazard (median, range): 1.83 (1.29 - 2.01)

Supplementary Table S7. Sensitivity Analysis for Length Bias Correction Providing Relative Risk and Approximate Relative Hazard of Never-screened Compared to Those FIT-Positive with a Follow-up Examination.

Relative screen detection and fatality rate	Mixing fraction	Screen detection probability	Symptomatic tumor fatality rate	True relative risk ^a	Approximate relative hazard ^b
0.90	0.90	0.32	0.42	2.99	3.59
0.90	0.80	0.31	0.42	2.98	3.60
0.90	0.70	0.31	0.43	2.98	3.60
0.90	0.60	0.31	0.43	2.98	3.61
0.90	0.50	0.30	0.44	2.98	3.62
0.80	0.90	0.31	0.42	2.97	3.58
0.80	0.80	0.31	0.43	2.96	3.58
0.80	0.70	0.30	0.44	2.95	3.58
0.80	0.60	0.29	0.45	2.94	3.60
0.80	0.50	0.29	0.46	2.94	3.62
0.70	0.90	0.31	0.43	2.94	3.55
0.70	0.80	0.30	0.44	2.90	3.52
0.70	0.70	0.29	0.45	2.88	3.52
0.70	0.60	0.27	0.47	2.86	3.53
0.70	0.50	0.27	0.48	2.86	3.56
0.60	0.90	0.30	0.43	2.89	3.48
0.60	0.80	0.28	0.44	2.81	3.42
0.60	0.70	0.27	0.46	2.76	3.39
0.60	0.60	0.25	0.48	2.73	3.39
0.60	0.50	0.24	0.50	2.72	3.43
0.50	0.90	0.29	0.43	2.81	3.38
0.50	0.80	0.27	0.45	2.68	3.24
0.50	0.70	0.25	0.47	2.59	3.17
0.50	0.60	0.23	0.49	2.54	3.15
0.50	0.50	0.21	0.53	2.53	3.20

^a True relative risk (median, range): 2.89 (2.53 - 2.99)

^b Approximate relative hazard (median, range): 3.53 (3.15 - 3.62)

Supplementary Table S8. Hazard Rates and Cox Regression Model Adjustment for Clinicopathological Variables.

Variables	Number of patients (%)	Person-years	Number of death	Hazard rates (per 100 person-years)	Crude hazard ratio (95%CI) ^a	Adjusted hazard ratio (95%CI) ^b
Screening history						
FIT-positive						
With a follow-up examination	8797 (27.4)	42490.4	1221	2.9	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1826 (5.7)	7524.6	505	6.7	2.24 (2.02 – 2.49)	1.10 (0.94 – 1.29)
FIT-negative						
Never-screened	18540 (57.8)	60562.0	7699	12.7	4.06 (3.82 – 4.31)	1.39 (1.26 – 1.54)
Colorectal cancer stage (AJCC) ^c						
0	3323 (10.4)	16415.1	87	0.5	1.00 (Reference)	1.00 (Reference)
I	6279 (19.6)	30203.9	452	1.5	2.82 (2.24 – 3.55)	1.86 (0.82 – 4.22)
II	6824 (21.3)	29526.9	1353	4.6	8.49 (6.83 – 10.54)	6.36 (2.83 – 14.27)
III	9145 (28.5)	36267.4	3003	8.3	15.08 (12.18 – 18.66)	12.65 (5.64 – 28.40)
IV	6528 (20.3)	10418.9	5295	50.8	79.40 (64.22 – 98.18)	46.10 (20.50 – 103.63)
Grade						
1	2666 (10.1)	12123.4	378	3.1	1.00 (Reference)	1.00 (Reference)
2	21316 (80.5)	84928.2	6430	7.6	2.35 (2.12 – 2.61)	1.23 (1.05 – 1.44)
3	2262 (8.5)	6449.6	1170	18.1	5.32 (4.74 – 5.97)	1.54 (1.29 – 1.85)
4	250 (0.9)	829.4	108	13.0	3.92 (3.17 – 4.86)	1.36 (1.02 – 1.82)
Tumor size (mm)						
1 - 50	19005 (70.8)	78914.6	4920	6.2	1.00 (Reference)	
51 - 100	7342 (27.3)	24741.7	3129	12.6	1.95 (1.86 – 2.04)	
101+	509 (1.9)	1497.2	252	16.8	2.55 (2.25 – 2.90)	
Tumor size (continuous) (per mm)					1.02 (1.02 – 1.02)	1.00 (1.00 – 1.01)
Lymph node ratio						
0 - 0.24	19439 (85.4)	85939.6	4138	4.8	1.00 (Reference)	
0.25+	3332 (14.6)	9419.5	2045	21.7	4.25 (4.03 – 4.48)	
Lymph node ratio (continuous)					21.25 (19.47 – 23.19)	4.28 (3.73 – 4.90)
Circumferential resection margin (mm)						
<0.1	1249 (7.0)	3413.7	767	22.5	1.00 (Reference)	
0.1 - 0.9	4826 (26.9)	20396.7	1199	5.9	0.27 (0.25 – 0.30)	
1.0 - 1.9	784 (4.4)	2951.1	305	10.3	0.48 (0.42 – 0.55)	
2.0 - 2.9	631 (3.5)	2486.2	215	8.6	0.40 (0.35 – 0.47)	
3.0 - 3.9	612 (3.4)	2513.0	197	7.8	0.37 (0.32 – 0.43)	
4.0 - 4.9	329 (1.8)	1414.7	94	6.6	0.31 (0.25 – 0.39)	

5.0+	9532 (53.1)	42458.9	1993	4.7	0.22 (0.20–0.24)	
Circumferential resection margin (per 0.1 mm)					1.00 (1.00–1.00)	1.00 (1.00–1.00)
Perineural invasion						
Without	16055 (71.1)	71852.4	3019	4.2	1.00 (Reference)	1.00 (Reference)
With	6523 (28.9)	22889.3	3002	13.1	3.00 (2.85–3.16)	1.44 (1.35–1.53)
Obstruction						
Without	21144 (71.0)	90272.8	4873	5.4	1.00 (Reference)	1.00 (Reference)
With	8618 (29.0)	26114.3	4293	16.4	2.81 (2.69–2.93)	1.33 (1.25–1.42)
Perforation						
Without	28748 (96.7)	113814.5	8553	7.5	1.00 (Reference)	1.00 (Reference)
With	985 (3.3)	2563.2	585	22.8	2.78 (2.55–3.02)	1.86 (1.67–2.08)
Chemotherapy						
Without (other therapies)	14539 (45.3)	60014.5	2850	4.7	1.00 (Reference)	1.00 (Reference)
With	15966 (49.7)	60197.1	6416	10.7	2.13 (2.04–2.23)	0.48 (0.44–0.51)
No therapy	1594 (5.0)	2620.6	924	35.3	6.12 (5.68–6.59)	1.03 (0.26–4.15)

Abbreviations: AJCC, The American Joint Committee on Cancer; FIT, fecal immunochemical test

Note: All these variables related to the patient were investigated at the time of colorectal cancer diagnosis.

^a Simple Cox regression model

^b Additionally adjusted for colorectal cancer AJCC stage (0, I, II, III, and IV), colorectal cancer site, hospital levels, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

Supplementary Table S9. Adjusted Hazard Ratios of the Screening History for Deaths due to Colorectal Cancer (CRC) and Other Causes (Non-CRC).

Screening history	Adjusted hazard ratio (95%CI) for	
	CRC	Non-CRC
All ^a		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.40 (1.26–1.56)	1.38 (1.16–1.63)
FIT-negative	1.63 (1.48–1.78)	1.28 (1.10–1.49)
Never-screened	1.76 (1.65–1.89)	1.68 (1.51–1.87)
Stage 0 ^b		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.48 (0.43–5.06)	0.97 (0.58–1.63)
FIT-negative	0.87 (0.29–2.62)	0.96 (0.67–1.38)
Never-screened	3.62 (1.79–7.30)	1.81 (1.36–2.41)
Stage I ^b		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.28 (0.72–2.26)	0.96 (0.64–1.45)
FIT-negative	1.26 (0.83–1.92)	0.99 (0.73–1.34)
Never-screened	1.83 (1.31–2.56)	1.59 (1.28–1.98)
Stage II ^b		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.79 (1.29–2.47)	1.48 (1.02–2.15)
FIT-negative	1.49 (1.10–2.03)	1.56 (1.11–2.18)
Never-screened	2.06 (1.66–2.56)	1.39 (1.09–1.78)
Stage III ^b		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.22 (1.00–1.49)	1.86 (1.36–2.54)
FIT-negative	1.70 (1.44–2.01)	1.49 (1.08–2.06)
Never-screened	1.93 (1.71–2.17)	1.85 (1.49–2.30)
Stage IV ^b		
FIT-positive		
With a follow-up examination	1.00 (Reference)	1.00 (Reference)
Without a follow-up examination	1.24 (1.08–1.42)	1.14 (0.71–1.84)
FIT-negative	1.40 (1.23–1.58)	1.35 (0.89–2.04)
Never-screened	1.36 (1.24–1.50)	1.42 (1.05–1.93)

Abbreviations: CRC, colorectal cancer; FIT, fecal immunochemical test; AJCC, The American Joint Committee on Cancer

^a Adjusted for colorectal cancer AJCC stage (0, I, II, III, and IV), colorectal cancer site, hospital levels, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

^b Adjusted for colorectal cancer site, hospital for diagnosis, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

Supplementary Table S10. Hazard Rates and Hazard Ratios of Colorectal Cancer Death by Screen-detected, Interval Cancer and Never-screened Patients.

Screening history	Number of patients (%)	Person-years	Number of death	Hazard rates, per 100 person-years	Crude hazard ratio (95%CI) ^a	Adjusted hazard ratio (95%CI) ^b
All (n=28197) ^a						
Screen-detected ^c	7390 (26.2)	36026.4	985	2.7	1.00 (Reference)	1.00 (Reference)
Interval cancer ^d	2267 (8.0)	9645.3	585	6.1	2.15 (1.94–2.38)	1.71 (1.54–1.90)
Never-screened	18540 (65.8)	60562.0	7699	12.7	4.25 (3.98–4.54)	1.89 (1.75–2.03)
Stage 0 (n=2791) ^b						
Screen-detected ^c	1377 (49.3)	7196.2	11	0.2	1.00 (Reference)	1.00 (Reference)
Interval cancer ^d	370 (13.3)	1921.2	3	0.2	1.02 (0.29–3.66)	0.95 (0.26–3.46)
Never-screened	1044 (37.4)	4598.8	63	1.4	8.82 (4.65–16.73)	4.57 (2.06–10.13)
Stage I (n=5370) ^b						
Screen-detected ^c	2289 (42.6)	11947.8	67	0.6	1.00 (Reference)	1.00 (Reference)
Interval cancer ^d	557 (10.4)	2846.5	26	0.9	1.62 (1.03–2.55)	1.36 (0.86–2.15)
Never-screened	2524 (47.0)	10799.1	327	3.0	5.23 (4.02–6.80)	2.13 (1.52–2.99)
Stage II (n=6081) ^b						
Screen-detected ^c	1226 (20.2)	6203.0	94	1.5	1.00 (Reference)	1.00 (Reference)
Interval cancer ^d	357 (5.9)	1761.3	42	2.4	1.57 (1.09–2.27)	1.41 (0.98–2.03)
Never-screened	4498(74.0)	18109.5	1120	6.2	3.96 (3.21–4.89)	2.32 (1.84–2.93)
Stage III (n=8086) ^b						
Screen-detected ^c	1880 (23.3)	9214.5	334	3.6	1.00 (Reference)	1.00 (Reference)
Interval cancer ^d	551 (6.8)	2377.0	163	6.9	1.86 (1.54–2.24)	1.83 (1.52–2.21)
Never-screened	5655 (69.9)	20137.8	2257	11.2	3.00 (2.68–3.37)	2.04 (1.80–2.32)
Stage IV (n=5869) ^b						
Screen-detected ^c	618 (10.5)	1464.9	479	32.7	1.00 (Reference)	1.00 (Reference)
Interval cancer ^d	432 (7.4)	739.3	351	47.5	1.40 (1.22–1.60)	1.42 (1.24–1.64)
Never-screened	4819 (82.1)	6916.8	3932	56.8	1.65 (1.50–1.81)	1.38 (1.25–1.53)

Abbreviations: FIT, fecal immunochemical test; AJCC, The American Joint Committee on Cancer

^a Adjusted for colorectal cancer AJCC stage (0, I, II, III, and IV), colorectal cancer site, hospital levels, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

^b Adjusted for colorectal cancer site, hospital for diagnosis, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression

^c Patients diagnosed through a positive FIT result and a follow-up examination

^d Patients diagnosed within 2 years following their most recent negative FIT result

Supplementary Table S11. Comparison of the Hazard Ratios of the Lead-time Bias Corrected Model with Original Model Using within 12 Months of Time to Diagnosis as a Reference for FIT-positive Patients with a Follow-up Examination.

Models	Crude hazard ratio (95%CI)^a	Adjusted hazard ratio (95%CI)^b
Cox hazards model		
FIT-positive		
With a follow-up examination		
≤ 12 months	1.00 (Reference)	1.00 (Reference)
> 12 months	1.67 (1.41–1.97)	1.31 (1.11–1.55)
Without a follow-up examination		
FIT-negative	2.20 (2.01–2.42)	1.68 (1.53–1.84)
Never-screened	4.28 (4.01–4.56)	1.82 (1.69–1.95)
Lead-time bias corrected from Cox hazards model		
FIT-positive		
With a follow-up examination		
≤ 12 months	1.00 (Reference)	1.00 (Reference)
> 12 months	1.65 (1.39–1.95)	1.32 (1.11–1.56)
Without a follow-up examination		
FIT-negative	1.67 (1.53–1.84)	1.30 (1.18–1.43)
Never-screened	3.24 (3.04–3.46)	1.42 (1.32–1.52)

Abbreviations: AJCC, The American Joint Committee on Cancer; FIT, fecal immunochemical test

^a Simple Cox regression model

^b Adjusted for colorectal cancer AJCC stage, colorectal cancer site, hospital levels, treatment, age at diagnosis, sex, and urbanization levels in the multiple Cox regression model