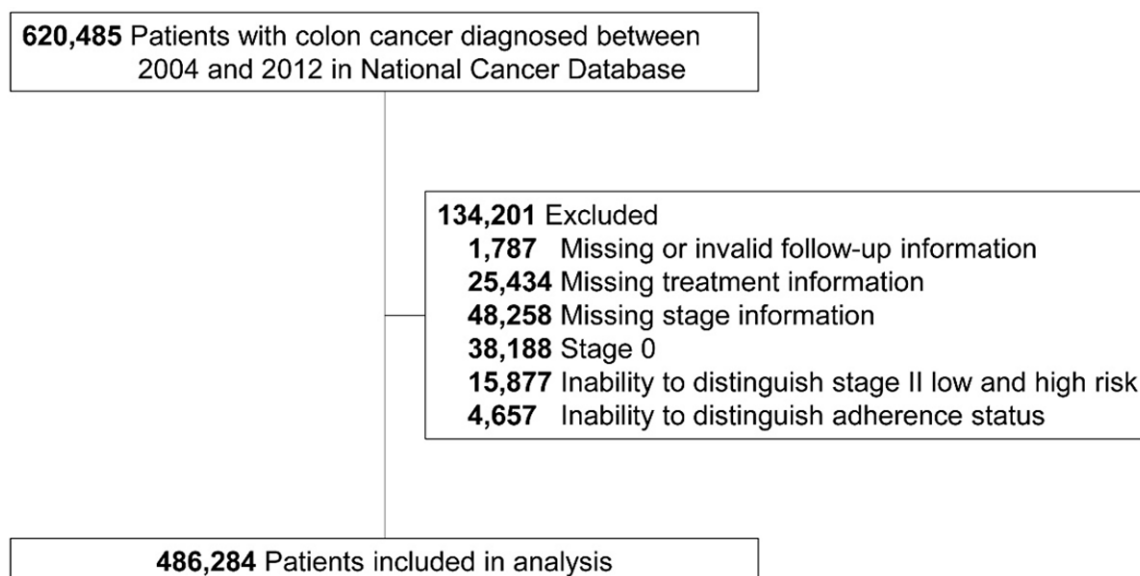


Determinants for age disparities in colon cancer survival improvement



Supplementary Figure 1. CONSORT diagram.

Supplementary Table 1. Characteristics of patients with colon cancer by ages^a

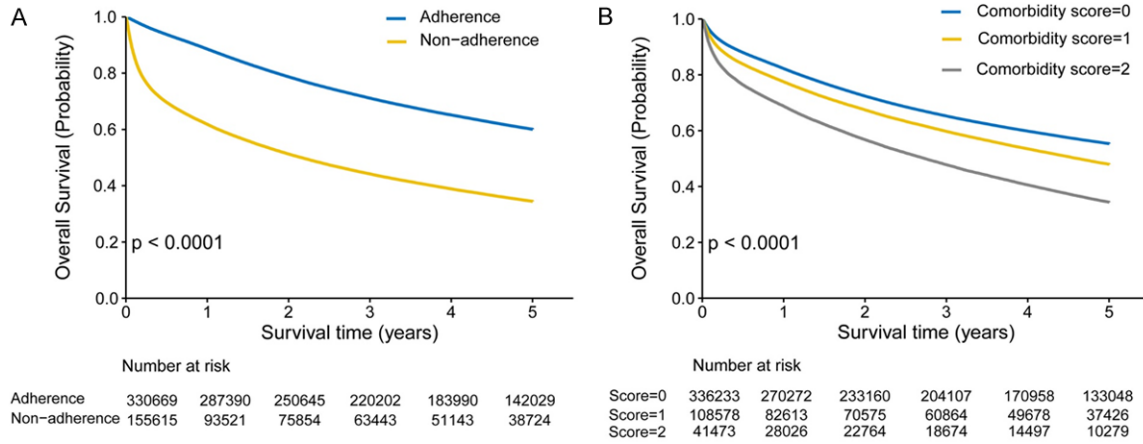
Variables	Age groups, y (n, %)			
	<50	50-64	65-74	≥75
Sex				
Male	22,594 (50.1)	69,342 (53.1)	63,651 (52.0)	78,671 (41.8)
Female	22,505 (49.9)	61,214 (46.9)	58,866 (48.0)	109,441 (58.2)
Race				
White	34,557 (76.6)	102,752 (78.7)	102,958 (84.0)	168,120 (89.4)
Black	7,796 (17.3)	21,415 (16.4)	14,615 (11.9)	14,461 (7.7)
Other	2,305 (5.1)	5,161 (4.0)	3,867 (3.2)	4,214 (2.2)
Unknown	441 (1.0)	1,228 (0.9)	1,077 (0.9)	1,317 (0.7)
Year of diagnosis				
2004-2006	13,411 (29.7)	39,663 (30.4)	39,742 (32.4)	63,897 (34.0)
2007-2009	14,681 (32.6)	42,725 (32.7)	39,568 (32.3)	61,711 (32.8)
2010-2012	17,007 (37.7)	48,168 (36.9)	43,207 (35.3)	62,504 (33.2)
Residence				
Metro	37,013 (82.1)	105,115 (80.5)	96,148 (78.5)	152,858 (81.3)
Urban	5,746 (12.7)	18,763 (14.4)	19,276 (15.7)	24,567 (13.0)
Rural	706 (1.6)	2,532 (1.9)	2,969 (2.4)	3,815 (2.0)
Unknown	1,634 (3.6)	4,146 (3.2)	4,124 (3.4)	6,872 (3.7)
Annual household income				
<\$30,000	6,359 (14.1)	19,864 (15.2)	17,887 (14.6)	22,962 (12.2)
\$30,000-\$34,999	7,821 (17.4)	23,725 (18.2)	23,492 (19.2)	33,464 (17.8)
\$35,000-\$45,999	11,590 (25.7)	34,355 (26.3)	33,638 (27.4)	52,562 (27.9)
≥\$46,000	17,742 (39.3)	48,226 (36.9)	43,493 (35.5)	73,359 (39.0)
Unknown	1,587 (3.5)	4,386 (3.4)	4,007 (3.3)	5,765 (3.1)
Insurance				
No insurance	4,028 (8.9)	9,673 (7.4)	909 (0.7)	679 (0.4)
Private insurance	32,211 (71.4)	90,471 (69.3)	18,097 (14.8)	16,890 (9.0)

Determinants for age disparities in colon cancer survival improvement

Government insurance	7,799 (17.3)	27,653 (21.2)	101,714 (83.0)	168,227 (89.4)
Unknown	1,061 (2.4)	2,759 (2.1)	1,797 (1.5)	2,316 (1.2)
Educational attainment				
≥29%	8,215 (18.2)	24,298 (18.6)	21,139 (17.3)	25,897 (13.8)
20%-28.9%	10,425 (23.1)	30,977 (23.7)	29,683 (24.2)	40,950 (21.8)
14%-19.9%	10,057 (22.3)	30,235 (23.2)	29,631 (24.2)	48,244 (25.6)
<14%	14,813 (32.9)	40,652 (31.1)	38,058 (31.0)	67,260 (35.8)
Unknown	1,589 (3.5)	4,394 (3.4)	4,006 (3.3)	5,761 (3.0)
Facility type				
Community	3,617 (8.0)	16,004 (12.3)	16,684 (13.6)	26,586 (14.1)
Comprehensive community	14,651 (32.5)	59,569 (45.6)	60,974 (49.8)	97,563 (51.9)
Academic/research program	11,481 (25.5)	40,160 (30.8)	31,378 (25.6)	43,102 (22.9)
Integrated network	3,836 (8.5)	14,823 (11.3)	13,481 (11.0)	20,861 (11.1)
Unknown	11,514 (25.5)	0 (0.0)	0 (0.0)	0 (0.0)
Charlson comorbidity score				
0	39,669 (88.0)	99,067 (75.9)	80,375 (65.6)	117,122 (62.3)
1	4,509 (10.0)	24,522 (18.8)	30,476 (24.9)	49,071 (26.1)
2	921 (2.0)	6,967 (5.3)	11,666 (9.5)	21,919 (11.6)
Surgery				
Yes	40,852 (90.6)	118,391 (90.7)	112,572 (91.9)	169,195 (89.9)
No	4,247 (9.4)	12,165 (9.3)	9,945 (8.1)	18,917 (10.1)
Chemotherapy				
Yes	29,775 (66.0)	68,847 (52.7)	49,959 (40.8)	36,146 (19.2)
No	15,324 (34.0)	61,709 (47.3)	72,558 (59.2)	151,966 (80.8)
Stage				
I	7,251 (16.1)	30,788 (23.6)	32,447 (26.5)	46,309 (24.6)
II	8,799 (19.5)	27,231 (20.9)	30,365 (24.8)	58,552 (31.1)
III	14,810 (32.8)	38,404 (29.4)	34,516 (28.2)	49,765 (26.5)
IV	14,239 (31.6)	34,133 (26.1)	25,189 (20.5)	33,486 (17.8)
Histology				
Adenocarcinomas	42,764 (94.8)	126,107 (96.6)	119,118 (97.2)	181,462 (96.5)
Others	2,335 (5.2)	4,449 (3.4)	3,399 (2.8)	6,650 (3.5)
Grade				
Well differentiated	4,411 (9.8)	13,529 (10.4)	12,800 (10.4)	17,973 (9.5)
Moderately differentiated	26,148 (58.0)	79,784 (61.1)	75,448 (61.6)	112,568 (59.8)
Poorly differentiated	8,818 (19.6)	21,812 (16.7)	21,426 (17.5)	36,810 (19.6)
Undifferentiated	1,057 (2.3)	2,377 (1.8)	2,478 (2.0)	4,470 (2.4)
Unknown	4,665 (10.3)	13,054 (10.0)	10,365 (8.5)	16,291 (8.7)
Treatment adherence status ^b				
Adherence	36,410 (80.7)	101,775 (78.0)	89,593 (73.1)	102,891 (54.7)
Non-adherence	8,689 (19.3)	28,781 (22.0)	32,924 (26.9)	85,221 (45.3)

^aThe comparison of the distribution of characteristics across age groups were all of statistical significance (all P<0.001). ^bAdherence status to NCCN treatment guidelines.

Determinants for age disparities in colon cancer survival improvement



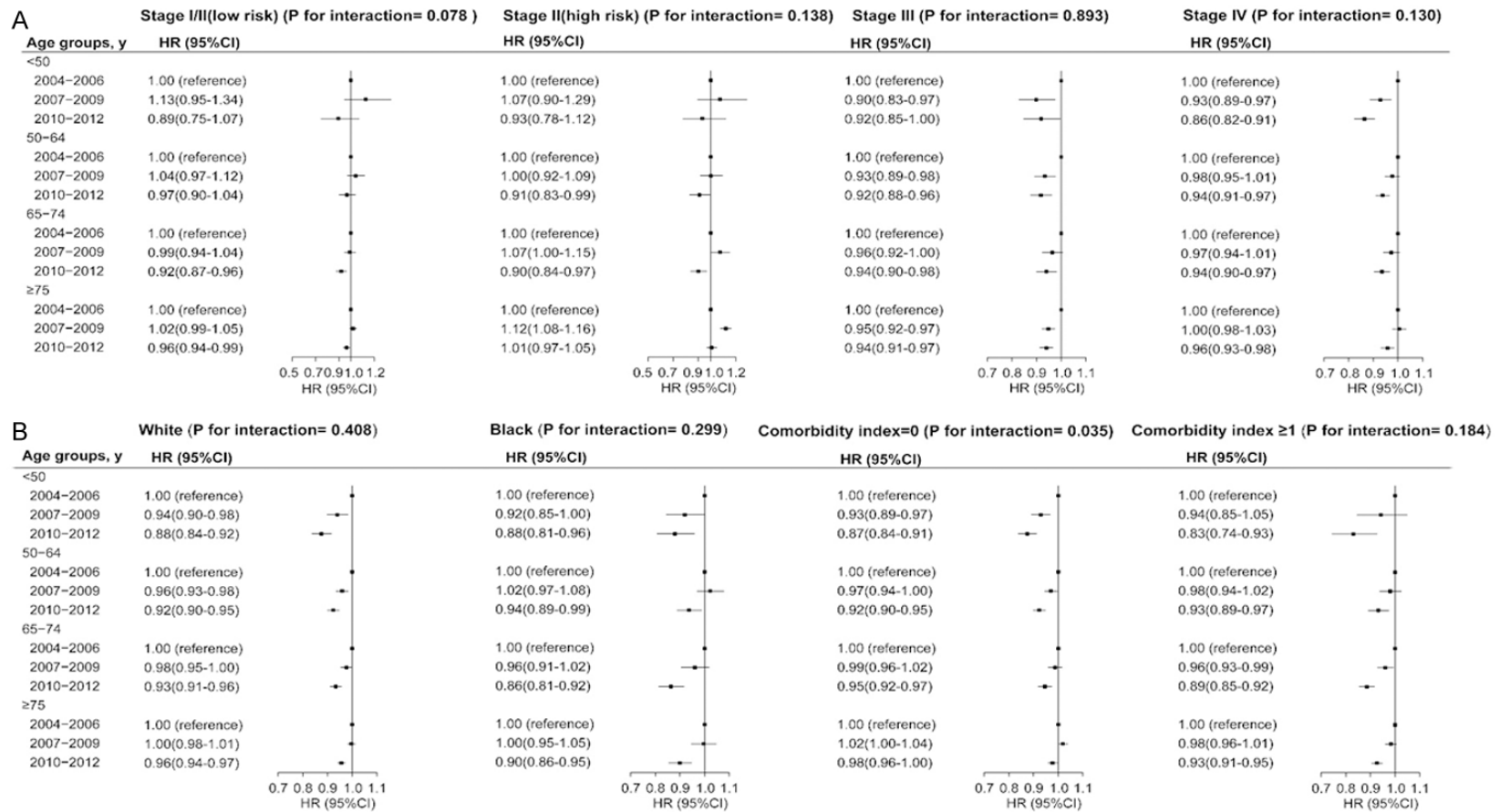
Supplementary Figure 2. Crude 5-year overall survival rates of colon cancer. (A) by adherence status to NCCN treatment guidelines, (B) by Charlson comorbidity score. P values were calculated by the log-rank test.

Supplementary Table 2. Association between Charlson comorbidity score and the risk of death among patients with colon cancer stratified by age

Strata	Charlson comorbidity score=1			Charlson comorbidity score=2		
	patients/death	HR (95% CI) ^a	HR (95% CI) ^b	patients/death	HR (95% CI) ^a	HR (95% CI) ^b
Aged <50	4,509/1,613	1.06 (1.01-1.12)	1.06 (1.01-1.12)	921/478	1.68 (1.53-1.84)	1.65 (1.50-1.81)
Aged 50-64	24,522/9,163	1.16 (1.13-1.19)	1.16 (1.13-1.19)	6,967/3,461	1.75 (1.69-1.81)	1.71 (1.65-1.77)
Aged 65-74	30,476/12,973	1.26 (1.23-1.28)	1.25 (1.22-1.27)	11,666/6,530	1.95 (1.90-2.01)	1.86 (1.81-1.91)
Aged ≥75	49,071/29,950	1.23 (1.21-1.25)	1.22 (1.20-1.23)	21,919/15,562	1.68 (1.65-1.71)	1.60 (1.57-1.63)

Abbreviations: HR, Hazard Ratio. ^aCharlson comorbidity score is equal to zero as the reference. Adjustment for age, sex, race, residence, education, income, facility type, insurance, histology, grade, TNM stage. ^bAdditional adjustment for adherence to treatment guidelines.

Determinants for age disparities in colon cancer survival improvement



Supplementary Figure 3. Multivariate adjusted hazard ratios (HRs) and 95% CIs for the risk of death associated with year of diagnosis across all age groups. A. Stratified by TNM stage. B. Stratified by race or Charlson comorbidity score. The HRs and 95% CIs were adjusted for age, sex, race, residence, education, income, facility type, insurance, histology, grade, TNM stage, Charlson comorbidity score, and adherence status to NCCN treatment guidelines. *P* values for interactions between age and year of diagnosis are displayed.