

Supplementary Table B. Sensitivity analysis that classified all subjects missing outcome data as meeting criteria for all outcome measures (i.e. up-to-date participation in all forms of CRC screening) in the 2009 Medical Expenditures Panel Survey

B1. Prevalence of colorectal cancer screening in the overall sample and by each mental health diagnosis

CRC Screening	Total Sample (N = 7060)	Depression N = 863 (12.81 %)			Any MH N = 1517 (22.69 %)			Anxiety N = 751 (11.19 %)		
		Yes n (%)	No n (%)	P-Value	Yes n (%)	No n (%)	P-value	Yes n (%)	No n (%)	P-Value
Up-to-date Colonoscopy	4035 (59.84 %)	540 (65.14 %)	3495 (59.06 %)	0.0085	936 (64.13 %)	3099 (58.58 %)	0.0019	454 (61.62 %)	3581 (59.61 %)	0.39
Up-to-date CRC Screening	4403 (64.40 %)	579 (69.04 %)	3824 (63.72 %)	0.01	1003 (67.79 %)	3400 (63.41 %)	0.01	490 (65.54 %)	3913 (64.26 %)	0.30
CRC Screening Ever	4880 (70.92 %)	646 (77.01 %)	4234 (70.02 %)	0.0003	1127 (75.99 %)	3753 (69.43 %)	<0.0001	561 (75.03 %)	4319 (70.40 %)	0.04

CRC = colorectal cancer, MH = mental health

Note:

- a. All percentages reported in this table are weighted to the 2009 United States civilian and non-institutionalized population
- b. P-values reported in this table are for the Rao-Scott Chi Square tests for differences in characteristics by mental health diagnosis

B2. Unadjusted associations between independent variables and CRC Screening (N = 7060)

Variable	Up-to-Date Colonoscopy		Up-to-Date CRC Screening		CRC Ever	
	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value
Depression		0.0085		0.01		0.0003
Yes	1.30 (1.07, 1.57)		1.27 (1.05, 1.53)		1.43 (1.18, 1.74)	
No	REF		REF		REF	
Any MH Disorder		0.0019		0.01		<0.0001
Yes	1.27 (1.09, 1.47)		1.22 (1.05, 1.41)		1.39 (1.19, 1.64)	
No	REF		REF		REF	
Anxiety		0.39		0.59		0.04
Yes	1.09 (0.90, 1.32)		1.06 (0.86, 1.30)		1.26 (1.01, 1.58)	
No	REF		REF		REF	
Gender		0.86		0.71		0.04
Male	0.99 (0.88, 1.11)		0.98 (0.87, 1.10)		0.88 (0.77, 0.99)	
Female	REF		REF		REF	
Marital Status		0.01		<0.0001		0.02
Married	2.15 (1.70, 2.72)		1.90 (1.48, 2.43)		1.61 (1.25, 2.06)	
Widowed/Divorced/Separated	1.80 (1.40, 2.32)		1.64 (1.26, 2.14)		1.55 (1.20, 2.01)	
Never Married	REF		REF		REF	
Education		<0.0001		<0.0001		0.08
< HS	0.44 (0.37, 0.52)		0.43 (0.36, 0.51)		0.43 (0.36, 0.53)	
HS Diploma/GED	0.59 (0.52, 0.67)		0.60 (0.52, 0.68)		0.59 (0.51, 0.68)	
> HS	REF		REF		REF	
Race		<0.0001		<0.0001		<0.0001
Hispanic	0.52 (0.42, 0.63)		0.54 (0.44, 0.66)		0.55 (0.45, 0.67)	
Black, non-Hispanic	0.96 (0.81, 1.13)		1.01 (0.86, 1.19)		0.97 (0.81, 1.15)	
Other	0.59 (0.48, 0.73)		0.58 (0.48, 0.73)		0.59 (0.48, 0.73)	
White, non-Hispanic	REF		REF		REF	
Born in US		<0.0001		<0.0001		<0.0001
No	0.60 (0.52, 0.70)		0.65 (0.56, 0.75)		0.62 (0.53, 0.72)	
Yes	REF		REF		REF	

Language Spoken at Home Non-English English	0.50 (0.42, 0.61) REF	<0.0001	0.50 (0.42, 0.60) REF	<0.0001	0.52 (0.43, 0.63) REF	<0.0001
US Census Region Northeast Midwest South West	1.41 (1.14, 1.74) 1.03 (0.84, 1.25) 1.14 (0.95, 1.37) REF	0.0056	1.12 (0.91, 1.38) 0.90 (0.74, 1.10) 0.96 (0.80, 1.15) REF	0.16	1.10 (0.88, 1.39) 0.92 (0.75, 1.13) 0.98 (0.81, 1.19) REF	0.41
Income Level Poor/Near Poor/Low Income Middle Income High Income	0.50 (0.42, 0.58) 0.65 (0.56, 0.76) REF	<0.0001	0.48 (0.41, 0.56) 0.63 (0.53, 0.73) REF	<0.0001	0.51 (0.43, 0.60) 0.65 (0.55, 0.77) REF	<0.0001
Age (in years) 50 – 64 ≥ 65	0.47 (0.41, 0.54) REF	<0.0001	0.43 (0.38, 0.50) REF	<0.0001	0.36 (0.31, 0.42) REF	<0.0001
Health Insurance Public Only Uninsured Private	0.84 (0.73, 0.98) 0.25 (0.20, 0.32) REF	<0.0001	0.85 (0.74, 0.98) 0.26 (0.21, 0.32) REF	<0.0001	0.91 (0.79, 1.06) 0.27 (0.22, 0.33) REF	<0.0001
Usual Care Provider No Yes	0.39 (0.31, 0.48) REF	<0.0001	0.35 (0.29, 0.43) REF	<0.0001	0.36 (0.29, 0.44) REF	<0.0001
Diabetes Yes No	1.20 (1.03, 1.39) REF	0.02	1.30 (1.11, 1.51) REF	0.0008	1.41 (1.19, 1.68) REF	<0.0001
Co-morbid conditions Yes No	1.69 (1.45, 1.96) REF	<0.0001	1.73 (1.49, 2.00) REF	<0.0001	1.93 (1.67, 2.23) REF	<0.0001
Number of co-morbid conditions None 1 2	REF 1.41 (1.20, 1.65) 1.74 (1.46, 2.07)	<0.0001	REF 1.47 (1.25, 1.72) 1.77 (1.49, 2.10)	<0.0001	REF 1.58 (1.35, 1.85) 1.97 (1.67, 2.33)	<0.0001

3	2.18 (1.79, 2.66)		2.16 (1.77, 2.64)		2.42 (1.97, 2.98)	
4	2.01 (1.48, 2.73)		2.19 (1.61, 2.97)		2.62 (1.93, 3.58)	
≥ 5	1.87 (1.44, 2.43)		1.83 (1.40, 2.39)		2.31 (1.76, 3.04)	
BMI	1.00 (0.99, 1.01)	0.89	1.00 (0.99, 1.01)	0.95	1.00 (0.99, 1.02)	0.47
# Office Based Provider Visits	1.04 (1.02, 1.05)	<0.0001	1.04 (1.03, 1.05)	<0.0001	1.05 (1.03, 1.06)	<0.0001

CRC = colorectal cancer, GED = General Equivalency Diploma, HS=high school

Notes:

- a. All models take into account the 2009 MEPS multi-stage complex survey design
- b. All models are weighted to reflect the 2009 US civilian, non-institutionalized population
- c. All models are based off the same 7,060 study subjects

B3. Adjusted Associations between CRC Screening Participation and Depression (N = 7060)

Predictors	Outcomes					
	Up-to-date Colonoscopy		Up-to-date CRC Screening		CRC Screening Ever	
	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value
Depression		0.0081		0.02		0.0019
Yes	1.34 (1.08, 1.66)		1.29 (1.05, 1.60)		1.40 (1.13, 1.73)	
No	REF		REF		REF	
Gender		0.56		0.64		0.32
Male	1.04 (0.92, 1.17)		1.03 (0.91, 1.17)		0.93 (0.81, 1.07)	
Female	REF		REF		REF	
Marital Status		<0.0001		0.0003		0.02
Married	1.94 (1.52, 2.48)		1.65 (1.29, 2.10)		1.32 (1.03, 1.67)	
Widowed/Divorced/Separated	1.85 (1.42, 2.43)		1.64 (1.25, 2.15)		1.45 (1.12, 1.89)	
Never Married	REF		REF		REF	
Education		<0.0001		<0.0001		<0.0001
< HS	0.54 (0.44, 0.67)		0.53 (0.42, 0.65)		0.50 (0.39, 0.64)	
HS Diploma/GED	0.64 (0.56, 0.73)		0.65 (0.57, 0.74)		0.63 (0.54, 0.72)	
> HS	REF		REF		REF	
Race		<0.0001		<0.0001		<0.0001
Hispanic	0.81 (0.65, 1.00)		0.85 (0.69, 1.05)		0.88 (0.71, 1.08)	
Black, non-Hispanic	1.36 (1.14, 1.62)		1.49 (1.25, 1.79)		1.36 (1.13, 1.63)	
Other	0.69 (0.55, 0.88)		0.66 (0.52, 0.85)		0.69 (0.54, 0.88)	
White, non-Hispanic	REF		REF		REF	
US Census Region		0.02		0.17		0.38
Northeast	1.25 (1.01, 1.55)		0.95 (0.76, 1.18)		0.93 (0.72, 1.19)	
Midwest	0.94 (0.77, 1.14)		0.81 (0.66, 0.99)		0.83 (0.68, 1.03)	
South	1.08 (0.90, 1.29)		0.88 (0.73, 1.06)		0.91 (0.75, 1.11)	
West	REF		REF		REF	
Income Level		<0.0001		<0.0001		<0.0001
Poor/Near Poor/Low Income	0.65 (0.54, 0.78)		0.60 (0.50, 0.74)		0.62 (0.50, 0.77)	
Middle Income	0.77 (0.65, 0.91)		0.72 (0.61, 0.85)		0.74 (0.61, 0.89)	

High Income	REF		REF		REF	
Age (in years)		<0.0001		<0.0001		<0.0001
50 – 64	0.47 (0.40, 0.55)		0.43 (0.36, 0.51)		0.35 (0.29, 0.42)	
≥ 65	REF		REF		REF	
Health Insurance		<0.0001		<0.0001		<0.0001
Public Only	0.77 (0.64, 0.94)		0.76 (0.63, 0.92)		0.71 (0.58, 0.88)	
Uninsured	0.49 (0.38, 0.62)		0.50 (0.40, 0.63)		0.53 (0.42, 0.65)	
Private	REF		REF		REF	
Usual Care Provider		<0.000		<0.0001		<0.0001
No	0.59 (0.47, 0.74)		0.53 (0.43, 0.66)		0.57 (0.46, 0.70)	
Yes	REF		REF		REF	
Diabetes		0.15		0.0065		0.0052
Yes	1.13 (0.96, 1.34)		1.25 (1.06, 1.46)		1.31 (1.08, 1.58)	
No	REF		REF		REF	
Co-morbid conditions		<0.0001		<0.0001		<0.0001
Yes	1.39 (1.19, 1.64)		1.41 (1.20, 1.65)		1.51 (1.29, 1.76)	
No	REF		REF		REF	
BMI	1.00 (0.99, 1.01)	0.73	1.00 (0.98, 1.01)	0.44	1.00 (0.99, 1.01)	0.89
# Office Based Provider Visits	1.02 (1.01, 1.03)	<0.0001	1.02 (1.02, 1.03)	<0.0001	1.03 (1.02, 1.04)	<0.0001
Model C-Statistic	0.69		0.70		0.71	

CRC = colorectal cancer, GED = General Equivalency Diploma, HS=high school

Notes:

- a. All models take into account the 2009 MEPS multi-stage complex survey design
- b. All models are weighted to reflect the 2009 US civilian, non-institutionalized population
- c. All models are based off the same 7,060 study subjects

B4. Adjusted Associations between CRC Screening Participation and Any Mental Health Disorder (N = 7060)

Predictors	Outcomes					
	Up-to-date Colonoscopy		Up-to-date CRC Screening		CRC Screening Ever	
	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value
Any Mental Health Disorder		0.0021		0.02		0.0005
Yes	1.28 (1.09, 1.50)		1.20 (1.03, 1.41)		1.35 (1.14, 1.60)	
No	REF		REF		REF	
Gender		0.51		0.63		0.36
Male	1.05 (0.92, 1.18)		1.03 (0.91, 1.17)		0.94 (0.82, 1.08)	
Female	REF		REF		REF	
Marital Status		<0.0001		0.0002		0.01
Married	1.97 (1.54, 2.50)		1.66 (1.30, 2.11)		1.34 (1.05, 1.70)	
Widowed/Divorced/Separated	1.87 (1.43, 2.44)		1.65 (1.26, 2.17)		1.47 (1.13, 1.91)	
Never Married	REF		REF		REF	
Education		<0.0001		<0.0001		<0.0001
< HS	0.54 (0.44, 0.67)		0.53 (0.42, 0.65)		0.50 (0.39, 0.63)	
HS Diploma/GED	0.64 (0.56, 0.72)		0.65 (0.57, 0.73)		0.62 (0.54, 0.72)	
> HS	REF		REF		REF	
Race		<0.0001		<0.0001		<0.0001
Hispanic	0.82 (0.66, 1.01)		0.85 (0.69, 1.06)		0.88 (0.72, 1.09)	
Black, non-Hispanic	1.37 (1.14, 1.63)		1.49 (1.25, 1.79)		1.37 (1.13, 1.65)	
Other	0.70 (0.56, 0.89)		0.67 (0.52, 0.85)		0.70 (0.55, 0.89)	
White, non-Hispanic	REF		REF		REF	
US Census Region		0.02		0.17		0.37
Northeast	1.25 (1.01, 1.55)		0.95 (0.76, 1.18)		0.93 (0.72, 1.19)	
Midwest	0.94 (0.77, 1.14)		0.81 (0.66, 0.99)		0.83 (0.68, 1.03)	
South	1.09 (0.91, 1.30)		0.88 (0.73, 1.06)		0.91 (0.75, 1.12)	
West	REF		REF		REF	
Income Level		<0.0001		<0.0001		<0.0001
Poor/Near Poor/Low Income	0.65 (0.54, 0.78)		0.61 (0.50, 0.74)		0.62 (0.50, 0.77)	

Middle Income High Income	0.77 (0.65, 0.90) REF		0.72 (0.61, 0.85) REF		0.74 (0.61, 0.89) REF	
Age (in years) 50 – 64 ≥ 65	0.47 (0.40, 0.55) REF	<0.0001	0.43 (0.36, 0.51) REF	<0.0001	0.35 (0.29, 0.42) REF	<0.0001
Health Insurance Public Only Uninsured Private	0.77 (0.63, 0.94) 0.49 (0.39, 0.62) REF	<0.0001	0.76 (0.63, 0.92) 0.51 (0.40, 0.64) REF	<0.0001	0.71 (0.58, 0.87) 0.53 (0.43, 0.66) REF	<0.0001
Usual Care Provider No Yes	0.59 (0.47, 0.75) REF	<0.0001	0.53 (0.43, 0.67) REF	<0.0001	0.57 (0.46, 0.70) REF	<0.0001
Diabetes Yes No	1.14 (0.96, 1.34) REF	0.14	1.25 (1.07, 1.47) REF	0.0055	1.32 (1.09, 1.59) REF	0.0042
Co-morbid conditions Yes No	1.40 (1.19, 1.64) REF	<0.0001	1.41 (1.20, 1.66) REF	<0.0001	1.52 (1.30, 1.77) REF	<0.0001
BMI	1.00 (0.99, 1.01)	0.79	1.00 (0.98, 1.01)	0.48	1.00 (0.99, 1.01)	0.94
# Office Based Provider Visits	1.02 (1.01, 1.03)	<0.0001	1.02 (1.02, 1.03)	<0.0001	1.03 (1.02, 1.04)	<0.0001
Model C-Statistic	0.70		0.70		0.71	

CRC = colorectal cancer, GED = General Equivalency Diploma, HS=high school

Notes:

- a. All models take into account the 2009 MEPS multi-stage complex survey design
- b. All models are weighted to reflect the 2009 US civilian, non-institutionalized population
- c. All models are based off the same 7,060 study subjects

B5. Adjusted Associations between CRC Screening Participation and Anxiety (N =7060)

Predictors	Outcomes					
	Up-to-date Colonoscopy		Up-to-date CRC Screening		CRC Screening Ever	
	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value	OR (95 % CI)	P-Value
Anxiety		0.53		0.79		0.12
Yes	1.07 (0.87, 1.30)		1.03 (0.83, 1.270)		1.21 (0.95, 1.55)	
No	REF		REF		REF	
Gender		0.71		0.79		0.26
Male	1.02 (0.91, 1.15)		1.02 (0.90, 1.16)		0.92 (0.80, 1.06)	
Female	REF		REF		REF	
Marital Status		<0.0001		0.0003		0.01
Married	1.93 (1.52, 2.46)		1.64 (1.28, 2.09)		1.31 (1.03, 1.67)	
Widowed/Divorced/Separated	1.88 (1.44, 2.45)		1.66 (1.27, 2.17)		1.47 (1.14, 1.91)	
Never Married	REF		REF		REF	
Education		<0.0001		<0.0001		<0.0001
< HS	0.54 (0.44, 0.67)		0.53 (0.43, 0.66)		0.50 (0.39, 0.64)	
HS Diploma/GED	0.64 (0.56, 0.72)		0.65 (0.57, 0.73)		0.62 (0.54, 0.72)	
> HS	REF		REF		REF	
Race		<0.0001		<0.0001		<0.0001
Hispanic	0.80 (0.64, 1.00)		0.84 (0.68, 1.04)		0.87 (0.70, 1.07)	
Black, non-Hispanic	1.33 (1.11, 1.59)		1.46 (1.22, 1.75)		1.33 (1.10, 1.60)	
Other	0.69 (0.55, 0.87)		0.66 (0.51, 0.84)		0.69 (0.54, 0.88)	
White, non-Hispanic	REF		REF		REF	
US Census Region		0.03		0.16		0.37
Northeast	1.24 (1.01, 1.54)		0.94 (0.75, 1.18)		0.92 (0.72, 1.18)	
Midwest	0.94 (0.77, 1.14)		0.81 (0.66, 0.99)		0.83 (0.68, 1.02)	
South	1.08 (0.90, 1.29)		0.87 (0.72, 1.05)		0.91 (0.74, 1.11)	
West	REF		REF		REF	
Income Level		<0.0001		<0.0001		<0.0001
Poor/Near Poor/Low Income	0.66 (0.55, 0.79)		0.61 (0.50, 0.74)		0.63 (0.51, 0.77)	
Middle Income	0.77 (0.65, 0.91)		0.72 (0.61, 0.85)		0.74 (0.61, 0.89)	

High Income	REF		REF		REF	
Age (in years)		<0.0001		<0.0001		<0.0001
50 – 64	0.48 (0.41, 0.56)		0.44 (0.37, 0.52)		0.36 (0.30, 0.43)	
≥ 65	REF		REF		REF	
Health Insurance		<0.0001		<0.0001		<0.0001
Public Only	0.78 (0.64, 0.95)		0.77 (0.64, 0.94)		0.72 (0.59, 0.89)	
Uninsured	0.49 (0.39, 0.62)		0.51 (0.40, 0.64)		0.53 (0.43, 0.66)	
Private	REF		REF		REF	
Usual Care Provider		<0.0001		<0.0001		<0.0001
No	0.58 (0.46, 0.74)		0.53 (0.43, 0.66)		0.56 (0.46, 0.69)	
Yes	REF		REF		REF	
Diabetes		0.12		0.0049		0.0035
Yes	1.14 (0.97, 1.35)		1.26 (1.07, 1.47)		1.33 (1.10, 1.60)	
No	REF		REF		REF	
Co-morbid conditions		<0.0001		<0.0001		<0.0001
Yes	1.42 (1.21, 1.67)		1.43 (1.21, 1.68)		1.54 (1.32, 1.79)	
No	REF		REF		REF	
BMI	1.00 (0.99, 1.01)	0.84	1.00 (0.99, 1.01)	0.51	1.00 (0.99, 1.01)	1.00
# Office Based Provider Visits	1.02 (1.02, 1.03)	<0.0001	1.03 (1.02, 1.04)	<0.0001	1.03 (1.02, 1.04)	<0.0001
Model C-Statistic	0.69		0.70		0.70	

CRC = colorectal cancer, GED = General Equivalency Diploma, HS=high school

Notes:

- a. All models take into account the 2009 MEPS multi-stage complex survey design
- b. All models are weighted to reflect the 2009 US civilian, non-institutionalized population
- c. All models are based off the same 7,060 study subjects