



# Covariates of perceived colon cancer risk

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## Colorectal cancer screening is efficacious but underutilized

- Colorectal cancer is the third most common cancer among both men and women in the United States, and it accounts for 10% of all cancer deaths (ACS, 2005).
- Screening strategies for colorectal cancer may prevent up to 90% of colorectal cancer mortality, and reduce colorectal cancer incidence (Rex et al., 2000; Smith et al., 2001).
- Approximately half (40% to 50%) of the general population is adherent with recommended screening guidelines for colorectal cancer (CDCP, 2003; Seef et al., 2004; Swan et al., 2003).

# Colorectal cancer screening guidelines for the general population\*

- For individuals age 50 and older, one of the following:
  - Annual home fecal occult blood testing (FOBT) or fecal immunochemical test (FIT) every year
  - Flexible sigmoidoscopy every five years
  - Double-contrast barium enema every five years
  - Colonoscopy every ten years

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\*United States Preventive Services Task Force (USPSTF). *Screening for colorectal cancer: Recommendation and Rationale*. Ann Intern Med, 2002.

# Evidence-based behavioral risk factors for colorectal cancer\*

- High fat, low fiber diet
- Heavy alcohol use
- Excessive body weight/low physical activity
- Cigarette smoking

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\*Bingham, *Proc Nutr Soc*, 1999; Giovannucci, *CEBP*, 2001; Martinez et al., *JNCI*, 1995; Sesink et al., *Carcinogenesis*, 2001 .

## Perceptions of risk for colorectal cancer

- A theoretically and empirically important construct in motivating the adoption of health actions, including colorectal cancer screening.
- Increased perception of colorectal cancer risk is *prospectively* related to increased colorectal cancer screening intentions (McCrae et al., 1984; Watts et al., 2003).
- Low rates of physician screening recommendation, and patient beliefs that the test is not needed if they are asymptomatic, highlight the need to address risk perceptions for colorectal cancer (Janz et al., 2003; Seeff et al., 2004).

## Perceived risk for colorectal cancer: Cross-sectional correlates

	Clipp, et al. <u>Cancer, 2004</u> N=1247, ages 40-75, h/o polyps	Robb et al. <u>CEBP, 2004</u> N=18,447 ages 55-64	Vernon et al. <u>CEBP, 2001</u> N=5042 White Males
<b>Demographics</b>			
Female vs. male		+	
White vs. nonwhite		+	
Age	-	-	
Marital status		ns	
SES		+	
<b>Medical</b>			
Family history crc		+	+
Poorer subjective health	+	+	
Physical symptoms	+	+	
<b>Lifestyle behaviors</b>			
Tobacco use status		+	+
Physical activity		-	
<b>Affect</b>			
General anxiety		+	
Colorectal cancer worry			+
Family support for screening			+
Support for behavior chnge	ns		

## Study aims

- To examine risk perceptions for colon cancer in a national representative sample of US adults.
- To examine the relationship of demographic, medical, risk behavior, and affective covariates of colon cancer risk perceptions.
- To examine the relative contribution of significant covariates of colon cancer risk perceptions.

# Sample

- Full HINTS sample,  $N = 6369$
- Participation included if:
  - Aged 45 and older
  - Not missing data on risk perception
- Final study  $N = 3041$

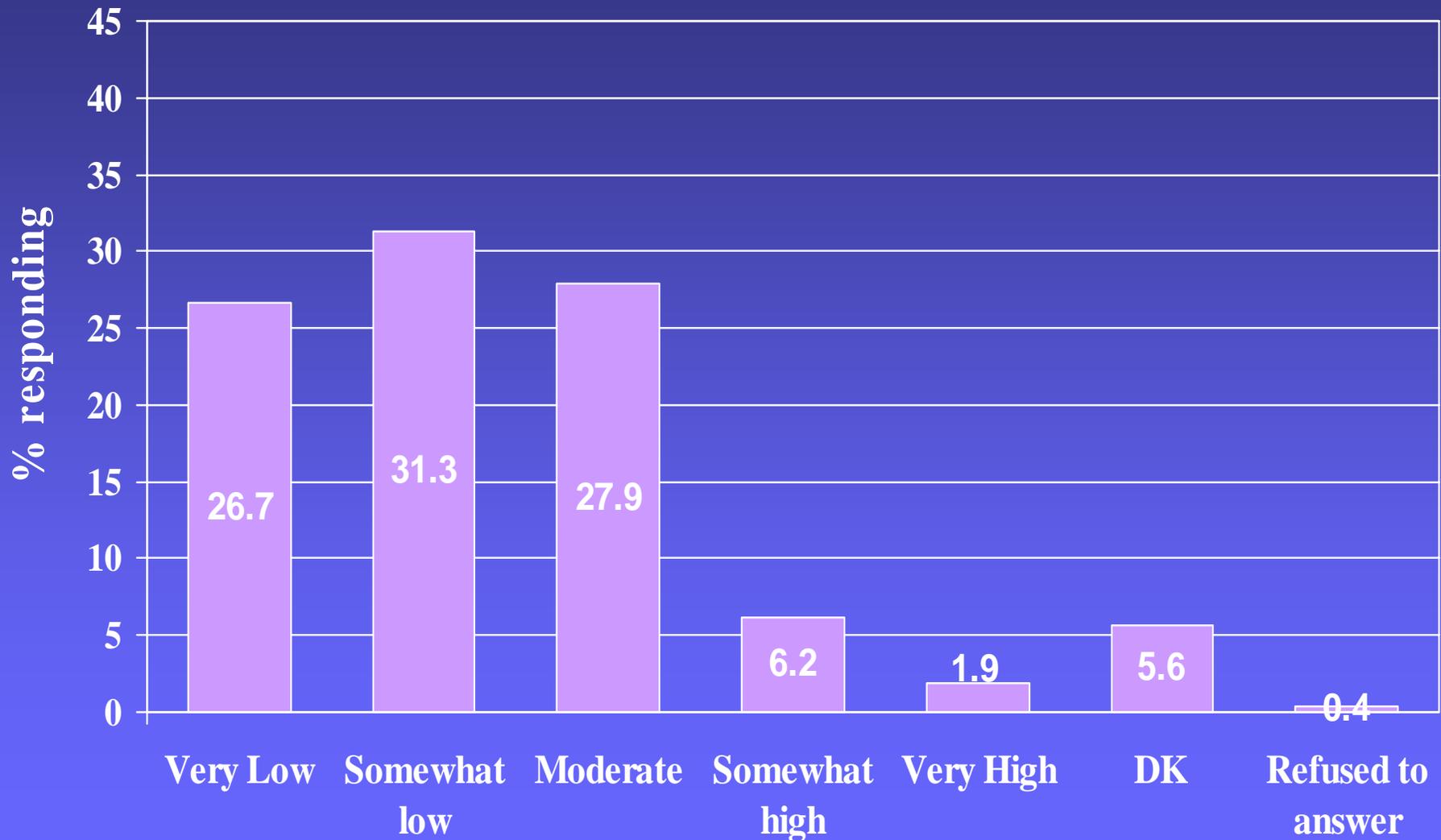
# Design and analytic approach

- Cross-sectional complex sample survey design
- Data weighted
- Jackknife technique for variance estimation
- Analysis conducted using SUDAAN
  - Univariate ordinal regressions
  - Multivariate ordinal regression

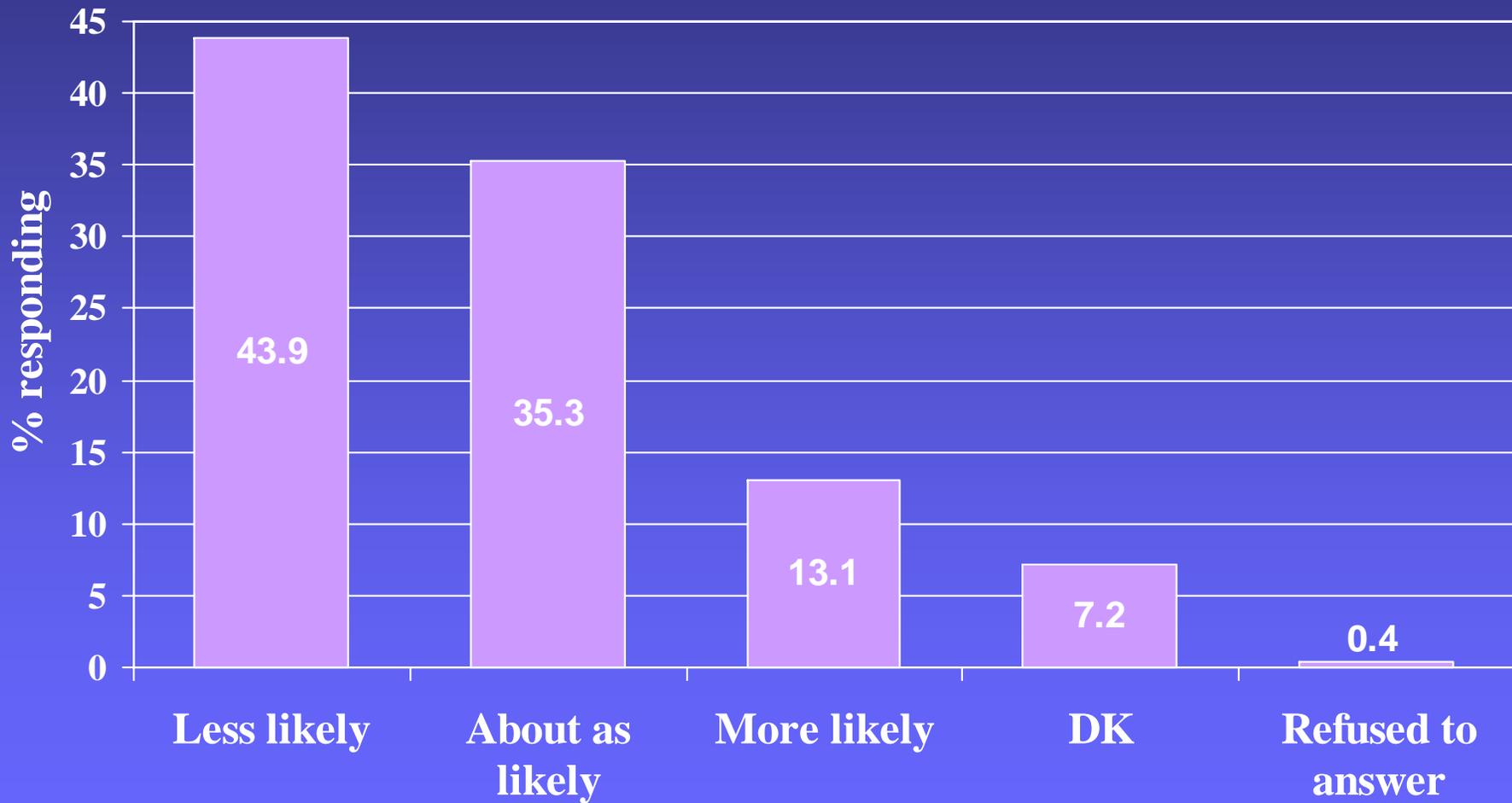
## Frequencies for Selected Descriptive Variables (N = 3041)

	Sample %		Sample %
<b>Gender</b>		<b>Income</b>	
Male	46.6	< \$25,000	30.0
Female	53.4	\$25,000 - \$34,999	13.9
Missing (N)	0	\$35,000 - \$49,999	16.2
		\$50,000 - \$74,999	17.4
		≥ \$75,000	22.4
<b>Age</b>		Missing (N)	357
45-54	40.7		
55-64	26.8		
65-74	20.0	<b>Race/ethnicity</b>	
≥75	12.4	Non-Hispanic white	79.1
Missing (N)	0	Non-Hispanic black	8.8
		Non-Hispanic other	4.5
		Hispanic	7.6
<b>Education</b>		Missing (N)	122
≤ High school 12 <sup>th</sup> grade	17.7		
High school graduate	33.6		
Some college	23.8		
College graduate	24.9		
Missing (N)	80		

## How likely do you think it is that you will develop colon cancer in the future?



# Compared to the average man/woman your age, would you say that you are... to get colon cancer?



# Univariate covariates of perceived risk for colon cancer

	OR (95% CI)		OR (95% CI)
<b>Gender</b>		<b>Education</b>	
Male	1.00	≤ High school 12th grade	1.00
Female	0.94 (0.81-1.09)	High school graduate	0.88 (0.66-1.17)
		Some college	0.67 (0.48-0.93)
<b>Race/ethnicity</b>		College graduate	0.77 (0.58-1.02)
Non-Hispanic white	1.00	<b>Family cancer history</b>	
Non-Hispanic black	0.99 (0.70-1.40)	Negative	1.00
Non-Hispanic other	0.78 (0.50-1.21)	Positive	1.54 (1.30-1.83)
Hispanic	1.58 (1.21-2.07)		
<b>Age</b>		<b>Personal cancer history</b>	
45-54	1.00	Negative	1.00
55-64	1.06 (0.88-1.28)	Positive	1.29 (1.03-1.61)
65-74	0.74 (0.61-0.90)		
≥ 75	0.79 (0.60-1.05)		
<b>Married/Partnered</b>			
No	1.00		
Yes	1.16 (0.98-1.38)		
<b>Income</b>			
< \$25,000	1.00		
\$25,000 - < \$35,000	0.82 (0.60-1.13)		
\$35,000 - < \$50,000	0.83 (0.58-1.19)		
\$50,000 - < \$75,000	0.91 (0.67-1.23)		
≥ \$75,000	0.84 (0.67-1.04)		

## Univariate covariates of perceived risk for colon cancer (cont.)

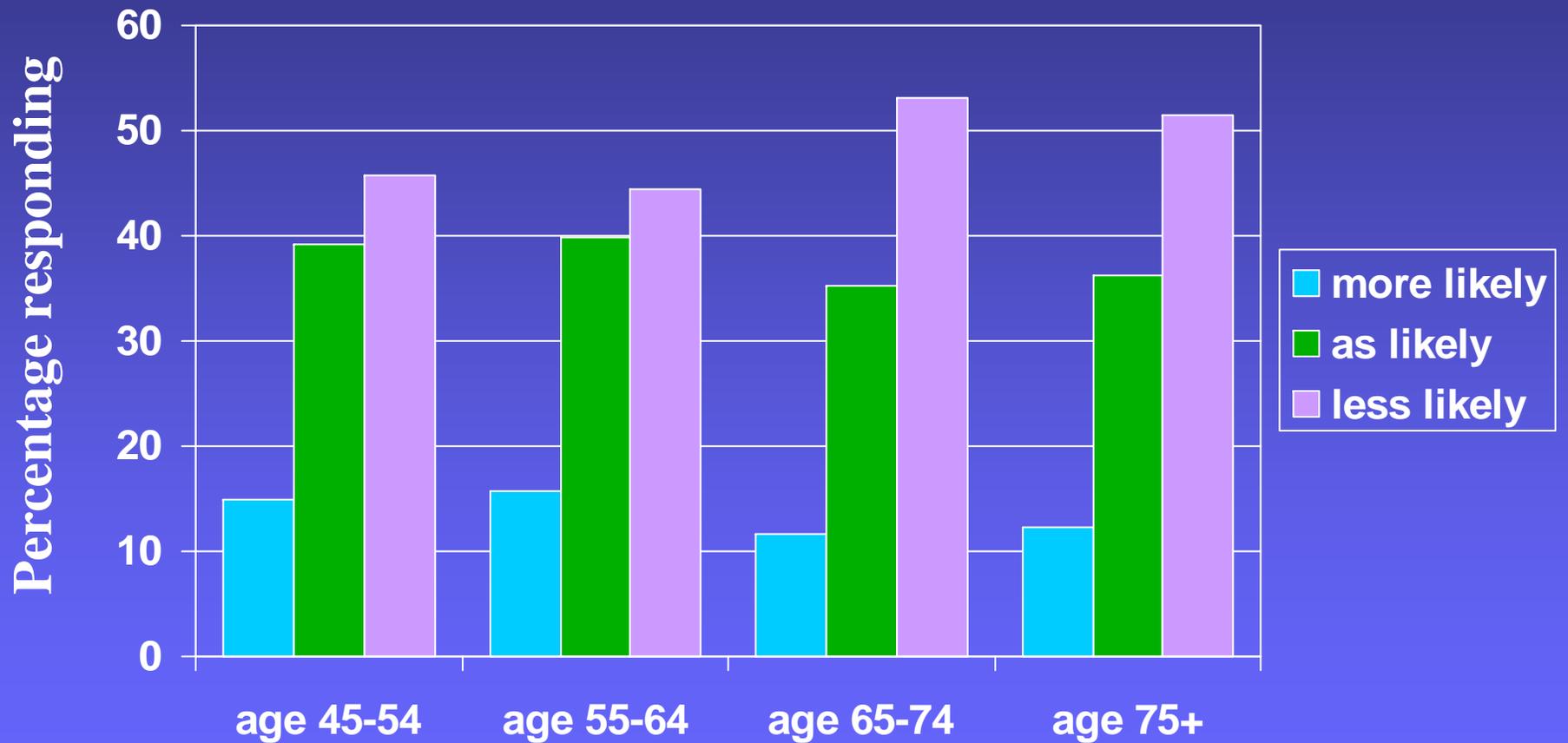
	OR (95% CI)		OR (95% CI)
<b>Overall health status</b>		<b>General anxiety</b>	
Poor	1.00	None of the time	1.00
Fair	0.64 (0.38-1.08)	A little of the time	1.39 (1.17- 1.66)
Good	0.38 (0.23-0.65)	Sometimes	2.08 (1.67- 2.59)
Very good	0.31 (0.19-0.52)	Most of the time	3.67 (2.52- 5.33)
Excellent	0.18 (0.11-0.30)	All the time	3.13 (1.75-5.58)
<b>Cigarette smoking</b>		<b>Colon cancer worry</b>	
Never	1.00	Rarely/never	1.00
Former	1.03 (0.87-1.24)	Sometimes	3.10 (2.52-3.81)
Current	1.20 (0.96-1.49)	Often	4.79 (2.50-9.19)
		All the time	24.16 (7.22-80.77)
<b>Physical activity</b>			
≥ once / week	1.00		
< once / week	1.34 (1.10-1.62)		
<b>Body mass index</b>			
Normal	1.00		
Overweight	1.04 (0.84-1.29)		
Obese	1.33 (1.02- 1.73)		
<b>Fruits and vegetables consumption</b>			
≥ five per day	1.00		
< five per day	1.27 (0.99-1.64)		

## Significant multivariate covariates of perceived risk for colon cancer

	OR (95% CI)		OR (95% CI)
<b>Age</b>		<b>General anxiety</b>	
45-54	1.00	None of the time	1.00
55-64	1.03 (0.83-1.29)	A little of the time	1.19 (0.97- 1.44)
65-74	0.69 (0.55-0.88)	Sometimes	1.42 (1.12- 1.81)
≥ 75	0.72 (0.52-1.01)	Most of the time	2.17 (1.40- 3.36)
		All the time	1.44 (0.68- 3.05)
<b>Family cancer history</b>		<b>Colon cancer worry</b>	
Negative	1.00	Rarely/never	1.00
Positive	1.41 (1.17-1.69)	Sometimes	2.67 (2.10- 3.40)
		Often	4.30 (2.25- 8.22)
<b>Overall health status</b>		All the time	19.71 (5.26-73.84)
Poor	1.00		
Fair	0.77 (0.43-1.41)		
Good	0.52 (0.28-0.94)		
Very good	0.45 (0.24-0.83)		
Excellent	0.28 (0.16-0.50)		

*Note:* Other covariates in the analysis included: race/ethnicity, physical activity, personal cancer history.

## Differences in perceived risk by age



## Summary of current findings

	Clipp, et al. <u>Cancer, 2004</u> N=1247, ages 40-75, h/o polyps	Robb et al. <u>CEBP, 2004</u> N=18,447 ages 55-64	Vernon et al. <u>CEBP, 2001</u> N=5042 White Males	<u>HINTS</u> N=3041 ages ≥ 45
<b>Demographics</b>				
Female vs. male		+		ns
White vs. nonwhite		+		ns
Age	—	—		—
Marital status		ns		ns
SES		+		ns
<b>Medical</b>				
Family history crc		+	+	+
Poorer subjective health	+	+		+
Physical symptoms	+	+		
<b>Lifestyle behaviors</b>				
Tobacco use status		+	+	ns
Physical activity		—		ns
<b>Affect</b>				
General anxiety		+		+
Colorectal cancer worry			+	+
Family support for screening			+	
Support for behavior chnge	ns			

## Conclusions

- Age is the primary risk factor for colorectal cancer. This represents a subgroup in need of specific risk communication and education concerning their *ongoing* risk.
- Those with good subjective health, and behavioral risk factors for colorectal cancer, are additional subgroups that should be prioritized in communication strategies for the general population.
- Affective variables require further investigation, and may indicate salience of cancer risk vulnerability in the individual.
- Study limitation: Assessing relative risk perceptions (same age/sex) across different age groups.
- Additional planned analyses.

# Acknowledgments

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