

The Vulnerability of Middle-Aged and Older Adults in a Multiethnic, Low-Income Area: Contributions of Age, Ethnicity, and Health Insurance

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This community-partnered study was developed and fielded in partnership with key community stakeholders and describes age- and race-related variation in delays in care and preventive service utilization between middle-aged and older adults living in South Los Angeles. The survey sample included adults aged 50 and older who self-identified as African American or Latino and lived in ZIP codes of South Los Angeles (N = 708). Dependent variables were self-reported delays in care and use of preventive services. Insured participants aged 50 to 64 were more likely to report any delay in care (adjusted predicted percentage (APP) = 18%, 95% confidence interval (CI) = 14–23) and problems obtaining needed medical care (APP = 15%, 95% CI = 12–20) than those aged 65 and older. Uninsured participants aged 50 to 64 reported even greater delays in care (APP = 45%, 95% CI = 33–56) and problems obtaining needed medical (APP = 33%, 95% CI = 22–45) and specialty care (APP = 26%, 95% CI = 16–39) than those aged 65 and older. Participants aged 50 to 64 were generally less likely to receive preventive services, including influenza and pneumococcal vaccines and colonoscopy than older participants, but women were more likely to receive mammograms. Participants aged 50 to 64 had more problems obtaining recommended preventive care and faced more delays in care than those aged 65 and older, particularly if they were uninsured. Providing insurance coverage for this group may improve access to preventive care and promote wellness. *J Am Geriatr Soc* 58:2416–2422, 2010.

Key words: preventive services; delays; community-based participatory research; insurance

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Racial, ethnic, socioeconomic, and access-related disparities exist in healthcare use of middle-aged adults and throughout the life span.^{1–3} Low-income older minorities, such as those in South Los Angeles, California, face poorer access to health care for many reasons, including lack of health insurance, higher out-of-pocket costs, transportation difficulties, and lack of community resources.^{4–9} The pre-Medicare population may experience greater challenges when changes occur in the economy and healthcare services are eliminated. At least one-quarter of older adults, and more in low-income areas, will be uninsured at some point during the years preceding eligibility for Medicare.^{10,11}

Martin Luther King Jr. Hospital served as the major urban hospital in South Los Angeles, a low-income area located in the metropolitan center of Los Angeles County, and provided emergency care, specialty care, and inpatient services for uninsured and Medicaid populations for 4 decades. After its closure, several community stakeholders were interested in learning how to address the needs of the older and potentially more-vulnerable population. Rarely have communities set research priorities to understand the effect of hospital closures and inform ongoing efforts to restructure healthcare services.

Even without the hospital closure, South Los Angeles has long faced the dual challenges of high disease burden and low availability of healthcare services. This community has higher rates of diabetes mellitus, hypertension, human immunodeficiency virus, and acquired immunodeficiency syndrome, and higher mortality from preventable or treatable conditions such as heart disease, stroke, and lung cancer than other areas in Los Angeles.¹² In addition, the hospital closure occurred in a community with a persistently low physician supply, which may exacerbate problems in accessing age-appropriate services.¹³ To add to these challenges, the current economic downturn has severely affected older adults, with loss of employment and health insurance,^{14,15} and this effect may have been amplified in minority communities.

As part of a community-based participatory research project designed to address the healthcare needs of middle-aged and older residents of South Los Angeles and to understand the role of age and health insurance in delays in care and preventive service use, a survey was conducted of persons aged 50 and older in the community. Differences in assessments between three groups (aged ≥ 65 and aged 50–64 with and without insurance) were compared. The survey was designed to inform ongoing efforts focused on improving access to healthcare for older African Americans and Latinos in this part of Los Angeles County.

METHODS

Sampling and Survey Design

The study protocol and survey were developed with input from local leaders and residents of South Los Angeles. Community-based participatory research is a collaborative method that equitably involves all partners in the process, recognizes unique strengths that each brings, and begins with a research topic of importance to the community, with an overall goal of improving health outcomes and eliminating health disparities.¹⁶

Community stakeholders, including community advocates, university officials, and representatives from the private healthcare sector, identified important areas of concern. A consensus-building approach was then used to identify principle survey domains and questions. The community-based telephone survey was developed using previously validated survey measures wherever possible from surveys administered in this area. The survey questions were translated into Spanish using independent forward and back translation. The survey was pretested using telephone administration a sample selected according to geographic area of participants who fulfilled the study inclusion criteria. Ten Spanish and 10 English pretest interviews were performed.

The study focused on African Americans and Latinos aged 50 and older because more than 95% of South Los Angeles residents self-identify as such, and more than half of all safety net clinic visits in this community are by people aged 50 and older.¹⁷ SDR Sampling Services (Atlanta, GA) randomly selected the sample from all listed household telephone numbers most likely to be within South Los Angeles ZIP codes based on all available sources. Twenty South Los Angeles ZIP codes were part of the study area and are defined by Los Angeles County Department of Health Services as Los Angeles County Service Planning Area (SPA) 6. Based on U.S. Census demographics, using South Los Angeles ZIP codes would also allow respondents' geographic, racial, and ethnic distribution to be targeted. To be included in the survey, respondents had to be aged 50 and older, identify themselves as African American or Latino, and indicate a language preference of English or Spanish. Call attempts were made up to 15 times at different times of the day and on different days of the week. All telephone numbers were classified into standard telephone survey categories, including known household, nonworking numbers, and facsimile lines. A \$2 incentive was mailed to increase participation mid-way through the 5-month study protocol to potentially eligible households who had not yet completed the survey. An institutional review board addendum was obtained to conduct this mailing. Household

addresses were obtained using multiple sources, including reverse directory services for telephone numbers that had been called at least once. Data collection was concluded after obtaining a 60% response rate.

Seven hundred eight participants completed the survey (55% of contacted telephone numbers, excluding ineligible phone numbers and participants who refused). If eligibility rates were similar for participants that could not be reached, the response rate of eligible participants would be 63% (7.1% refusal rate; 93% cooperation rate).¹⁸ For participants who consented, trained interviewers completed the survey using a computer-aided telephone interviewing system or paper and pencil. Full details of survey data collection and responses are included in Figure 1, with more detail in Supporting Information Table S1. The RAND Corporation institutional review board approved the study protocol.

Outcome Variables

Two outcome measures were assessed: delays in care and use of preventive care (Supporting Information Table S2). Respondents were asked about delays in care (dichotomized into any delay vs none), any problem receiving needed medical care (dichotomized into any problem vs no problem), and any problem receiving needed specialty care (dichotomized into

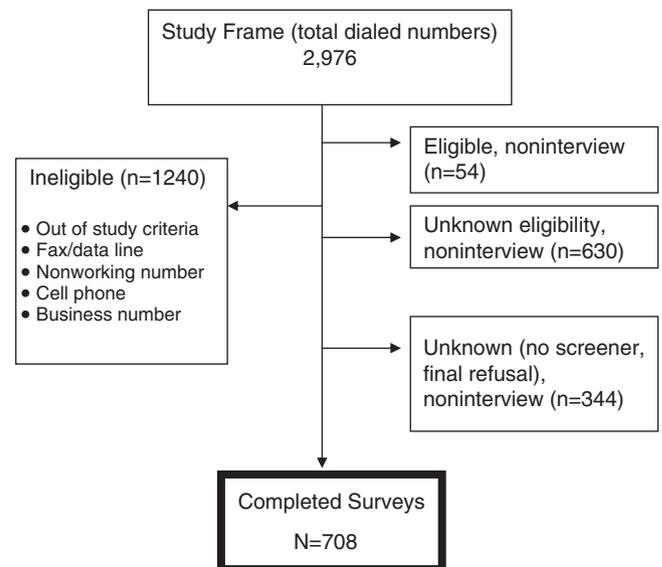


Figure 1. Study sample. The sample of 2,976 telephone numbers was randomly selected from all listed household telephone numbers most likely to be within South Los Angeles ZIP codes. To be included in the survey, respondents had to be aged 50 and older, identify themselves as African American or Latino, indicate a language preference of English or Spanish, and be willing to complete the survey. Call attempts were made up to 15 times at different times of the day and on different days of the week. All telephone numbers were classified into standard telephone survey categories, including known household, nonworking numbers, and facsimile lines. (See Supporting Information Table S1 for more details.) Data collection was concluded after obtaining a 60% response rate. Seven hundred eight participants completed the survey, representing 55% of contacted telephone numbers. If eligibility rates were similar in participants who could not be reached, the response rate of eligible participants would be 63% (7.1% refusal rate; 93% cooperation rate).

any problem vs no problem). Four specific preventive measures were assessed: influenza shot in the previous 12 months (yes or no), ever having had a pneumonia shot (yes or no), colonoscopy in the previous 10 years (yes or no), and for women, mammogram in the previous 24 months (yes or no). For pneumococcal vaccination, participants aged 65 and older and those aged 50 to 64 who had a clinical indication, including diabetes mellitus, chronic lung disease, and asthma, were included.¹⁹

Independent Variables

The independent variables selected were based on a conceptual framework modified from the Andersen Model of Access to Healthcare for Low-income Populations.²⁰ The model incorporates the predisposing characteristics that exist before the perception of illness (e.g., race, education, age), enabling resources that facilitate or impede health service usage (e.g., health insurance, poverty), and the need variables pertaining to physical illness. Self-reported measures were used for model covariates that included predisposing factors (age, race and ethnicity, sex), enablers (insurance, poverty), and individual need (chronic conditions). Because the study sample aged 65 and older was largely insured, an age–insurance combination variable was created with three groups: 50 to 64 with insurance; 50 to 64 without insurance; and 65 and older, excluding those who were uninsured ($n = 11$). Creating the three age-by-insurance categories and limiting the data set avoided collinearity of these two variables. Self-identified race and ethnicity information categorized into two mutually exclusive groups was used: non-Latino African-American and Latino. Mixed-race individuals were excluded from analysis ($n = 1$). In addition, information was obtained about the presence or absence of chronic conditions, including diabetes mellitus, hypertension, asthma, lung disease, and arthritis. The study used self-reported household income and size to calculate poverty level (based on 2008 federal poverty-level guidelines) and created a dichotomous poverty status variable ($>100\%$ or $<100\%$ the federal poverty level).²¹

Analysis

The survey sample had 13% missing data for poverty. A non-negligible proportion, and up to one-third of respondents in most large population-based surveys, has missing income information.^{22,23} Before running the analyses, missing poverty data were imputed using multiple imputation methods with SAS PROC MIanalyze (SAS Institute, Inc., Cary, NC), using race and age as predictors. All other variables had less than 4% missing values. Next, survey weights were created from census-level data on race, poverty, and age, and weights were applied to the data, similar to studies conducted in this area.²⁴

Bivariate analyses were then conducted of each independent variable (50–64 with insurance, 50–64 without insurance, and ≥ 65) with each outcome. Logistic regression models were constructed to test associations between the independent variables and reported delay in care and each preventive service. The associations are presented as differences between age and insurance combination categories in predicted percentages of having a delay in care or receiving preventive services, and their statistical significance was determined by simulating 95% confidence intervals for the differences. Using the multivariate logistic

regression model, the independent variables were empirically tested in predicting outcomes of delays in care and preventive service use. Raw logistic regression coefficients and odds ratios are nonlinear expressions of the effect of individual covariates on the outcome variables, so the findings are presented as predicted percentages to show the individual marginal effects of each covariate on the outcome variables.

To evaluate interaction effects for whether age effects on delays in care and preventive service use had similar magnitudes for subjects with chronic conditions, interaction terms of age by presence of chronic conditions were tested in the models. All analyses were performed with SAS statistical software (version 9.1.3, SAS Institute, Inc.).

RESULTS

Sixty-one percent of the study sample was female, 60% African American, and 64% aged 65 and older; 78% of Latinos conducted the survey in Spanish (Table 1). Fifty percent of participants had a high school education or less, 32% were under the federal poverty level, and 10% were uninsured. Latinos accounted for 77% of those aged 50 to 64 years old who were uninsured, compared with 40% of the total sample, 42% of all participants aged 50 to 64 (insured and uninsured), and 31% of those aged 65 and older.

In unadjusted analyses, those aged 65 and older had fewer reported problems receiving needed medical care than the younger groups (Table 1). Adults aged 50 to 64 without insurance were more likely to report any delay or problems receiving needed medical or specialty care, but insured participants aged 50 to 64 were also more likely to report any delay and problems receiving needed medical care than the older group. African Americans and Latinos aged 65 and older had higher rates of reported influenza and pneumococcal vaccination and colonoscopy than the insured and uninsured younger cohorts. Receipt of mammograms did not follow patterns for other preventive services; insured younger women reported receiving mammograms more than women aged 65 and older.

In multivariate analyses adjusted for the predisposing, enabling, and need variables, participants aged 50 to 64 without insurance were most likely to report delays in care, followed by those aged 50 to 64 with insurance and then those aged 65 and older (Table 2). Participants aged 65 and older had lower rates of reported delays in care than their younger insured and uninsured counterparts (adjusted predicted percentage (APP) = 8% vs 18% and 45%, respectively) and problems receiving needed medical care (APP = 15% vs 28% and 43%, respectively).

Preventive service use also differed between the three age and insurance status groups. Vaccination rates were low in all three groups. The older group had significantly higher rates of influenza vaccination (APP = 58% vs 45% and 33%) and colonoscopy (APP = 69% vs 52% and 27%) than their insured and uninsured younger counterparts. Patterns were similar for pneumococcal vaccination, but rates for uninsured participants aged 50 to 64 who had a clinical indication for vaccination were significantly lower than rates for those aged 65 and older. Patterns of receipt of mammogram again diverged from the other preventive services, with significantly higher rates for participants insured aged 50 to 64.

Table 1. Unadjusted, Unweighted Percentages for Demographic, Clinical, and Self-Reported Measures According to Age and Insurance Status from 2008 Survey of Older Minorities in South Los Angeles

Characteristic	Overall %	≥65%	50–64 with Insurance %	P-Value	50–64 without Insurance %	P-Value
	n = 696	n = 351	n = 272		n = 73	
Female	61	64	57	.06	62	.69
Race or ethnicity						
African American	60	69	58	.005	23	<.001
Latino	40	31	42		77	
Language						
English	69	77	69	.02	27	<.001
Spanish	31	23	31		73	
Education						
≤High school	50	50	55	.26	74	<.003
≥Some college	50	50	45		26	
Income as percentage of federal poverty level						
0–99	32	28	35	.07	41	.03
≥100	68	72	65		59	
Self-reported health						
Excellent, very good, or good	65	63	68	.20	67	.47
Fair or poor	35	37	32		33	
Chronic conditions						
Arthritis	43	51	38	.001	22	<.001
Asthma	12	12	14	.41	7	.21
Diabetes mellitus	28	29	26	.36	29	.94
Heart disease	16	21	10	<.003	8	.01
High blood pressure	64	75	54	<.001	48	<.001
Delays						
Reported any delay in care	15	9	17	.008	39	<.001
Problem seeing a specialist	24	20	25	.16	44	<.007
Problem receiving needed medical care	22	16	26	.003	44	<.001
Preventive need						
Influenza shot in previous year	49	57	43	<.001	34	<.004
Mammogram in previous 2 years	84	81	90	.01	78	.63
Ever had a pneumococcal vaccine	34	48	20	<.001	16	<.001
Colonoscopy in previous 10 years	57	68	52	<.001	21	<.001

Note: Comparison between aged 65 and older group and 50 to 65 according to insurance as assessed using chi-square tests. Pneumococcal vaccination assessed for those with a clinical indication, including diabetes mellitus, chronic lung disease, and aged 65 and older.

Sex, race and ethnicity, income, and chronic disease were also associated with differences in delays in care and preventive service use (Table 2). Women had higher rates of problems receiving needed medical care and colonoscopy than men. Latinos had higher rates of influenza vaccination and lower rates of colonoscopy than African Americans. Respondents under the federal poverty level reported higher rates of problems seeing a specialist. Participants with chronic disease, particularly two or more, had higher rates of any reported delays than those without chronic disease and greater use of influenza and pneumococcal vaccination and mammography.

Finally, the interactions between age and presence of chronic conditions were not statistically significant.

DISCUSSION

For middle-aged and older adults in South Los Angeles, differences in levels of reported delays and variation in

delays in care and use of preventive care were observed according to age, race, and insurance status. Independent of insurance status, persons aged 50 to 64 reported more delays in care and problems receiving needed medical care than those aged 65 and older. The delays and problems were even greater for those who were younger and uninsured.

An important feature of this work for community stakeholders was the ability to benchmark study results with established national targets for delays in care and preventive service use. Compared with Healthy People 2010 national targets for delays in access to care (<7%), the rates in this study were more than double for insured adults aged 50 to 64 and more than six times as great for uninsured adults aged 50 to 64 as for those aged 65 and older.²⁵ The rates that insured and uninsured adults in the younger group reported fall far short of the Healthy People 2010 national objectives and far below the expectations of community stakeholders.

Table 2. Predicted Percentages of Outcome Measures According to Predisposing and Enabling Characteristics

	% (95% Confidence Interval)									
	Delays					Preventive Care				
	Any Reported Delay	Problem Seeing a Specialist	Problem Receiving Needed Medical Care	Influenza Vaccination in Previous 12 Months	Mammogram in Previous 24 Months	Pneumococcal Vaccine*	Colonoscopy in Previous 10 Years			
Age										
50–64 uninsured	45 (33–56) [†]	43 (29–58) [†]	43 (31–56) [†]	33 (24–45) [†]	81 (68–89)	21 (15–30) [†]	27 (18–39) [†]			
50–64 insured	18 (14–23) [†]	27 (22–34)	28 (23–33) [†]	45 (39–50) [†]	91 (85–94) [†]	42 (25–61)	52 (47–57) [†]			
≥65 (reference)	8 (5–12)	19 (13–27)	15 (11–21)	58 (51–64)	76 (68–83)	50 (44–57)	69 (62–75)			
Sex										
Male	13 (10–18)	22 (17–29)	20 (16–27)	54 (48–59)	—	46 (38–54)	51 (45–57) [†]			
Female	16 (13–20)	26 (21–32)	24 (20–29)	48 (43–53)	—	43 (37–50)	62 (57–67) [†]			
Race or ethnicity										
African American	16 (13–21)	23 (18–29)	21 (17–26)	45 (40–50) [†]	83 (77–88)	46 (40–52)	63 (58–67) [†]			
Latino	13 (10–18)	27 (20–36)	25 (19–32)	58 (51–65) [†]	80 (71–87)	41 (32–50)	50 (43–58) [†]			
Income as percentage of federal poverty level										
0–99	16 (12–22)	31 (24–40) [†]	27 (22–35) [†]	49 (44–54)	80 (72–86)	49 (43–54)	53 (46–60)			
≥100	14 (11–18)	18 (14–24) [†]	18 (15–22) [†]	52 (45–59)	84 (79–88)	40 (31–50)	62 (57–66)			
Presence of chronic disease										
None (reference)	10 (6–16)	22 (14–33)	17 (11–25)	30 (22–40)	68 (54–80)	28 (15–46)	52 (42–60)			
1	14 (11–20)	23 (17–31)	21 (16–28)	46 (40–53) [†]	82 (73–88)	41 (33–50)	60 (53–66)			
≥2	18 (14–22) [†]	26 (21–33)	25 (20–31)	59 (54–64) [†]	85 (79–90) [†]	48 (41–54) [†]	59 (53–64)			
Healthy People 2010 Goal	<7	NA	NA	90	90	90	50			

Note: Predicted percentages are adjusted for all other covariates, including sex, race, poverty status, health coverage, and presence of chronic conditions.

* Pneumococcal vaccination assessed for those with a clinical indication, including diabetes mellitus, chronic lung disease, and those age 65 and older.

[†] All statistically significantly different from reference ($P < .05$).

NA = not available in current Healthy People 2010 goals.

As in prior studies, it was found that middle-aged people without insurance are a high-risk group for delays in care and problems receiving needed medical care,^{8,26} although the findings underscore that adults aged 65 and older reported problems obtaining needed medical care that were greater than expected for this population. This is consistent with studies that suggest that Medicare coverage decreases but does not eliminate racial, ethnic, and socioeconomic health disparities in this age group.^{9,27–31} Older minorities who are uninsured and subsequently enroll in Medicare may have greater morbidity and greater health decline and therefore require more-intensive and more-costly care after enrollment in the program.^{32,33} The findings of the current study reinforce the importance of insurance in this urban African-American and Latino study sample but identify potentially remediable gaps in preventive service use.

Healthy People 2010 objectives have also identified target rates for vaccination and preventive care that can be used for community program and intervention planning.²⁵ For South Los Angeles residents, the adjusted rate of influenza vaccination was not greater than 60% for any group, compared with the Healthy People 2010 goal of 90%; for those who reported having a pneumococcal vaccine, the vaccination rate was less than 50% for all groups, compared with the Healthy People 2010 goal of 90%. Rates of influenza vaccination higher than national rates reported by the Centers for Disease Control and Prevention of 30% for non-Latino African Americans and Latinos aged 50 to 64 were observed but still far from the goal set in Healthy People 2010. Additionally, the rates for influenza and pneumococcal vaccination in insured participants and those aged 65 and older were still far from the targeted goals.

Future community-based participatory research studies should examine the reasons for delays in care and lower use of preventive services. Community partners suggested several reasons for the findings and identified areas for future investigation. Partners thought that delays in care may be due to lack of transportation, competing demands for time and money, and difficulty accessing specialty services in this older population. To address these delays in care, community partners wanted to examine the capacity of the healthcare system to treat older patients with chronic diseases in this community. Our partners thought that lower preventive service use was linked to service availability, but that additional barriers remain to understanding the importance of certain services and overcoming distrust for immunizations. Partners proposed the creation of a community action plan that would be dual pronged to improve health education and outreach and to examine the capacity of the healthcare system for appointments, care coordination, and education. Some specific suggestions included providing immunizations and colon cancer screening in a mobile van setting to build on the success of mobile mammography. Other partners wanted to have older residents educate other older persons about the importance of obtaining timely care and preventive screening. This work is one example of how communities can address healthcare needs and share their voice in research agendas. Other communities can use this study as a model for approaching joint problem solving through identifying needs and vulnerabilities for older populations.

Despite low vaccination rates, this South Los Angeles cohort has generally high mammogram and colon cancer

screening rates that are approaching or exceeding Healthy People 2010 goals, which are 75% for mammography, compared with impressively high rates in the current study of more than 90%. Ongoing breast cancer screening efforts should continue to focus on uninsured populations. For colonoscopy, this study demonstrates rates of screening of almost 70%, whereas national rates are often less than 40%, and Health People 2010 set goals of 50%.^{34,35} Differences were found in vaccination and cancer screening between middle-aged and older participants.

The success in cancer screening may shed light on important local interventions. Future efforts should be directed at exploring the differences in community perception between vaccination and mammography to develop targeted outreach interventions. Effective community-based breast cancer screening targets uninsured and low-income women through mobile mammogram clinics and media campaigns. These results could inform future combined interventions for vaccination or other cancer screening promotion efforts.

This study has three important limitations. First, participants were recruited from one area of Los Angeles County, South Los Angeles, a community that recently faced the closure of a major urban public hospital. The survey was performed after hospital closure and may represent a vulnerable and transient period in time. Thus, these findings may not generalize to other low-income areas, nor can inferences be made about the role of hospital closure from this cross-sectional design. Measures important to community stakeholders were focused on through this community-based research methodology. Second, using a random sample of households with listed telephone numbers, people aged 65 and older who are retired or younger persons who are unemployed or disabled may have been oversampled. Finally, delays and the use of preventive services were obtained using self-report and not chart review, which could have introduced recall bias, but to mitigate these biases, previously tested measures that have been developed to limit these methodological challenges were used.²⁴

Because the numbers of uninsured decline after health reform implementation, uninsured middle-aged people may be an important population for insurance expansion. These findings underscore the potential for future reductions in delays in care and increases in receipt of preventive services that may result from expansions of insurance coverage. As insurance coverage expands, visit and prescription copayments may increase and cause further strain on older populations. Future opportunities for cost savings may also be captured through better screening and disease prevention.³⁶ Ongoing efforts to develop a community-based integrated care network³⁷ may be able to address these concerns as community stakeholders plan to reopen the closed Martin Luther King Hospital.

CONCLUSION

Independent of insurance status, middle-aged African Americans and Latinos are much more likely to experience delays in care and have lower reported use of several preventive services in South Los Angeles than older insured adults. As efforts to increase health insurance are implemented, it will be important to consider expanding Medicare eligibility as one strategy to improve preventive care for vulnerable and at-risk older adults.

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Conflict of Interest: The editor in chief has reviewed the conflict of interest checklist provided by the authors and has determined that the authors have no financial or any other kind of personal conflicts with this paper.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Table S1. Variables and Survey Questions.

Table S2. Adjusted Predicted Relative Risks for Selected Model.

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