

Supplemental Material: National Health Interview Survey (NHIS) questions used in the study.

Social Determinants of Health (SDoH) Variables

Variable		NHIS Survey Question	NHIS Survey Responses	NHIS Survey Table / NHIS Variable Name	Analytic Recode
Domain: Economic Stability					
Employment		What was your employment status as of last week?	Working for pay at a job or business; With a job or business but not at work; Looking for work; Working, but not for pay, at a family-owned job or business; Not working at a job or business and not looking for work	Sample Adult / DOINGLW2	0 = "Employed or Retired"; 1 = "Never or Previously Employed"
Sick Leave		[If DOINGLW2 eq] Do you have paid sick leave on this MAIN job or business? [Else if EVERWRK eq and [WHYNOWK2 eq 03 or AGE ge 65] Did you ever have paid sick leave on the job you held the longest? [Else if EVERWRK eq and WHYNOWK2 ne 03 and AGE lt 65] Did you ever have paid sick leave on the job you held most recently?	Yes; No	Sample Adult / PDSICK	0 = "Yes"; 1 = "No"
Family Income		Was your total [fill1: family/] income from all sources less than [fill2: 200% of poverty threshold] or [fill2: 200% of poverty threshold] or more?	Less than 200% of poverty threshold; more than 200% of poverty threshold	Family / FPOV200	0 = "Middle/High-income" (≥ 200% of poverty threshold); 1 = "Low-income" (< 200% of poverty threshold)
Difficulty Paying Medical Bills		In the past 12 months did [fill1: you/anyone in the family] have problems paying or were unable to pay any medical bills? Include bills for doctors, dentists, hospitals, therapists, medication, equipment, nursing home or home care.	Yes; No	Family / MEDBILL	0 = "No"; 1 = "Yes"
Unable to Pay Medical Bills		[fill 1: Do you/Does anyone in your family] currently have any medical bills that you are unable to pay at all?	Yes; No	Family / MEDBNOP	0 = "No"; 1 = "Yes"
High Financial Distress composite Score	Worried about money for retirement	How worried are you right now about not having enough money for retirement? Are you...	Very worried; Moderately worried; Not too worried; Not worried at all	Sample Adult / ACIRETR	0 = "Not too worried/Not worried at all"; 1 = "Mod/Very worried"
	Worried about medical costs of illness/ accident	How worried are you right now about not being able to pay medical costs of a serious illness or accident? Are you...	Very worried; Moderately worried; Not too worried; Not worried at all	Sample Adult / ACIMEDC	0 = "Not too worried/Not worried at all"; 1 = "Mod/Very worried"
	Maintaining standard of living	How worried are you right now about not being able to maintain the standard of living you enjoy? Are you...	Very worried; Moderately worried; Not too worried; Not worried at all	Sample Adult / ACISTLV	0 = "Not too worried/Not worried at all"; 1 = "Mod/Very worried"
	Medical costs of healthcare	How worried are you right now about not being able to pay medical costs for normal healthcare? Are you...	Very worried; Moderately worried; Not too worried; Not worried at all	Sample Adult / ACICNHC	0 = "Not too worried/Not worried at all"; 1 = "Mod/Very worried"

	Paying monthly bills	How worried are you right now about not having enough to pay your normal monthly bills? Are you...	Very worried; Moderately worried; Not too worried; Not worried at all	Sample Adult / ACINBILL	0 = "Not too worried/Not worried at all"; 1 = "Mod/Very worried"
	Paying rent/ mortgage/ housing costs	How worried are you right now about not being able to pay your rent, mortgage, or other housing costs? Are you...	Very worried; Moderately worried; Not too worried; Not worried at all	Sample Adult / ACIHCST	0 = "Not too worried/Not worried at all"; 1 = "Mod/Very worried"
Cost-related medication non-adherence (medication)	Skipped medication doses to save money	DURING THE PAST 12 MONTHS, were any of the following true for you?...You skipped medication doses to save money	Yes; No	Sample Adult / ARX12_1	0 = "No"; 1 = "Yes"
	Took less medicine to save money	DURING THE PAST 12 MONTHS, were any of the following true for you? ...you took less medicine to save money	Yes; No	Sample Adult / ARX12_2	0 = "No"; 1 = "Yes"
	Delayed filling prescription to save money	DURING THE PAST 12 MONTHS, were any of the following true for you? ...You delayed filling a prescription to save money	Yes; No	Sample Adult / ARX12_3	0 = "No"; 1 = "Yes"
Cost-related medication non-adherence (care)	Delayed care due to cost	DURING THE PAST 12 MONTHS, [fill: have you delayed seeking medical care/has medical care been delayed for anyone in the family] because of worry about the cost?	Yes; No	Family / FDMED12M	0 = "No"; 1 = "Yes"
	Foregone care due to cost	DURING THE PAST 12 MONTHS, was there any time when [fill1: you/someone in the family] needed medical care, but did not get it because [fill2: you/the family] couldn't afford it?	Yes; No	Family / FNMED12M	0 = "No"; 1 = "Yes"
Domain: Neighborhood, physical environment, and social cohesion					
House Tenure	Is this house/apartment owned or being bought, rented, or occupied by some other arrangement by you [fill: /or someone in your family]?	Owned or being bought; Rented; Other Arrangement	Family / HOUSEOWN	0 = "Own or being bought"; 1 = "Rent/Other arrangement"	
Neighborhood Quality (Help)	How much do you agree or disagree with the following statements about your neighborhood? People in this neighborhood help each other out.	Definitely agree; somewhat agree; somewhat disagree; definitely disagree	Sample Adult / ACINHELP	0 = "Agree (Somewhat/Definitely)"; 1 = "Disagree (Somewhat/Definitely)"	
Neighborhood Quality (Trust)	How much do you agree or disagree with the following statements about your neighborhood? People in this neighborhood can be trusted.	Definitely agree; somewhat agree; somewhat disagree; definitely disagree	Sample Adult / ACINTRU	0 = "Agree (Somewhat/Definitely)"; 1 = "Disagree (Somewhat/Definitely)"	
Neighborhood Quality (Close Knit)	How much do you agree or disagree with the following statements about your neighborhood? This is a close-knit neighborhood.	Definitely agree; somewhat agree; somewhat disagree; definitely disagree	Sample Adult / ACINKNT	0 = "Agree (Somewhat/Definitely)"; 1 = "Disagree (Somewhat/Definitely)"	
Neighborhood Quality (Accountability)	How much do you agree or disagree with the following statements about your neighborhood? There are people I can count on in this neighborhood.	Definitely agree; somewhat agree; somewhat disagree; definitely disagree	Sample Adult / ACINCNTO	0 = "Agree (Somewhat/Definitely)"; 1 = "Disagree (Somewhat/Definitely)"	
Domain: Community and social context					

Kessler K6 Scale for High Psychological Distress	Feeling Sad	DURING THE PAST 30 DAYS, how often did you feel ...So sad that nothing could cheer you up?	All of the time; Most of the time; Some of the time; A little of the time; None of the time	Sample Adult / ACISAD	0 = "None of the time"; 1 = "A little of the time"; 2 = "Some of the time"; 3 = "Most of the time"; 4 = "All of the time"
	Nervous	During the PAST 30 DAYS, how often did you feel ...Nervous?	All of the time; Most of the time; Some of the time; A little of the time; None of the time	Sample Adult / ACINERV	0 = "None of the time"; 1 = "A little of the time"; 2 = "Some of the time"; 3 = "Most of the time"; 4 = "All of the time"
	Restless/ fidgety	During the PAST 30 DAYS, how often did you feel ...Restless or fidgety?	All of the time; Most of the time; Some of the time; A little of the time; None of the time	Sample Adult / ACIRSTLS	0 = "None of the time"; 1 = "A little of the time"; 2 = "Some of the time"; 3 = "Most of the time"; 4 = "All of the time"
	Hopeless	During the PAST 30 DAYS, how often did you feel ...Hopeless?	All of the time; Most of the time; Some of the time; A little of the time; None of the time	Sample Adult / ACIHOPLS	0 = "None of the time"; 1 = "A little of the time"; 2 = "Some of the time"; 3 = "Most of the time"; 4 = "All of the time"
	Everything was an effort	During the PAST 30 DAYS, how often did you feel ...That everything was an effort?	All of the time; Most of the time; Some of the time; A little of the time; None of the time	Sample Adult / ACIEFFRT	0 = "None of the time"; 1 = "A little of the time"; 2 = "Some of the time"; 3 = "Most of the time"; 4 = "All of the time"
	Worthless	During the PAST 30 DAYS, how often did you feel ...Worthless?	All of the time; Most of the time; Some of the time; A little of the time; None of the time	Sample Adult / ACIWITHLS	0 = "None of the time"; 1 = "A little of the time"; 2 = "Some of the time"; 3 = "Most of the time"; 4 = "All of the time"

Domain: Food Insecurity

Food Insecurity Composite	Worried food would run out before got money to buy more	The first statement is "[fill 2: I/We] worried whether [fill 3: my/our] food would run out before [fill 4: I/we] got money to buy more." Was that often true, sometimes true, or never true for [fill 1: you/your family] in the last 30 days?	Often true; sometimes true; never true	Family / FSRUNOUT	0 = "Never true"; 1 = "Sometimes true/Often true"
	Food did not last before had money to get more	"The food that [fill 1: I/we] bought just didn't last, and [fill 1: I/we] didn't have money to get more." Was that often true, sometimes true, or never true for [fill 2: you/your family] in the last 30 days?	Often true; sometimes true; never true	Family / FSLAST	0 = "Never true"; 1 = "Sometimes true/Often true"

Could not afford to eat balanced meals	"[fill 1: I/We] couldn't afford to eat balanced meals." Was that often true, sometimes true, or never true for [fill 2: you/your family] in the last 30 days?	Often true; sometimes true; never true	Family / FSBALANC	0 = "Never true"; 1 = "Sometimes true/Often true"
Cut size or skipped meals because not enough money	In the last 30 days, did [fill 1: you/you or other adults in your family] ever cut the size of your meals or skip meals because there wasn't enough money for food?	Yes; No	Family / FSSKIP	0 = "No"; 1 = "Yes"
How many days in the past month cut size of or skipped meals	In the last 30 days, how many days did this happen?	1-30 (continuous response)	Family / FSSKDAYS	0 = if < 3 days; 1 = if ≥ 3 days
Eat less than felt should because not enough money	In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?	Yes; No	Family / FSLESS	0 = "No"; 1 = "Yes"
Hungry but did not eat because not enough money	In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food?	Yes; No	Family / FSHUNGRY	0 = "No"; 1 = "Yes"
Lose weight because not enough money for food	In the last 30 days, did you lose weight because there wasn't enough money for food?	Yes; No	Family / FSWEIGHT	0 = "No"; 1 = "Yes"
Not eat for a whole day because not enough money for food	In the last 30 days, did [fill 1: you/you or other adults in your family] ever not eat for a whole day because there wasn't enough money for food?	Yes; No	Family / FSNOTEAT	0 = "No"; 1 = "Yes"
How many days in the past month not eat for whole day	In the last 30 days, how many days did this happen?	1-30 (continuous response)	Family / FSNEEDAYS	0 = if < 3 days; 1 = if ≥ 3 days
Domain: Education				
English Language	How well [fill: do you/ does ALIAS] speak English? Would you say...	Very well; well; not well; not at all	Persons / ENGLANG	0 = "Well/Very Well"; 1 = "Not well/Not at all"

Education Attainment	What is the HIGHEST level of school [fill: you have/ALIAS has] completed or the highest degree [fill: you have/ALIAS has] received? Please tell me the number from the card.	Never attended/kindergarten only; 1st grade; 2nd grade; 3rd grade; 4th grade; 5th grade; 6th grade; 7th grade; 8th grade; 9th grade; 10th grade; 11th grade; 12th grade, no diploma; GED or equivalent; High school graduate; some college, no degree; Associate degree: occupational, technical, or vocational program; associate's degree: academic program; bachelor's degree; master's degree; professional school degree; doctoral degree; child under 5 years old	Family / EDUC	0 = "≥ Some college"; 1 = "≤ High School"
Health Information Technology use: Did not look up health info on internet	DURING THE PAST 12 MONTHS, have you ever used computers for any of the following ...Look up health information on the Internet.	Yes; No	Sample Adult / HIT1A	0="Yes", 1="No"
Health Information Technology use: Did not fill a prescription online	DURING THE PAST 12 MONTHS, have you ever used computers for any of the following ...Fill a prescription.	Yes; No	Sample Adult / HIT2A	0="Yes", 1="No"
Health Information Technology use: Did not schedule a healthcare appointment online	DURING THE PAST 12 MONTHS, have you ever used computers for any of the following...Schedule an appointment with a health care provider.	Yes; No	Sample Adult / HIT3A	0="Yes", 1="No"
Health Information Technology use: Did not communicate with healthcare provider online	DURING THE PAST 12 MONTHS, have you ever used computers for any of the following...Communicate with a health care provider by email	Yes; No	Sample Adult / HIT4A	0="Yes", 1="No"
Health Information Technology use: Did not use internet chat rooms to learn about health topics	DURING THE PAST 12 MONTHS, have you ever used computers for any of the following ...Use online chat groups to learn about health topics	Yes; No	Sample Adult / HIT5A	0="Yes", 1="No"
Domain: Health care system				
Insurance Status	Multiple Questions	Private health insurance; Medicare ; Medi-Gap; Medicaid; SCHIP (CHIP/Children's Health Insurance Program); Military health care (TRICARE/VA/CHAMP-VA); Indian Health Service; State-sponsored health plan; Other government program; Single service plan (e.g., dental, vision, prescriptions); No coverage of any type	Persons / HIKIND	0 = "Uninsured"; 1 = "Insured"
Usual Source of Care	Is there a place that you USUALLY go to when you are sick or need advice about your health?	Yes; There is NO place; There is MORE THAN ONE place	Sample Adult / AUSUALPL	0 = "Usual source of care"; 1 = "No usual source of care"
Trouble finding a doctor/provider, past 12m	DURING THE PAST 12 MONTHS, did you have any trouble finding a general doctor or provider who would see you?	Yes; No	Sample Adult / APRVTRYR	0 = "No"; 1 = "Yes"

MD's office not accept you as new patient, past 12m	DURING THE PAST 12 MONTHS, were you told by a doctor's office or clinic that they would not accept you as a new patient?	Yes; No	Sample Adult / ADRNANP	0 = "No"; 1 = "Yes"
MD's office not accept your insurance, past 12m	DURING THE PAST 12 MONTHS, were you told by a doctor's office or clinic that they did not accept your health care coverage?	Yes; No	Sample Adult / ADRNAI	0 = "No"; 1 = "Yes"
Delayed Medical Care: Couldn't get through on phone	There are many reasons people delay getting medical care. Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS?...You couldn't get through on the telephone.	Yes; No	Sample Adult / AHCDLY_1	0 = "No"; 1 = "Yes"
Delayed Medical Care: Couldn't get appt soon enough	There are many reasons people delay getting medical care. Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS? ...You couldn't get an appointment soon enough.	Yes; No	Sample Adult / AHCDLY_2	0 = "No"; 1 = "Yes"
Delayed Medical Care: Wait too long at MD's office	There are many reasons people delay getting medical care. Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS? ...Once you get there, you have to wait too long to see the doctor.	Yes; No	Sample Adult / AHCDLY_3	0 = "No"; 1 = "Yes"
Delayed Medical Care: Not open when you could go	There are many reasons people delay getting medical care. Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS? ...The (clinic/doctor's) office wasn't open when you could get there	Yes; No	Sample Adult / AHCDLY_4	0 = "No"; 1 = "Yes"
Delayed Medical Care: No transportation	There are many reasons people delay getting medical care. Have you delayed getting care for any of the following reasons in the PAST 12 MONTHS? ...You didn't have transportation.	Yes; No	Sample Adult / AHCDLY_5	0 = "No"; 1 = "Yes"
Quality of Care (Satisfaction)	In general, how satisfied are you with the health care you received in the past 12 months?	Very satisfied; Somewhat satisfied; Somewhat dissatisfied; Very dissatisfied	Sample Adult / ACISATHC	0 = "Somewhat/Very Satisfied"; 1 = "Somewhat/Very Dissatisfied or No healthcare in past year"

Outcome Variable

Variable	NHIS Survey Question	NHIS Survey Responses	NHIS Survey Table / NHIS Variable Name	Analytic Recode
Eye care utilization	During the past 12 months, have you seen or talked to an optometrist, ophthalmologist, or eye doctor (someone who prescribes eyeglasses) about your own health?	Yes; No	Sample Adult / AHCSY1_2	0 = "No"; 1 = "Yes"

Demographic Variables

Variable	NHIS Survey Question	NHIS Survey Responses	NHIS Survey Table / NHIS Variable Name	Analytic Recode
Age	How old are you?	Age in years (000-120)	Sample Adult / AIDAGE	1 = "18 to 44"; 2 = "45 to 64"; 3 = "65 and older"
Sex	Are you Male or Female?	Male; Female	Sample Adult / AIDSEX	1 = "Male"; 2 = "Female"
Geographic region (Northeast, Midwest, South, West)	In what state [fill: were you/was ALIAS] born?	Lists 50 States, DC, and United States (state unknown)	Family / PLBORN1	1 = "Northeast"; 2 = "Midwest"; 3 = "South"; 4 = "West"

Race/ethnicity (non-Hispanic White, non-Hispanic Black, non-Hispanic Asian, Hispanic)	What race or races [fill1: Do you/Does ALIAS] consider [fill2: yourself/himself/herself] to be?	White; Black/African American; Indian (American) (includes Eskimo, Aleut); Chinese; Filipino; Asian Indian; Other race; Multiple race, no primary race selected	Sample Adult / MRACBP12	1 = "White"; 2 = "Black"; 3 = "Asian" if Chinese, Filipino, Asian Indian
	Does {person} consider {self} Hispanic/Latino?	Yes; No	Sample Adult / HISPANI_I	0 = "Not Hispanic"; 1 = "Hispanic"
Vision Impairment	Do you have any trouble seeing even when wearing glasses or contact lenses	Yes; No	Sample Adult / AVISION	0 = "No"; 1 = "Yes"
Charlson Comorbidity Index Variables	Have you ever been told by a physician that you have diabetes?	Yes; No; Borderline or prediabetes	Sample Adult / DIBEV1	0 = "No"; 1 = "Yes"
	What conditions or health problems cause {person} limitations? Stroke problem causes limitation	1 mentioned, 2 not mentioned, 7 refused, 8 not ascertained, 9 don't know	Persons / LAHCA8	0 = "Not mentioned"; 1 = "Mentioned";
	How long {have you/has ALIAS} had a lung or breathing problem (e.g., asthma and emphysema)?	1 chronic, 2 not chronic, 9 unknown if chronic	Persons / LACHRC11	0 = "Not chronic / unknown if chronic"; 1 = "Chronic"
	What conditions or health problems cause {person} limitations? Musculoskeletal/connective tissue problem causes limitation	1 mentioned, 2 not mentioned, 7 refused, 8 not ascertained, 9 don't know	LAHCA20_	0 = "Not mentioned"; 1 = "Mentioned";
	What conditions or health problems cause {person} limitations? Senility causes limitation	1 mentioned, 2 not mentioned, 7 refused, 8 not ascertained, 9 don't know	LAHCA16	0 = "Not mentioned"; 1 = "Mentioned";
	Have you EVER been told by a doctor or other health professional that you had ...A heart attack (also called myocardial infarction)?	Yes; No	Sample Adult / MIEV	0 = "No"; 1 = "Yes"
	Have you EVER been told by a doctor or other health professional that you had ...An ulcer This could be a stomach, duodenal or peptic ulcer.	Yes; No	Sample Adult / ULCEV	0 = "No"; 1 = "Yes"
	Have you EVER been told by a doctor or other health professional that you had ...Cancer or a malignancy of any kind?	Yes; No	Sample Adult / CANEV	0 = "No"; 1 = "Yes"
	DURING THE PAST 12 MONTHS, have you been told by a doctor or other health professional that you hadWeak or failing kidneys? - Do not include kidney stones, bladder infections or incontinence.	Yes; No	Sample Adult / KIDWKYR	0 = "No"; 1 = "Yes"
Has a doctor or other health professional ever told you that you had any kind of chronic, or long-term liver condition?	Yes; No	Sample Adult / LIVEV	0 = "No"; 1 = "Yes"	

Other Variables

Variable	NHIS Survey Question	NHIS Survey Responses	NHIS Survey Table / NHIS Variable Name	Analytic Recode
Diabetes Type	What type of diabetes do you have?	Type 1; Type 2; Other; Refused; Not ascertained; Don't know	Sample Adult / DIBTYPE (2016-2017)	1 = "Type 1"; 2 = "Type 2"