# Social Risks, Social Needs, and Attitudes Toward Social Health Screening 1 Year Into the COVID-19 Pandemic: Survey of Adults in an Integrated Health Care Delivery System

*Nancy P Gordon, ScD[1]; Carmen Byker Shanks, PhD, RDN[2]; Richard W Grant, MD, MPH[1]*

*Perm J 2023;27:22.142 • https://doi.org/10.7812/TPP/22.142*

NPG, 0000-0003-3692-112X

**Corresponding Author**
Nancy P Gordon, ScD
nancy.gordon@kp.org

**Author Affiliations**
[1] Kaiser Permanente Northern California Division of Research, Oakland, CA, USA

[2] Gretchen Swanson Center for Nutrition, Omaha, NE, USA

**Author Contributions**
Nancy P Gordon, ScD, conceived the study design, collected, analyzed, and interpreted the data, and wrote the first draft of the manuscript. Richard W Grant, MD, MPH, conceived the study design, interpreted the data, and contributed to subsequent drafts of the manuscript. Carmen Byker Shanks, PhD, RDN, interpreted the data and contributed to subsequent drafts of the manuscript. All authors approved the final version of this manuscript.

## Abstract

**INTRODUCTION:** Information about demographic differences in social risks, needs, and attitudes toward social health screening in non–highly vulnerable adult populations is lacking.

**METHODS:** The authors analyzed data for 2869 Kaiser Permanente Northern California non–Medicaid-covered members aged 35 to 85 who responded to a 2021 English-only mailed/online survey. The survey covered 7 social risk and 11 social needs domains and attitudes toward social health screening. The authors used data weighted to the Kaiser Permanente Northern California membership to estimate prevalence of risks, needs, and screening receptivity in the overall population, by race/ethnicity (White, Black, Latinx, Asian American/Pacific Islander) and age (35–65 years old, 66–85 years old). Multivariable regression was used to evaluate differences between groups.

**RESULTS:** Overall, 26% of adults were financially strained, 12% food insecure, 12% housing insecure, and 5% transportation insecure. Additionally, 7%, 8%, and 17% had difficulty paying for utilities, medical expenses, and dental care, respectively. Over 40% of adults wanted help with ≥ 1 social need. Dental care, vision/hearing care, paying for medical expenses and utilities, and managing debt/credit card repayment surpassed food, housing, and transportation needs. Prevalence of social risks and needs was generally higher among middle-aged versus older and Black and Latinx versus White adults. Among the 70% of adults receptive to screening, 85% were willing to complete a questionnaire and 40% were willing to have staff ask questions; 18% did not want to be screened.

**CONCLUSION:** When implementing social health screening in diverse patient populations, the prevalence of social risks and needs, as well as the acceptability of social health screening and screening modalities, will vary among demographic subgroups.

## Introduction

In 2014, the Institute of Medicine released its seminal report titled *Capturing Social and Behavioral Domains and Measures in Electronic Health Records: Phase 2.*[1] This report provided a major impetus and direction for health care practitioners and health insurance organizations to engage in measuring the prevalence of different social determinants of health (SDoHs), social risks, and social needs in patient populations. Further, there was interest in understanding how social risks and unaddressed social needs impact population health and health care utilization.[2–9] Screening for and employing cost-effective methods to address medical-related and "non-medical" social risks and social needs through individual- and population-level interventions was viewed as necessary to achieve the triple aim of better health, improved health care delivery, and lower health care costs, as well as to achieve health equity.[9–12]

In 2015, Kaiser Permanente's Care Management Institute's Center for Population Health created the Your Current Life Situation questionnaire, which assessed social risks related to living situation, food, transportation, and financial strains; needs with daily activities; and social needs for which help was desired.[13] In 2017, Kaiser Permanente's Health Plan and Medical Group leadership put forth the vision statement that "In partnership with communities, addressing members' most pressing needs is an integral part of health care quality."[9] This vision spurred development of Kaiser Permanente's enterprise-wide goals to assess members' "social health," capture relevant information in electronic health records (EHRs) for easy access by everyone in the member's health care team, and build the Thrive Local digital platform to link members with community resources that address social needs. In 2019, all Kaiser Permanente markets were directed to start using EpicCare's EHR SDoH questions to assess members' social risks. Since then, Kaiser Permanente National Social Health has supported Kaiser Permanente markets in the implementation of standard screening, including a Brief Social Health Screener, to be used across outpatient and inpatient settings and the age continuum. The Brief Social Health Screener, which is documented in the EHR, assesses 4 social risk domains (financial, food, housing, transportation insecurity) and also includes a question about desire for assistance with 9 social needs. The resulting information provides health care teams with data to facilitate a "whole person"

approach to treatment planning, care delivery, and referral to resources that address social needs.

There is a growing body of research documenting the prevalence of social risks and social needs, as well as how prevalence differs by sociodemographic and health-related characteristics. However, most published studies are based on convenience samples and focus on socioeconomically vulnerable populations (eg, Medicaid, very low income, homeless) that are served by teams that include social workers. Several of these studies have been conducted in Kaiser Permanente populations.[14–18] There is scant research that explores the prevalence of social risks and social needs in diverse socioeconomic and racial/ethnic adult populations that are not considered highly vulnerable based on financial or health considerations. Additionally, much of the previous social risk research focuses on a limited number of "basic" social risks (ie, financial, food, housing, and transportation), leaving out other domains that influence overall health, including affordability of dental care, medicines, and medical supplies.[19]

This current study used data from a survey of middle-aged and older adult members of a non–safety-net, US-based, integrated health care delivery system. Data collection occurred approximately 1 year after the implementation of California's COVID-19 "stay at home" order and when social distancing requirements and capacity limits for most indoor establishments and entertainment venues were being lifted. The authors' specific aims were to estimate the current prevalence of different social risks and desire for Health Plan assistance in addressing different social and medical-financial needs in a non–Medicaid-insured population; to learn how adults in this population would feel about social risk/needs screening and screening modalities, given that most would never have been asked these types of questions by their health care practitioner; and to identify how social risks, needs, and attitudes toward screening varied by age group and race/ethnicity. The authors' ultimate goals are to contribute evidence to ongoing Health Plan and national discussions about which social risk and social needs domains should be included in social health screening tools for sociodemographically diverse general adult and older adult populations in non–safety-net settings, and to enhance understanding of how patient acceptance of social health screening may vary according to the demographic characteristics of the population being screened.

# Methods

### SETTING AND STUDY POPULATION

Kaiser Permanente Northern California is an integrated health care delivery system that provides primary and specialty health care to a racially/ethnically and sociodemographically diverse Health Plan membership that includes over 3 million adults who mostly reside in the Greater San Francisco Bay Area, Sacramento Area, Silicon Valley, and Central Valley. The focus of this study was on Kaiser Permanente Northern California Health Plan members aged 35–85 years who were not considered highly vulnerable (ie, non-Medicaid, not very low income, not homeless) at the time of the survey. The Kaiser Permanente Northern California adult membership is similar to the non–Medicaid-insured adult population of Northern California with regard to sociodemographic and health characteristics.[20]

### DATA SOURCE

Data for this study were collected using a self-administered (print and online) questionnaire that was mailed/emailed to a stratified (race x age x sex) random sample of 10,000 adults aged 35–90 years. This sample included adults who had been Health Plan members for at least 2 years, were not covered by Medi-Cal at the time of the survey, preferred to speak and write in English as documented in the EHR, and had a viable mailing address. The survey, titled "Kaiser Permanente Life Situation Survey," was first sent in mid-April 2021 (approximately 1 year into the COVID-19 pandemic), with a follow-up mailing to nonrespondents in late June. Emails containing a link to the online questionnaire were sent at approximately the same time as the print mailing. The survey materials stated that the survey was being conducted "to learn about the different types of financial and social problems that we know many of our members are facing during these difficult times." Participants were told that this was a research survey and there would be no follow-up with people who wanted help, but the mailings included a list of Health Plan and community resources that members could contact to get help with health care-related financial needs, non-medical social needs, and emotional/mental health needs. Respondents were entered into a drawing for 1 of 100 Target or Amazon.com gift cards valued at $100.

The survey collected information about sociodemographic characteristics; self-rated health, mental/emotional health, and overall well-being; social risks (financial strains, food/nutrition insecurity, housing insecurity, transportation insecurity); psychosocial risks (social connection, loneliness/social isolation, social support); social needs for which help might be wanted; and willingness to be screened for social risks and needs by self-administered questionnaire or staff interview. (See Appendix in Supplemental Materials for a list of survey questions used in this report.)

The survey response rate, after excluding people whose print survey bounced back as undeliverable or who were deceased, had a language barrier, or were no longer Health Plan members, was 29.0%. The authors restricted their analyses to 2869 respondents ages 35 to 85. The sample included 992 adults aged 35 to 65 and 1877 aged 66 to 85, with an overall mean age of 66.4 (± 11.2) and age-group–specific mean ages of 53.5 (± 9.3) and 73.2 (± 5.1). Slightly over half of respondents were female, and 879 were White, 643 Black, 663 Latinx, 667 Asian American/Pacific Islander (AAPI), and 17 other race/ethnicity. The distributions of sex and race/ethnicity were similar in both age groups.

### STUDY VARIABLES

The authors created 7 composite social risk domain variables for financial strain, food insecurity, housing insecurity, transportation insecurity, and difficulty paying for utilities, medical expenses, and dental care (Table 1). The authors used a checklist question to identify social-financial needs for which people might want help (Table 1). In addition to these variables, the authors ascertained willingness to be screened for social risks and needs and preference for how this would be done using the following question: "To identify members who may be in need of help, Kaiser Permanente may begin to ask members questions about their social and financial circumstances. How would you feel about being asked these types of questions?" Possible responses were: "OK if done with a short questionnaire I fill out myself"; "OK for staff to ask me these questions"; "I would not want to be asked these types of questions"; "Not sure"; and "Other." Those who were okay completing a questionnaire or having staff ask questions were classified as "OK with being screened." Those who were not okay with either screening modality but did not indicate "Not sure" were classified as "Would not want to be screened."

### STATISTICAL ANALYSIS

Respondents were assigned poststratification weighting factors based on the age (10-year intervals) x sex (male, female) x racial/ethnic (White,

| Domain | Survey variables |
|---|---|
| **Sociodemographic characteristics** | Age, sex (male/female), race/ethnicity (non-Hispanic White, Black, Latinx, Asian/Pacific Islander, other), total household income in 2020, level of education, employment status, marital/relationship status, current living situation (alone in own home, with family members/relatives, with family members/nonrelatives, in a residence or supportive community situation, or in a temporary living situation) |
| **Financial situation compared to prepandemic** | Compared to before the COVID-19 pandemic, would you say your financial situation is: better; about the same; somewhat worse; much worse? |
| **Social risks** | |
| Financial strain | • In general, how hard is it for you to pay for the very basics like food, housing, medical care, and heating? [Very hard; Hard; Somewhat hard; Not hard at all]<br>• Thinking about the past 3 months, at the end of each month, you generally ended up with: [More than enough money left over; Some money left over; Just enough to make ends meet; Almost enough to make ends meet; Not enough to make ends meet]<br>• In the past 3 months, did you have trouble paying for any of the following: food; housing; utilities; medical needs; dental care; transportation; phone; internet; debts; childcare or helping care for an adult?<br>• During the past 3 months, because of the cost, did you: Delay or not get medical care you thought you needed; Decide not to fill a prescription; Delay or not get dental care?<br>**Composite financial strain variable**: Over the past 3 months, they generally ended up with not enough money to make ends meet OR had trouble paying for ≥ 1 expense type OR used less medical/dental care than needed because of the cost OR indicated that it is hard or very hard for them to pay for the very basics. |
| Food insecurity | • Modified Hunger Vital Sign: Within the past 3 months: Sometimes or often worried food would run out before you had money to buy more; Sometimes or often ran out of food before you had money to buy more.<br>• You had trouble paying for food in past 3 months.<br>• In the past 3 months, you got free food from a food bank, food pantry, church, or other community-based organization.<br>**Composite food insecurity variable 1:** Within the past 3 months, often worried food would run out OR actually ran out of food before they had money to buy more OR had trouble paying for food.<br>**Composite food insecurity variable 2:** Within the past 3 months, often worried food would run out OR actually ran out of food before they had money to buy more OR had trouble paying for food OR got free food from a community-based organization. |
| Housing insecurity | • In the past 3 months, you had trouble paying for housing (rent or mortgage).<br>• You lived in 3 or more places during the past 12 months.<br>• You are concerned about your ability to pay for housing.<br>• You are worried about losing current housing.<br>**Composite housing instability variable**: ≥ 1 of the above. |
| Transportation insecurity | • You had trouble paying for transportation in the past 3 months.<br>• You sometimes or often lack transportation to get to medical appointments or get medicines/medical supplies; to get to meetings, work, or other things you need to do.<br>**Composite transportation insecurity variable**: ≥ 1 of the above. |
| Difficulty paying for utilities | • In the past 3 months, you had trouble paying for utilities.<br>• You are concerned about your ability to pay for utilities.<br>**Composite utilities insecurity variable**: ≥ 1 of the above. |
| Difficulty paying for medical expenses | • In the past 3 months, you had trouble paying for medical needs.<br>• During the past 3 months, because of the cost: You delayed or did not get medical care you thought you needed;<br>• During the past 3 months, because of cost: You took medicine in smaller doses or less frequently than prescribed, or decided not to fill a prescription.<br>**Composite medical-financial insecurity variable**: ≥ 1 of the above. |
| Difficulty paying for dental care | • In the past 3 months, you had trouble paying for dental care.<br>• During the past 3 months, you delayed or did not get dental care because of the cost.<br>**Composite dental care insecurity variable**: ≥ 1 of the above. |
| Social needs for which help might be wanted | Which of the following might you want to get help with if help were available: food; housing; transportation; utilities (heat, electricity, water, phone, internet, etc); paying for health care, medicine, medical supplies; dental care; vision or hearing services; applying for public benefits; more help with activities of daily living; caregiver/adult-care–related assistance; handling debt, loan, or credit card repayment. |
| **Attitude toward screening** | Okay to be screened by self-completed questionnaire or staff asking questions; would not want to be screened; unsure about being screened. |

**Table 1** Survey variables

Black, Latinx, AAPI, other) composition of the 2019 Kaiser Permanente Northern California adult membership with English as the spoken language preference. All analyses used weighted data and were performed using SAS v9.4 procedures for survey data (SAS Institute, Cary, NC, 2014). The authors produced descriptive statistics for sociodemographic characteristics. The authors estimated percentages of adults with different social risks, who would be interested in obtaining help with different social needs, who were or were not okay with being screened, and among those amenable to screening, preferred screening modalities. Statistics were produced for the overall population, and by sex (male and female), age group (35–65 years old and 66–85 years old), race/ethnicity (White, Black, Latinx, AAPI), and race/ethnicity within age group. Differences by age group and race/ethnicity in sociodemographic characteristics, social risks, social needs for which assistance might be wanted, and social risk/needs screening attitudes were evaluated for statistical significance using $\chi^2$ statistics derived from multivariable logistic regression models. Age group comparisons (35–65 years old vs 66–85 years old) controlled for sex and race/ethnicity; racial/ethnic comparisons (Black, Latinx, AAPI vs White) controlled for age (10-year interval variable) and sex; and racial/ethnic differences within age group and age group differences within racial/ethnic group controlled for sex. All percentages reported are based on weighted data, and all subgroup differences mentioned in the text are significant at p < 0.05.

## Results

After weighting, the analytic sample was 53.2% female and 55.3% White, 7.9% Black, 14.0% Latinx, 22.4% AAPI, and 0.4% other, with a mean age of 56.6. The middle-aged group was 52.1% female, 50.4% White, 8.1% Black, 15.9% Latinx, 25.3% AAPI, and 0.3% other, with a mean age of 50.1; the older group was 55.9% female, 68.1% White, 7.4% Black, 8.9% Latinx, 15.1% AAPI, and 0.5% other, with a mean age of 73.6. The Latinx and AAPI subgroups were somewhat younger than the White and Black subgroups (mean ages 52.7 and 53.0 vs 59.0 and 56.7, respectively), with percentage female ranging from 53% to 57%.

Sociodemographic characteristics of the study population are shown in Table 2. Approximately 9% of adults were considered to be lower income (2020 household income ≤ $35,000). Higher percentages

of older versus middle-aged adults and Black versus White adults were lower income, with no significant sex difference. Within both age groups, similar sex and racial/ethnic group differences were observed for income and educational attainment as for the full population (Supplemental Table 1). No sex difference was seen for relationship status or living alone in the middle-aged group, but in the older group, females were significantly more likely to not be in a committed relationship and to live alone.

The prevalence of the 7 social risk factors in the overall study population and within age and racial/ethnic groups is shown in Figure 1. In the overall population, 26% of adults had experienced financial strain, 12% food insecurity (based on food insecurity variable 2), 12% housing insecurity, and 5% transportation insecurity. Additionally, 7% were insecure regarding ability to pay for utilities, 8% regarding ability to pay for medical needs, and 17% regarding ability to pay for dental care. Middle-aged adults were more likely than older adults to have experienced financial strain and housing insecurity but did not differ from older adults on the other social risks. Black and Latinx adults were significantly more likely than White adults to have experienced financial strains within the prior 3 months (43% and 35% vs 23%, respectively), food insecurity (26% and 20% vs 7%), and difficulty related to utility payment (19% and 13% vs 5%), and to have had trouble paying for dental care or foregoing dental care due to the cost (22% and 27% vs 17%). The only significant disparity in social risks between AAPI and White adults was in food insecurity (14% vs 7%), primarily due to higher percentages of AAPI than White adults (9% vs 4%) reporting use of a food bank in the previous 3 months. (See Supplemental Figure 1 for racial/ethnic group estimates by age group.)

Among adults who experienced financial strain, debts (29%), dental care (23%), housing (22%), and utilities (19%) were the most frequently indicated types of expenses that people had trouble paying for in the prior 3 months. Middle-aged adults were more likely than older adults to have had trouble with debt repayment (odds ratio [OR] = 2.34; 95% confidence interval [CI] = 1.47-3.74) and housing costs (OR = 2.62; 95% CI = 1.54-4.56), and Black adults were more likely than White adults to have had trouble with debt repayment (OR = 1.84; 95% CI = 1.00-3.38) and paying for utilities (OR = 2.97; 95% CI = 1.50-5.88).

Approximately 16% of adults felt that their overall financial situation was somewhat (14%) or much

| Sociodemographic characteristics | All | Age group | | Sex | | Race/ethnicity | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Age 35–85 (%) | Age 35–65 (%) | Age 66–85 (%) | Male (%) | Female (%) | White (%) | Black (%) | Latinx (%) | AAPI (%) |
| **2020 household income** | | | | | | | | | |
| Lower income (≤ $35,000) | 8.7 | 5.3 | 17.8[a] | 7.2 | 10.1 | 7.4 | 17.6[b] | 9.3[b] | 7.7 |
|   < $25,000 (very low income) | 4.2 | 1.9 | 10.2 | 3.1 | 5.2 | 3.5 | 9.2 | 4.6 | 3.6 |
|   $25,000–$35,000 (low income) | 4.5 | 3.4 | 7.6 | 4.1 | 4.9 | 4.0 | 8.4 | 4.7 | 4.1 |
| $35,001–$50,000 | 9.3 | 7.5 | 14.3 | 8.3 | 10.3 | 8.5 | 12.5 | 13.0 | 8.0 |
| $50,001–$80,000 | 19.0 | 15.2 | 28.9 | 17.8 | 20.0 | 18.0 | 25.0 | 21.3 | 17.9 |
| $80,001–$100,000 | 14.0 | 14.9 | 11.4 | 12.0 | 15.8 | 14.5 | 14.7 | 14.5 | 12.2 |
| > $100,000 | 49.0 | 57.0 | 27.7[a] | 54.7 | 43.8[c] | 51.6 | 30.3[b] | 41.9[b] | 54.1 |
| **Current employment status** | | | | | | | | | |
| Employed for pay or self-employed | 62.9 | 81.3 | 15.9[a] | 66.3 | 60.0 | 58.5 | 65.1 | 68.6 | 69.5 |
| Unemployed or on leave from work | 3.5 | 4.2 | 1.5[a] | 5.0 | 2.1[c] | 3.1 | 3.4 | 4.0 | 4.1 |
| Not working due to health/disability | 1.5 | 1.8 | 1.0 | 2.1 | 1.0 | 1.6 | 2.4 | 1.3 | 1.2 |
| Retired | 28.9 | 8.7 | 80.6[a] | 26.0 | 31.5[c] | 34.2 | 27.8 | 22.0 | 20.7[b] |
| Not employed (full-time homemaker, caregiver, or student) | 3.1 | 4.0 | 1.0 | 0.6 | 5.4[c] | 2.6 | 1.3 | 4.1 | 4.5 |
| **Educational attainment** | | | | | | | | | |
| High school education or less | 15.2 | 14.0 | 18.4[a] | 17.3 | 13.2[c] | 13.6 | 20.9[b] | 26.8[b] | 8.8 |
|   Non–high school graduate | 2.2 | 1.8 | 3.3 | 2.7 | 1.7 | 0.8 | 2.2 | 6.9 | 2.5 |
|   High school graduate, GED, technical/trade school | 13.0 | 12.2 | 15.1 | 14.6 | 11.5 | 12.8 | 18.7 | 19.9 | 6.3 |
| Some college (no degree) | 17.5 | 15.0 | 24.0 | 15.5 | 19.2 | 17.9 | 23.4 | 21.2 | 12.2 |
| Associate degree (AA, etc) | 9.9 | 9.0 | 12.5 | 9.1 | 10.7 | 9.9 | 11.1 | 11.8 | 8.4 |
| Bachelor's or postgraduate degree | 57.4 | 62.1 | 45.2[a] | 58.1 | 56.8 | 58.5 | 44.6[b] | 40.1[b] | 70.6 |
| **Marital/relationship status** | | | | | | | | | |
| In a committed relationship | 75.5 | 77.9 | 69.2[a] | 78.6 | 72.8[c] | 73.5 | 56.0[b] | 78.8 | 85.4[b] |
|   Married/domestic partner | 66.7 | 67.5 | 64.8 | 69.4 | 64.4 | 65.2 | 44.6 | 69.2 | 76.6 |
|   Lives with partner but not married | 6.5 | 7.9 | 2.6 | 7.9 | 5.2 | 5.9 | 6.6 | 7.8 | 7.0 |
|   In a committed relationship, not living together | 2.3 | 2.5 | 1.7 | 1.3 | 3.2 | 2.3 | 4.8 | 1.7 | 1.8 |
| Separated, widowed, single | 24.5 | 22.1 | 30.8 | 21.4 | 27.2 | 26.5 | 44.0 | 21.2 | 14.6 |
| **Current living situation** | | | | | | | | | |
| Lives alone (may have a pet) | 15.2 | 12.5 | 22.2[a] | 14.1 | 16.2 | 17.2 | 25.1[b] | 11.5 | 9.1[b] |
| Lives with spouse and/or other family members | 81.8 | 84.4 | 75.2 | 82.3 | 81.4 | 79.0 | 72.2 | 85.3 | 90.0 |
| Lives with non–family members or in a supportive residential community | 3.0 | 3.1 | 2.6 | 3.6 | 2.4 | 3.8 | 2.7 | 3.2 | 0.9 |

**Table 2** Sociodemographic characteristics of study sample, overall and by age group, sex, and race/ethnicity

[a] Older-aged adults are significantly (p < 0.05) different from middle-aged adults after controlling for sex and race/ethnicity.
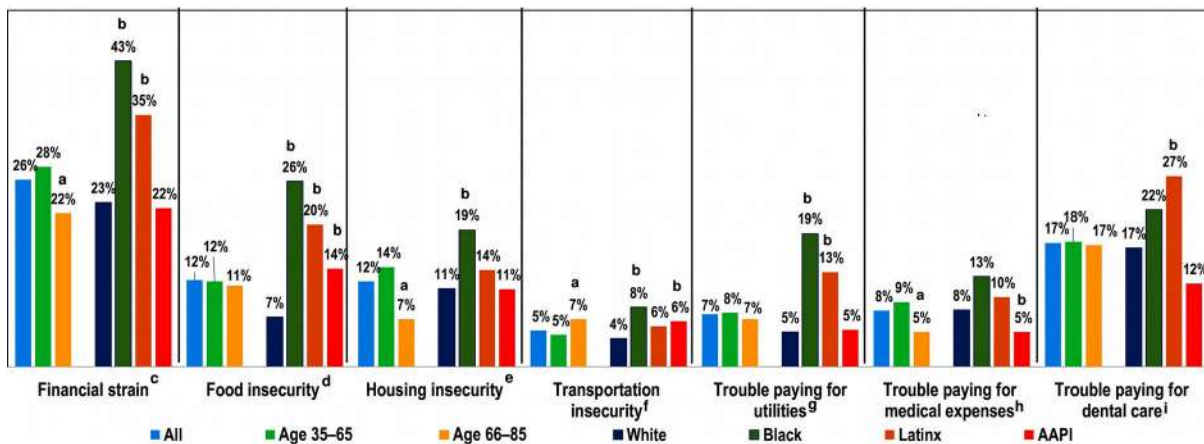[b] Racial/ethnic group is significantly (p < 0.05) different from White after controlling for age (10-year interval) and sex.
[c] Females are significantly (p < 0.05) different from males after controlling for age (10-year interval) and race/ethnicity.
AA = Associate of Arts degree;  AAPI = Asian American/Pacific Islander;  GED = General Educational Development certificate.

(2%) worse 1 year into the COVID-19 pandemic compared to before the pandemic. Middle-aged adults were more likely than older adults (OR = 2.16; 95% CI = 1.60-2.90) and Black adults were more likely than White adults (OR = 1.56; 95% CI = 1.04-2.33) to feel that their financial situation was worse. Overall, 7% of those not classified as experiencing financial strain indicated that their financial situation was worse compared with 39% of those who had been experiencing financial strain.

**Figure 1:** Summary of social-financial risks of adults age 35–85 overall and by age group and race/ethnicity.
[a] Significantly (p < 0.05) different from age 35 to 65 years after controlling for race/ethnicity and sex.
[b] Significantly (p < 0.05) different from White after controlling for age (10-year interval) and sex.
[c] Had trouble paying for at least 1 type of expense OR generally did not have enough money at the end of the month to make ends meet OR it is hard/very hard to pay for the basics OR used less medical/dental care or prescription medications than needed due to cost.
[d] In past 3 months: often worried would run out of food OR ran out of food at least sometimes due to cost OR had trouble paying for food OR got food from a food bank.
[e] Lived in 3 or more places in past 12 months OR had trouble paying for housing in past 3 months OR is concerned about ability to pay for housing OR is worried about losing housing.
[f] In past 3 months: sometimes or often lacked transportation to address health care needs or do other things needed to do OR had trouble paying for transportation.
[g] Had trouble paying for utilities in past 3 months OR is concerned about ability to pay for utilities.
[h] In past 3 months: had trouble paying for medical needs OR delayed/didn't get needed medical care because of the cost OR used less medicine than prescribed.
[i] In past 3 months: had trouble paying for dental care OR delayed/didn't get dental care because of the cost.
AAPI = Asian American/Pacific Islander.

However, this differed by level of current financial hardship. Approximately 22% of adults who were not making ends meet and 31% of those who were having a hard time paying for basic needs felt that their current financial situation was *much* worse than before the pandemic, compared with approximately ≤ 2% of those whose financial circumstances were not as bad.

Over 40% of adults expressed potential interest in getting help with ≥ 1 need and nearly 13% with ≥ 3 needs (Table 3). Although there was no significant difference by age group in overall interest in getting help, Black, Latinx, and AAPI adults were significantly more likely than White adults to want help with ≥ 1 need (64%, 57%, and 50% vs 40%, respectively) and with ≥ 3 needs (23%, 18%, and 15% vs 9%, respectively). The most frequently indicated needs were for dental care (22%), vision care (15%), paying for health care, medicines, or medical supplies (12%), handling debt, loan, or credit card repayment (11%), and paying for utilities (10%). Less than 10% of adults wanted help with the needs corresponding to the 3 social needs most commonly screened for: food (5%), housing (6%), and transportation (3%).

As with prevalence of social risks, interest in getting help with different needs varied by age group and race/ethnicity (Table 3). Middle-aged adults were more likely than older adults to want assistance with food (6% vs 3%), housing (8% vs 3%), paying for

health-related expenses (13% vs 7%), and handling debt repayment (14% vs 4%), and less likely to want help with transportation (3% vs 5%) and dental care (21% vs 26%), differences that remained significant after controlling for sex and race/ethnicity. Black, Latinx, and AAPI adults were more likely than White adults to be interested in assistance with food (11%, 9%, and 8% vs 3%, respectively), housing (14%, 9%, and 9% vs 3%), utilities (21%, 16%, and 12% vs 6%), and transportation (5%, 5%, and 5% vs 2%), and Black and Latinx adults were more likely than White adults to want help with dental care (27% and 31% vs 19%, respectively) and handling debt (27% and 19% vs 8%), differences that remained significant after controlling for sex and age. There were some age group differences within racial/ethnic groups. For example, interest in help with debt management was ssignificantly higher among middle-aged than older White (10% vs 2%), Black (32% vs 10%), Latinx (22% vs 6%), and AAPI (11.1% vs 5.5%) adults, and assistance with dental care was significantly higher among older than middle-aged Black (36% vs 24%) and AAPI (31% vs 19%) adults.

There was modest overlap of identified social risks with interest in getting help with needs related to those risks (Table 4). For example, 35% of the 12% of adults considered housing insecure based on the composite measure might want help with housing, but only approximately two-thirds of adults who might want help would have screened positive on

| Social needs[a] | All | Age group | | Race/ethnicity | | | |
|---|---|---|---|---|---|---|---|
| | Age 35–85 (%) | Age 35–65 (%) | Age 66–85 (%) | White (%) | Black (%) | Latinx (%) | AAPI (%) |
| Wants assistance with ≥ 1 need | 46.4 | 47.6 | 43.4 | 39.6 | 64.0[b] | 57.1[b] | 50.0[b] |
| 1 need only | 21.8 | 22.0 | 21.4 | 19.9 | 28.7 | 24.7 | 22.5 |
| 2 needs | 11.8 | 12.2 | 10.8 | 10.7 | 12.4 | 14.2 | 12.6 |
| 3 or more needs | 12.8 | 13.5 | 11.2 | 9.0 | 23.0[b] | 18.3[b] | 14.9 |
| Food | 5.5 | 6.4 | 3.2[c] | 2.9 | 11.4[b] | 9.0[b] | 7.5[b] |
| Housing | 6.3 | 7.5 | 3.3[c] | 3.3 | 13.7[b] | 9.3[b] | 9.2[b] |
| Utilities (electricity, phone, internet, etc) | 10.2 | 11.0 | 8.4 | 6.3 | 20.9[b] | 15.6[b] | 12.4[b] |
| Transportation | 3.2 | 2.5 | 5.0[c] | 1.9 | 4.9[b] | 4.5[b] | 5.0[b] |
| Paying for health care, medicines, medical supplies | 11.6 | 13.3 | 7.3[c] | 10.5 | 10.3 | 11.3 | 14.7 |
| Dental care | 22.2 | 20.8 | 25.7[c] | 19.4 | 26.9[b] | 30.6[b] | 21.7 |
| Vision/hearing care | 15.1 | 14.3 | 17.3[c] | 15.0 | 12.9 | 16.9 | 15.1 |
| Applying for public health benefits (WIC, SSI, SNAP, Medi-Cal, etc) | 2.8 | 2.7 | 3.0 | 1.9 | 5.2[b] | 4.0[b] | 3.5 |
| Getting help with activities of daily living | 4.9 | 5.1 | 4.4 | 3.0 | 5.9 | 7.2[b] | 7.9[b] |
| Caregiver/adult-care assistance | 5.7 | 5.6 | 5.8 | 5.5 | 8.6 | 5.6 | 5.2 |
| Handling debt, loan, or credit card repayment | 11.4 | 14.3 | 3.8[c] | 7.6 | 26.5[b] | 19.4[b] | 10.0 |

**Table 3** Percentages of adults who might want help with different social needs, overall and by age group and race/ethnicity

[a] Which of the following might you want to get help with if help were available?

[b] Racial/ethnic group is significantly (p < 0.05) different from White after controlling for age (10-year interval) and sex.

[c] Older-aged adults are significantly (p < 0.05) different from middle-aged adults after controlling for sex and race/ethnicity.

AAPI = Asian American/Pacific Islander;  SNAP = Supplemental Nutrition Assistance Program;  SSI = Supplemental Security Income;  WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

that measure. Similarly, 30% of the 5% of adults considered transportation insecure based on the composite measure might want help with transportation, whereas only 43% of adults who might want help with transportation were at risk based on that measure. Finally, 34% of the 12% of adults considered food insecure based on the composite measure that included difficulty affording food and/or food bank use and 47% of the 7% of adults considered food insecure based on the food insecurity measure that did not include food bank use expressed potential interest in getting help with food. Conversely, of those adults who might want help with food, 25% would not have screened positive for food insecurity on the first measure and 43% would not have screened positive using the second measure. Nearly two-thirds of these food insecure adults had used a food bank, but prior food bank use was not significantly associated with interest in getting help with food. However, of the 7% of adults identified as food insecure based solely on difficulty affording food, approximately one-third had used a food bank in the prior 3 months, and food bank users were significantly more likely to want help (58.8% vs 37.6%, p < 0.05).

Approximately 70% of adults were okay with being screened for social risks and needs, while approximately 18% would not want to be screened, and 12% were unsure (Figure 2). Middle-aged adults were more likely than older adults to indicate willingness to be screened (72% vs 65%) and less likely to say that they would not want to be screened (17% vs 20%). Latinx and AAPI adults were more likely than White adults to say they would not want to be screened (21% and 24% vs 15%, respectively) and less likely to indicate willingness to be screened (68% and 63% vs 73%), while Black adults did not significantly differ from White adults. Adjusting for age, sex, and race/ethnicity, adults who indicated that they might want help with ≥ 1 of the 11 social needs did not differ on whether they were okay with being screened, but they were significantly less likely than those who did not want any help to indicate not wanting to be screened (OR = 0.66; 95% CI = 0.49-0.89).

Among those amenable to being screened, 85% were okay with completing a questionnaire (62% wanted this modality only), 40% were okay with staff asking the questions (15% wanted this modality

| Social risk domains and measures | Estimated percentage of adults identified with this risk (%) | Social need for which help could be requested[a] | Overall estimated percentage of adults who might want help with this need (%) | Percentage of adults with the social risk who might want help with this need[b] (%) | Percentage of those adults interested in help with the need who had this social risk[b] (%) |
|---|---|---|---|---|---|
| **Financial strain** | | Handling debt, loan, or credit card repayment | 11.4 | | |
| Financially strained (composite measure)[c] | 26.0 | | | 27.0 | 60.6 |
| Had trouble paying for debts in past 3 mo | 7.6 | | | 57.7 | 38.7 |
| **Food insecurity** | | Food | 5.5 | | |
| Food insecure (composite measure 2)[d] | 12.1 | | | 34.3 | 74.9 |
| Food insecure (composite measure 1)[e] | 6.7 | | | 47.1 | 56.8 |
| Had trouble paying for food in past 3 mo | 3.1 | | | 61.8 | 34.9 |
| Got free food from a community organization in past 3 mo | 7.8 | | | 31.0 | 45.9 |
| **Housing instability** | | Housing | 6.5 | | |
| Housing instability (composite measure)[f] | 11.6 | | | 35.4 | 63.5 |
| Had trouble paying for housing in past 3 mo | 5.4 | | | 43.0 | 36.7 |
| Worried about housing stability[g] | 4.3 | | | 32.7 | 27.2 |
| **Utility payment insecurity**[h] | 7.0 | Utilities | 10.4 | 69.0 | 47.0 |
| **Transportation insecurity** | | Transportation | 3.2 | | |
| Transportation risk (composite measure)[i] | 4.7 | | | 29.5 | 42.5 |
| Had trouble paying for transportation in past 3 mo | 0.9 | | | 45.1 | 13.1 |
| **Difficulty paying for medical needs**[j] | 7.8 | Paying for health care, medicine, or medical supplies | 11.5 | 54.1 | 36.8 |
| **Difficulty**[k] **paying for dental care**[k] | 17.2 | Dental care | 22.3 | 73.2 | 56.6 |

**Table 4** Relationship of positive screens for different social risks and social needs

[a] Based on responses to question, "Which of the following might you want to get help with if help were available?"

[b] **How to interpret last 2 columns**—Example of food insecurity: Among the adults who were identified as being food insecure using composite measures 1 and 2, 47.1% and 34.3%, respectively, might want help with food. Of those who had obtained free food from a community organization, 31% might be interested in help with food. Conversely, of the 5.5% of adults who indicated interest in help with food, 56.8% and 74.9% would have screened positive for food insecurity based on composite measure 1 or 2, respectively, and 45.9% of those interested in getting help with food already had used a food bank or other community-based free food resource.

[c] **Financial strain:** Had trouble paying for at least 1 type of expense in past 3 mo OR did not have enough money at end of the month to make ends meet OR indicated having a hard time paying for basic expenses OR due to cost had used less medical/dental care or prescription medications than needed in past 3 mo.

[d] **Food insecurity measure 2:** In past 3 mo, often worried would run out of food before had money to buy more OR had run out of food at least sometimes due to cost OR had trouble paying for food OR got food from a food bank.

[e] **Food insecurity measure 1:** In past 3 mo, often worried would run out of food before had money to buy more OR had run out of food at least sometimes due to cost OR had trouble paying for food.

[f] **Housing instability:** Lived in 3 or more places in past 12 mo OR had trouble paying for housing in past 3 mo OR is concerned about ability to pay for housing OR is worried about losing housing.

[g] **Worried about housing stability:** Worried about ability to pay for housing OR about losing current housing but did not have trouble paying for housing in prior 3 mo.

[h] **Utility payment insecurity:** Had trouble paying for utilities in past 3 mo OR is concerned about ability to pay for utilities.

[i] **Transportation insecurity:** In past 3 mo, sometimes or often lacked transportation to address health care needs or to do other things needed to do OR had trouble paying for transportation.

[j] **Difficulty paying for medical needs:** In past 3 mo, had trouble paying for medical needs OR delayed/didn't get needed medical care because of the cost OR used less medicine than prescribed.

[k] **Difficulty paying for dental care:** In past 3 mo, had trouble paying for dental care OR delayed/didn't get dental care because of the cost.
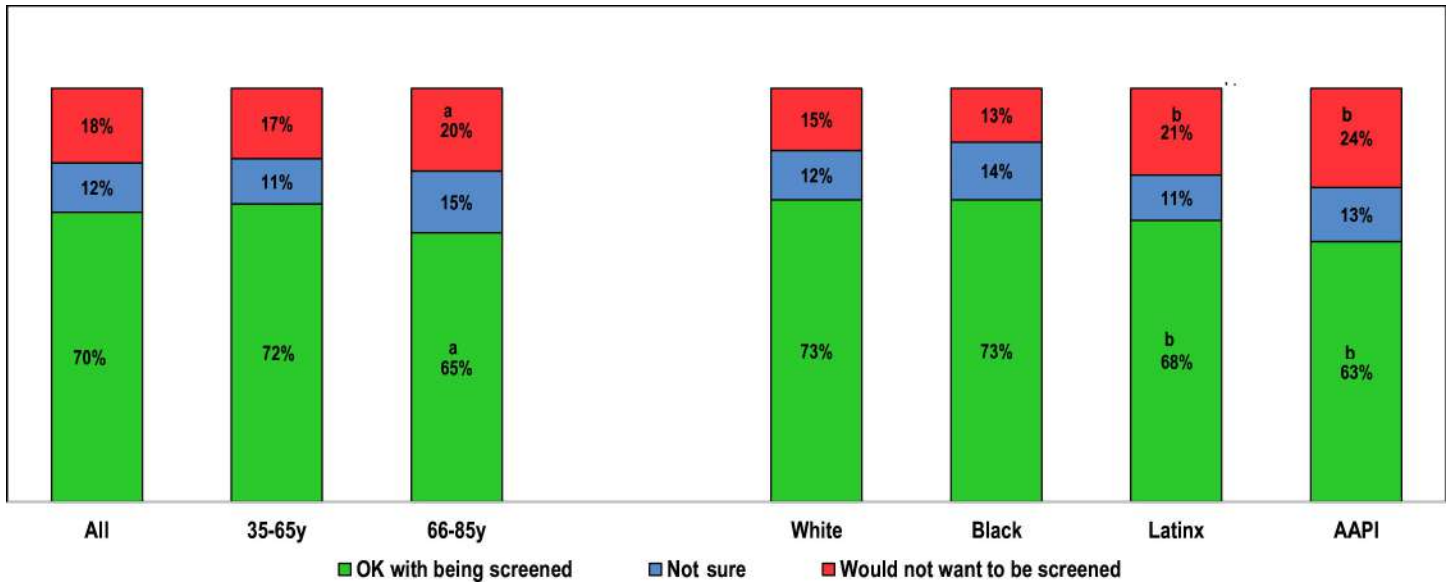
**Figure 2:** Willingness to be screened for social risks and needs, overall and by age group and race/ethnicity.
[a] Significantly (p < 0.05) different from age 35 to 65 after controlling for race/ethnicity and sex.
[b] Significantly (p < 0.05) different from White after controlling for age (10-year intervals) and sex.
AAPI = Asian American/Pacific Islander.

only), and 24% were okay with either modality (Figure 3). Older adults were less likely than middle-aged adults to want a questionnaire (79% vs 87%) and more likely to want staff interview only (21% vs 13%). Black and Latinx adults were less likely than White adults (80% and 80% vs 86%, respectively) to want a questionnaire and more likely to want staff interview only (20% and 20% vs 14%). AAPI adults were more likely than White adults to want questionnaire only (74.2% vs 57%) and less likely

to want staff interview (26% vs 43%). White adults were more flexible regarding mode of screening, with 29% indicating that either mode was okay, compared to 17% of Black, 19% of Latinx, and 15% of AAPI adults. Compared to middle-aged adults, older White (67% vs 76%), Black (63% vs 76%), and Latinx (61% vs 70%) adults were less likely to find screening acceptable, and among White (19% vs 13%) and Black (29% vs 11%) adults, more likely to say they would not want to be screened. Among
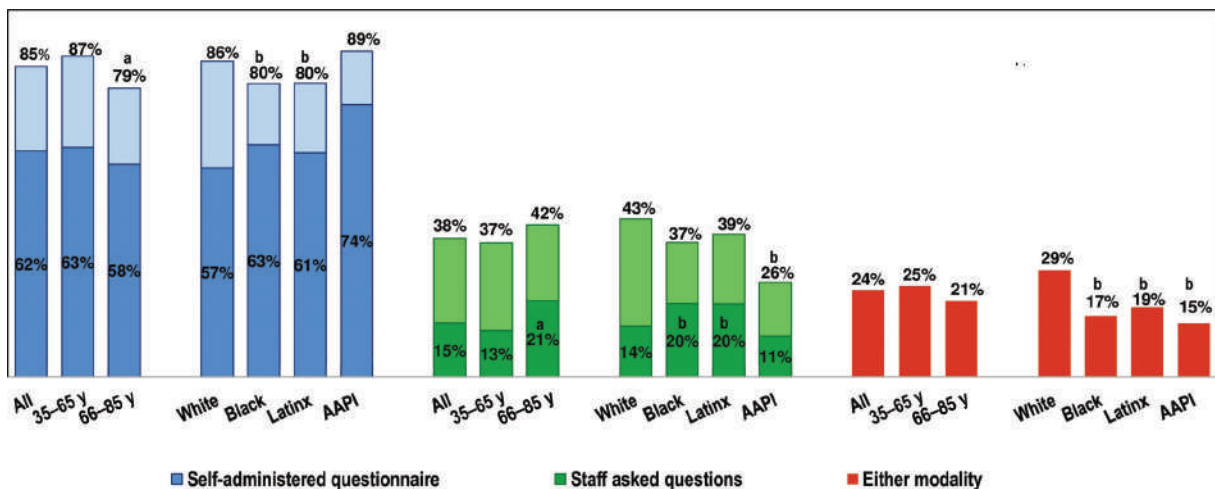


**Figure 3:** Acceptability of modalities for social risk/social needs screening, overall and by age group and race/ethnicity. [a] Significantly (p < 0.05) different from age 35–65 after adjusting for race/ethnicity and sex. [b] Significantly (p < 0.05) different from White after adjusting for age (10-year intervals) and sex. AAPI = Asian American/Pacific Islander; darker portion of bar indicates this is the only acceptable modality.

those willing to be screened, older versus middle-aged White (80% vs 89%), Black (72% vs 82%), and AAPI (80% vs 91%) adults were less likely to want screening by questionnaire and more likely only to want staff interview (White: 20% vs 11%; Black: 29% vs 18%; AAPI: 20% vs 9%).

## Discussion

Slightly over 1 year after the start of the COVID-19 pandemic, the authors surveyed a community-dwelling Health Plan population that was not considered highly vulnerable based on sociodemo-graphic, health, or health care-related characteristics to estimate the prevalence of different social risks and social needs.

The authors found that adults who were middle-aged versus older, Black versus White, and greatly versus only somewhat or not struggling financially, were more likely to report a worsened financial situation. Using more comprehensive multivariable composite measures and shorter 3-month "look-back" windows for assessing social risks than were used in most previous studies, the authors esti-mated that 26% of adults had experienced financial strain within the prior 3 months, over 15% had diffi-culty covering the costs of needed dental care, over 10% had experienced food insecurity and housing insecurity, and 5% to 8% had experienced difficulties related to transportation and paying for utilities and medical expenses.

The authors observed significant disparities by age group and race/ethnicity for some social risks and needs. For example, after adjusting for race/ethnicity and sex, middle-aged adults were more likely than older adults to have experienced financial strain, housing insecurity, and difficulty paying for medical expenses, while no significant age group differences were observed for the other social risks. Compared to middle-aged adults, substan-tially higher percentages of older adults in all 4 racial/ethnic groups had a relatively low household income (≤ $35,000) and lower percentages had a relatively high household income (> $100,000). However, the lower percentages of older adults who were experiencing difficulties related to housing and medical care costs during the pandemic may in part be due to factors that placed less demand on their income. The authors' finding that middle-aged adults were twice as likely as older adults to report that their current financial situation was worse than during the year prior to the start of the COVID-19

pandemic suggests that the financial impact of the pandemic may have placed more strain on middle-aged adults' financial resources. Most adults in the older age group were retired and likely had to adjust their living expenses to be covered through non–work-related income (eg, Social Security, pension plans, retirement savings) prior to the start of the pandemic. Additionally, most older adults had health care expenses covered through the Kaiser Perma-nente Northern California's Medicare Advantage program. In contrast, most adults in the middle-aged group were still participating in the workforce. As such, they were more likely to be adversely affected by pandemic-related workplace closures that reduced their primary source of income, by school and daycare closures that required parents to take time off from work, and by accumulated debt related to housing and household expenses.

Overall and within both age groups, Black and Latinx adults were more likely than White adults to be experiencing financial strain and difficulty paying for utilities, with substantially larger dispar-ities observed in the middle-aged group. Lower household incomes and difficulties with debt and credit card repayment may be contributing to these disparities in financial strain. Black adults were also more likely than White adults to feel that their finan-cial situation was worse than before the pandemic. AAPI adults did not significantly differ from White adults on these indicators.

Food and housing security are considered important SDoHs due to their relationship with chronic disease development. As has been found in previous national household surveys,[21-23] in the current study's popu-lation, Black and Latinx adults were more likely than White adults to be food insecure. There is little infor-mation about food insecurity among AAPI adults nationally. In this study, the authors observed that after adjusting for age and sex, AAPI adults were nearly twice as likely as White adults to have expe-rienced food insecurity in the 3 months prior to the survey. Black, Latinx, and AAPI adults were also more likely than White adults to be interested in getting help with food, although this difference became nonstatistically significant after controlling for food insecurity status. The authors suspected that the 2-question Hunger Vital Sign[24] measure standardly used to screen for food insecurity risk based only on food unaffordability may miss individuals accessing food through sources not requiring payment. To explore this, the authors compared the current study's food insecurity measure that included food bank use with food insecurity based solely on food affordability

and found that the broader measure increased estimated risk by 5 percentage points (see Supplemental Table 2). The authors similarly explored how this study's housing insecurity risk estimates, based on having trouble paying for housing in the past 3 months, having lived in ≥ 3 places in the past year, or being concerned about ability to pay for housing or worried about losing housing, compared with estimates based solely on the study's adaptation of the first 2 Children's Health Watch Housing Stability Vital Signs questions[25] used in EpicCare's EHR SDoH tool. The authors found that the broader measure increased estimates by percentages similar to those observed with food insecurity. This finding underscores the value of asking about concerns regarding future housing stability as is done in the PRAPARE[26] and Accountable Health Communities[27] social risk screening tools. Future work will further explore measurement of food insecurity and also nutrition insecurity (ie, ability to afford food, but not food that contributes to better health).

A notable finding in this survey was the large percentage of adults who were having trouble affording dental care, including foregoing dental care due to the cost. Further, dental care was the most frequently indicated need for which help might be requested, with more than double the percentages of adults interested in help with dental care than with food, housing, and transportation. Yet barriers to dental care and help wanted with obtaining dental care are generally not included in social health screening tools. There is mounting evidence that poor oral health contributes to the development and exacerbation of cardiovascular conditions[28] and that cost is a major barrier to routine dental care.[29] Additionally, over 10% of adults wanted help paying for health-related expenses such as medicines, medical supplies, and vision/hearing care. Unless adults are asked whether they want assistance with a broad spectrum of health-related expenses or referrals to low-cost community resources for care, these needs may go unaddressed when not covered by or are more expensive through their Health Plan.

Another finding relevant to the design of screening tools was that solely screening for social risks without asking a separate question about assistance wanted with parallel social needs increases the likelihood that large percentages of adults who have social needs may not be identified. For example, the authors found that approximately 40% of adults who wanted help handling debt, loan, or credit card repayment did not screen positive for financial strain. A similar percentage of adults who wanted help with food did not screen positive for food insecurity using the Hunger Vital Sign measure. Querying social risks in tandem with assistance wanted for social needs may help identify additional patients who would benefit from wraparound supports. This supports the approach that Kaiser Permanente has adopted for its Brief Social Health Screener.

These study results contribute the patient voice about acceptability of screening for social risks and needs and preference for how this should be done. The authors found that only 70% of adults in this population were okay with being screened for social risks and needs in the clinic setting and nearly 20% would not want to be screened. However, this varied by patient demographics, with lower percentages of older adults and Latinx and AAPI adults okay with being screened and higher percentages indicating that they would not want to be screened. The authors also showed that desiring help with at least 1 need did not increase receptivity to being screened. In contrast to surveys conducted with convenience samples of very low income or socially distressed populations, the majority of adults in this socioeconomically diverse population would likely not be accustomed to being asked about their financial situation and may be reluctant to share this information. This notion is supported by this study's finding that adults with missing data on the survey's household income question were 3 times more likely than those with data to indicate that they would not want to be screened, and AAPI and older adults were more likely than adults in their comparator subgroups to be missing household income data and to indicate not wanting to be screened. Regarding screening modality preferences among those okay with being screened, the authors found that although approximately one-fourth of adults were flexible regarding mode of screening, higher percentages were okay with a questionnaire than having staff asking these questions (80% vs 40%).

Strengths of this study include use of a large randomly selected socioeconomically and racial/ethnically diverse study population to produce estimates of the prevalence of 7 social risks, 11 social needs, and social health screening acceptability and modality preferences in an overall population and for demographic subgroups. Limitations that potentially affect generalizability of results to other settings include a low survey response rate, exclusion of non–English-proficient and homeless adults, a sample drawn from 1 Health Plan, and inability to

examine differences by Asian ethnicity. The authors also lacked information about enrollment in government benefit programs or details about use of free or subsidized community-based services that address food, housing, and transportation insecurity. Finally, this survey was conducted during the COVID-19 pandemic, when many adults were experiencing abnormal financial strains. Future analyses of the survey data will focus on different ways to assess food and nutrition insecurity, financial strain, and social connection/social support as part of social health screening.

## Conclusions

In this survey of middle-aged and older adults 1 year into the COVID-19 pandemic, the authors found that over 25% of adults were experiencing financial strain and < 10% were food and housing insecure. Estimates for these risk domains based on this study's composite measures were substantially higher than estimates based on screening questions currently used in EpicCare's SDoH screening tool.[30] Social health screening tools currently being used in health care settings may thus be underidentifying adults with social risks and needs. The authors observed significant racial/ethnic and age group differences in social risks and social needs, with higher prevalence of social risks among middle-aged versus older and Black and Latinx versus White adults. Although the majority of adults were amenable to being screened for social risks, acceptance was not universal and differed by age group and race/ethnicity. This study's results suggest that in diverse patient populations, prevalence of social risks and needs for which assistance is desired, patient acceptance of social health screening, and patient preferences for mode of screening will vary among demographic subgroups. These differences should be taken into consideration when implementing social health screening programs in health care settings serving sociodemographically diverse patient populations.

**Supplementary Materials**
Supplementary material is available at: https://www. thepermanentejournal.org/doi/10.7812/TPP/22.142# supplementary-materials

REFERENCES
1. Committee on the Recommended Social and Behavioral Domains and Measures for Electronic Health Records, Board on Population Health and Public Health Practice, IOM. *Capturing Social and Behavioral Domains and Measures in Electronic Health Records: Phase 2*. Washington, DC: National Academies Press; 2014. Accessed May 24, 2016. www.nap. edu/catalog/18951/capturing-social-and-behavioral-domains-and-measures-in-electronic-health-records
2. Braveman P, Gottlieb L. The social determinants of health: It's time to consider the causes of the causes. Public Health Rep. 2014;129(Suppl 2):19–31. DOI: https://doi.org/10.1177/00333549141291S206
3. Behforouz HL, Drain PK, Rhatigan JJ. Rethinking the social history. N Engl J Med. 2014;371(14):1277–1279. DOI: https://doi.org/10.1056/NEJMp1404846
4. Yabroff KR, Dowling EC, Guy GP, et al. Financial hardship associated with cancer in the United States: Findings from a population-based sample of adult cancer survivors. J Clin Oncol. 2016;34(3):259–267. DOI: https://doi.org/10.1200/JCO.2015.62.0468
5. Heiman HJ, Artiga S. *Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity*. Washington, DC: The Henry J. Kaiser Family Foundation; 2015.
6. Fraze T, Lewis VA, Rodriguez HP, Fisher ES. Housing, transportation, and food: How ACOs seek to improve population health by addressing nonmedical needs of patients. Health Aff (Millwood). 2016;35(11):2109–2115. DOI: https://doi.org/10.1377/hlthaff.2016.0727
7. Gold R, Cottrell E, Bunce A, et al. Developing electronic health record (EHR) strategies related to health center patients' social determinants of health. J Am Board Fam Med. 2017;30(4):428–447. DOI: https://doi.org/10.3122/jabfm.2017.04.170046
8. Gottlieb L, Tobey R, Cantor J, Hessler D, Adler NE. Integrating social and medical data to improve population health: Opportunities and barriers. Health Aff (Millwood). 2016;35(11):2116–2123. DOI: https://doi.org/10.1377/hlthaff.2016.0723
9. Solomon LS, Kanter MH. Health care steps up to social determinants of health: Current context. TPJ. 2018;22(4S). DOI: https://doi.org/10.7812/TPP/18-139
10. McMullen AM, Katz MH. Targeting unmet social needs-next steps toward improving chronic disease management. JAMA Intern Med. 2017;177(2):252–253. DOI: https://doi.org/10.1001/jamainternmed.2016.7711
11. Gottlieb L, Fichtenberg C, Alderwick H, Adler N. Social determinants of health: What's a healthcare system to do? J Healthc Manag. 2019;64(4):243–257. DOI: https://doi.org/10.1097/JHM-D-18-00160
12. Chaiyachati KH, Grande DT, Aysola J. Health systems tackling social determinants of health: Promises, pitfalls, and opportunities of current policies. Am J Manag Care. 2016;22(11):e393–e394.
13. Sundar KR. Universal screening for social needs in a primary care clinic: A quality improvement approach using the your current life situation survey. Perm J. 2018;22:18–89. DOI: https://doi.org/10.7812/TPP/18-089
14. Lewis CC, Wellman R, Jones SMW, et al. Comparing the performance of two social risk screening tools in a vulnerable subpopulation. J Family Med Prim Care. 2020;9(9):5026–5034. DOI: https://doi.org/10.4103/jfmpc.jfmpc_650_20
15. Tuzzio L, Wellman RD, De Marchis EH, et al. Social risk factors and desire for assistance among patients receiving subsidized health care insurance in a US-based integrated delivery system. Ann Fam Med. 2022;20(2):137–144. DOI: https://doi.org/10.1370/afm.2774
16. Roblin DW, Khalid SI, Rouillard C. Comparison of social needs among US insured adults before and during the early phase of the COVID-19 pandemic. JAMA Netw

Open. 2022;5(2):e2146700. DOI: https://doi.org/10.1001/jamanetworkopen.2021.46700

17. Rogers AJ, Hamity C, Sharp AL, Jackson AH, Schickedanz AB. Patients' attitudes and perceptions regarding social needs screening and navigation: Multi-site survey in a large integrated health system. J Gen Intern Med. 2020;35(5):1389–1395. DOI: https://doi.org/10.1007/s11606-019-05588-1

18. McCloskey JK, Ellis JL, Uratsu CS, et al. Accounting for social risk does not eliminate race/ethnic disparities in COVID-19 infection among insured adults: A cohort study. J Gen Intern Med. 2022;37(5):1183–1190. DOI: https://doi.org/10.1007/s11606-021-07261-y

19. Eder M, Henninger M, Durbin S, et al. Screening and interventions for social risk factors: Technical brief to support the US preventive services task force. JAMA. 2021;326(14):1416–1428. DOI: https://doi.org/10.1001/jama.2021.12825

20. Gordon NP. Similarity of adult Kaiser Permanente members to the adult population in Kaiser Permanente's Northern California service area: Comparisons based on the 2017/2018 cycle of the California Health Interview Survey. 2020. Accessed April 4, 2023. https://divisionofresearch.kaiserpermanente.org/projects/memberhealthsurvey/SiteCollectionDocuments/compare_kp_ncal_chis2017-18.pdf

21. Odoms-Young A, Bruce MA. Examining the impact of structural racism on food insecurity: Implications for addressing racial/ethnic disparities. Fam Community Health. 2018;41(Suppl 2):S3–S6. DOI: https://doi.org/10.1097/FCH.0000000000000183

22. Coleman-Jensen A, Rabbitt MP, Gregory CA, Singh A. Household food security in the United States in 2020, ERR-298, U.S. Department of Agriculture, Economic Research Service. 2021. Accessed April 1, 2023. www.ers.usda.gov/webdocs/publications/102076/err-298.pdf?v=6031.5

23. Coleman-Jensen A, Rabbitt MP, Gregory CA, Singh A. Household Food Security in the United States in 2021, ERR-309, U.S. Department of Agriculture, Economic Research Service. 2022. Accessed April 1, 2023. www.ers.usda.gov/webdocs/publications/104656/err-309.pdf?v=8592.5

24. Hager ER, Quigg AM, Black MM, et al. Development and validity of a 2-item screen to identify families at risk for food insecurity. Pediatrics. 2010;126(1):e26–e32. DOI: https://doi.org/10.1542/peds.2009-3146

25. Sandel M, Sheward R, Ettinger de Cuba S, et al. Unstable housing and caregiver and child health in renter families. Pediatrics. 2018;141(2). DOI: https://doi.org/10.1542/peds.2017-2199

26. National Association of Community Health Centers and partners, National Association of Community Health Centers, Association of Asian Pacific Community Health Organizations, Association OPC, Institute for Alternative Futures. PRAPARE. 2017. Accessed April 4, 2023. www.prapare.org

27. Centers for Medicare & Medicaid Services. The Accountable Health Communities HealthRelated Social Needs Screening Tool. 2018. Accessed April 4, 2023. https://innovation.cms.gov/files/worksheets/ahcm-screeningtool.pdf

28. Sanz M, Marco Del Castillo A, Jepsen S, et al. Periodontitis and cardiovascular diseases: Consensus report. J Clin Periodontol. 2020;47(3):268–288. DOI: https://doi.org/10.1111/jcpe.13189

29. Gordon NP, Mosen DM, Banegas MP. Oral health care: A missing pillar of total health care? Perm J. 2021;25:21. DOI: https://doi.org/10.7812/TPP/21.080

30. Epic Systems Corporation. EPIC. Verona: Epic Systems Corporation; 2020.