The Kaiser Permanente Northern California Adult Member Health Survey

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ABSTRACT

Introduction: The Kaiser Permanente Northern California (KPNC) Member Health Survey (MHS) is used to describe sociodemographic and health-related characteristics of the adult membership of this large, integrated health care delivery system to monitor trends over time, identify health disparities, and conduct research.

Objective: To provide an overview of the KPNC MHS and share findings that illustrate how survey statistics and data have been and can be used for research and programmatic purposes.

Methods: The MHS is a large-scale, institutional review board-approved survey of English-speaking KPNC adult members. The confidential survey has been conducted by mail triennially starting in 1993 with independent age-sex and geographically stratified random samples, with an option for online completion starting in 2005. The full survey sample and survey data are linkable at the individual level to Health Plan and geocoded data. Respondents are assigned weighting factors for their survey year and additional weighting factors for analysis of pooled survey data.

Results: Statistics from the 1999, 2002, 2005, 2008, and 2011 surveys show trends in sociodemographic and health-related characteristics and access to the Internet and e-mail for the adult membership aged 25 to 79 years and for 6 age-sex subgroups. Pooled data from the 2008 and 2011 surveys show many significant differences in these characteristics across the 5 largest race/ethnic groups in KPNC (non-Hispanic whites, blacks, Latinos, Filipinos, and Chinese).

Conclusion: The KPNC MHS has yielded unique insights and provides an opportunity for researchers and public health organizations outside of KPNC to leverage our survey-generated statistics and collaborate on epidemiologic and health services research studies.

INTRODUCTION

Most researchers, public health practitioners, and clinicians are familiar with national and state health surveillance surveys used to monitor trends in health and health-related behaviors over time, such as the National Health Interview Survey (NHIS), the Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance Survey (BRFSS), the California Health Interview Survey (CHIS), and the Gallup-Healthways Well-Being Index. Many fewer are aware of the Kaiser Permanente (KP) Northern California (KPNC) Adult Member Health Survey (MHS), which has been conducted every 3 years since 1993 to describe the sociodemographic and health-related characteristics of adults within a large, multicenter, integrated health care delivery system and how these characteristics may be changing over time. In 2015, the KPNC adult membership numbered more than 2.9 million, 19.3% of whom were aged at least 65 years. Using CHIS data, we have previously shown that the KPNC adult population is very similar to the insured adult population in Northern California with respect to sociodemographic and health-related characteristics.[1] This longitudinal survey project has yielded unique insights and provides an opportunity for other researchers and public health organizations to leverage our survey-generated statistics and collaborate on epidemiologic and health services research studies.

The MHS aims to provide information to health service planners, program/service managers, and researchers in KPNC and organizations external to KPNC that can be used to

- describe the sociodemographic characteristics, the prevalence of health-related problems, behaviors/lifestyle factors, and the service needs and interests of young, middle-aged, and older KPNC adults for planning and research purposes
- monitor trends over time for the overall adult membership and segments of the membership (eg, age, sex, and race/ethnic groups) in prevalence of health conditions, health risks, use of complementary and alternative medicine and dietary supplements, and Internet access and preferred methods of obtaining health information
- examine important associations between patient-reported predictors and clinical outcomes through linkage to a state-of-the-art electronic medical record
- contribute to an evidence base for service/program development and program evaluation within KPNC and for the community (eg, community health needs assessment and community health initiatives)
- educate health care professionals about factors that affect the total health of adults
- conduct epidemiologic and health services research
- compare the KPNC adult membership to the general and insured populations (using BRFSS, CHIS, and NHIS data) and research populations to the KPNC population.

The KPNC Adult MHS is funded by KPNC's Community Benefit program as part of its portfolio of support for health research. The survey materials are not proprietary, and most of the

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survey results are shared with the public, foundations, government, and research community via conference presentations, publications, and reports posted on our Web site (www.memberhealthsurvey.kaiser.org). With the approval of the Division of Research Director and KPNC's institutional review board, researchers from within and outside the KP Medical Care Program can collaborate on important descriptive and analytic research studies using MHS data.

History of the Member Health Survey

The MHS was created in 1990 to serve a dual purpose: KPNC researchers in the Division of Research required information about characteristics of the adult Health Plan membership in the region and different Medical Center service populations, and KPNC's regional and Medical Center Health Education Departments required data to optimize health education service planning for their service populations. At the time it was first piloted with a regional sample in 1990, there was little information about nonhospitalized members

besides age, sex, geographic residence area, and number of outpatient visits. KPNC's pre-electronic health record (EHR) information systems and disease registries had not yet been implemented, so there were no available data to estimate numbers of members with chronic health conditions such as diabetes or hypertension; which patients were getting recommended cancer screening procedures; and numbers of members who smoked and had other behavioral health risks like obesity. Additionally, there was no systematic individual-level or descriptive information about sociodemographic characteristics (eg, race/ethnicity, educational attainment, and household income) for the membership.

Now 25 years later, even with the vast improvement in availability of race/ethnicity, diagnosis, and health risk (body mass index, smoking status, and exercise frequency) data from members' EHRs, the MHS is still used by KPNC researchers and our Health Education Departments to describe the regional and Medical Center adult membership's more detailed sociodemographic characteristics, overall

health status, behavioral and psychosocial health risks, access to digital technology, and health education/health information modality preferences—data elements that may not be readily available from EHRs or other sources of Health Plan data. MHS data are used to identify racial/ethnic differences in self-reported health and functional status, health-related behaviors, social determinants of health, and access to/preferences for using digital technologies for health care-related purposes. The survey is also the source of membership statistics over time that is most comparable with results of other population surveys based on self-reported data, such as the BRFSS, CHIS, and NHIS.

Survey Content

The core content categories and examples of items included in these categories are summarized in Table 1. Before 2012, when Stage 1 Meaningful Use requirements were implemented,[2] race/ethnicity was not routinely collected for Health Plan members, and in KPNC, the MHS provides more detailed race/ethnicity

Table 1. Core content of Member Health Surveys	
Category	**Sample items**
Sociodemographic characteristics	Race/ethnicity; educational attainment; income; employment status; marital status; sexual orientation; for ages ≥ 65, transportation situation
Social determinants of health	Educational attainment, income, worry about financial security, chronic stress, satisfaction with life, experience of discrimination/harassment in past year, worry about family safety due to neighborhood violence, intimate partner violence
Health and functional status	Rating of overall, physical, and emotional/mental health; extent to which physical and emotional/mental health problems interfere with daily activities; selected chronic health conditions and health-related problems (eg, back pain, sleep problems, hearing problems, urinary incontinence); and for ages ≥ 65, functional status (ADLs/IADLs), falls, use of hearing aid, oral health problems
Medications used during past year	Prescription medicines for diabetes, hypertension, heart problems, high cholesterol, asthma, depression, anxiety, pain; low-dose aspirin to prevent heart attack/stroke; OTC pain medication; NSAIDs; antacids; stop-smoking aids (eg, nicotine patches and nicotine gum); sleep aids
Health-related behaviors and beliefs	Smoking, height/weight, exercise frequency, daily servings of fruit/vegetables, high-fat food avoidance, high-salt food avoidance (2011), alcohol use, number of sleep hours, actions taken to improve or maintain health, health-related beliefs
CAM modalities used during past year (1996-present)	Modalities vary by year but always include: acupuncture, acupressure, massage, chiropractic treatment, yoga, tai chi, herbal supplements/remedies, homeopathic medicines, deep breathing/mindfulness meditation, guided imagery, special diet, prayer or spiritual practice, religious/spiritual healing by others, psychological counseling, 12-step/self-help program
Dietary supplements used during past year	Supplements vary by year but always include: daily multivitamin, calcium, glucosamine, melatonin, a space to list other supplements
Preventive care and health advice	Flu shot for past flu season; health-related advice received from Health Plan; before 2011, recency of blood pressure and cholesterol checks and breast, cervical, and colorectal cancer screening tests
Access to digital technology	Computer; Internet; e-mail; starting in 2011, mobile phone, text messaging capability, type of device used to go online
Use of and interest in using a variety of modalities to obtain health information and health education	Digital and telephone-based modalities; print modalities; and in-person visits, which change as new modalities become available.

ADLs = activities of daily living; CAM = complementary and alternative medicine; IADLs = instrumental activities of daily living; KPNC = Kaiser Permanente Northern California; NSAIDs = nonsteroidal anti-inflammatory drugs; OTC = over-the-counter

information than is currently captured in the EHR from outpatient visits, especially for Asian and multiracial members. Currently educational attainment, an important social determinant of health,[3] is found in a sparsely populated text field in KPNC members' EHRs, so studies requiring this demographic have generally used census-derived data. Similarly, household income is only estimable from geocoded census block data, and employment status (including number of work hours), marital status, and sexual orientation are not available from any other data source.

Even though information about respondents' diagnosed chronic conditions (eg, diabetes, hypertension, asthma) and prescription medication use is now available from the EHR system, these items are still included in the survey to keep estimates comparable with other surveys based on self-reported data, for quick profiling of segments of the membership; and to study behavioral and social characteristics of members who self-identify with these conditions. Other conditions contained in the health condition checklist, such as severe back, neck, or shoulder pain, urinary incontinence, vision and hearing problems, and frequent sleep problems, are often not reported to physicians and so don't get into EHRs. For seniors, the MHS is currently the best way to profile functional status (mobility issues, difficulties with activities of daily living and instrumental activities of daily living, ability to care for oneself).

Although data about overweight/obesity (body mass index), smoking status, exercise, and measures of alcohol use are now routinely captured in the EHR of KPNC members as "vital signs" at outpatient visits, MHS data are still probably the most reliable way to estimate prevalence of these behavioral risks because the data are collected from members who have and have not recently come in for a medical office visit (during which vital signs are measured) during a six-month period using the same exact question and response wording. Information about other behaviors and psychosocial risk factors that are not currently routinely captured in the EHR, such as usual amount of sleep, number of daily servings of fruits and vegetables, salt/sodium and high-fat food avoidance, satisfaction with life, chronicity of stress

and sources of distress (including worry about financial security and neighborhood safety), nutritional supplement and complementary and alternative medicine use, and actions members are taking to improve or maintain their health, are currently available only through the survey. Additionally, since 1999, the MHS has been asking members to evaluate the extent to which they believe their lifestyle/habits (like diet, exercise, and weight) and stress and emotion troubles (like depression) can affect their health.

In all MHS cycles, members have been asked to report whether they had a flu immunization for the last flu season because some members get this immunization outside of KP. From 1999 on, the survey has asked about recency of last dental exam and whether advice or counseling had been received in the past year from a KPNC health care professional about a variety of health risks (eg, increasing exercise, quitting smoking, getting enough sleep, taking steps to reduce falls). In the 1993-2008 surveys, members were asked about recency of their last blood pressure and cholesterol check and cancer screening tests, but screening items were dropped starting in 2011 to enable expansion of questions on other topics.

Finally, because the MHS serves as a health education planning tool, the survey captures information about members' access to digital technology and preferred methods for obtaining health information and health education. In 1996, we began to ask about access to and use of a computer and the Internet. In 1999, we added questions regarding e-mail access and use, and in 2011 we started ascertaining access to mobile phone and text messaging, as well as whether the member could use these digital technologies on their own and the types of device(s) they used to access the Internet and e-mail. Health information modality preferences has been obtained since 1999 using 2 checklist questions. The first question asks members to indicate which of a variety of print, in-person, and online health information sources and health education services they used in the previous 12 months. The second question asks members to indicate which modalities they would prefer to use to learn about taking care of health problems and improving

their health, in addition to getting information from their physician.

Survey Methods

For most cycles, the MHS has used different questionnaires for women aged 20-64, men aged 20-64, and women and men aged 65 and older, but all contain the same core set of questions for that survey year. Most of the MHS questionnaires can be downloaded from the MHS Web site. The MHS is a confidential, not anonymous survey, making it possible to link respondent data by medical record number level to other sources of KPNC clinical and administrative data. This makes it possible to obtain objective information on diagnoses, procedures, vital signs, medical care and pharmacy utilization and costs, laboratory testing, registration to use and use of the kp.org patient portal, Health Plan benefits, and other health and health care information. By means of mailing address, respondent data can be linked with geocoded data such as neighborhood sociodemographic and built environment characteristics. Both nonrespondents and respondents can be linked to available Health Plan data and geocoded data to study effects of nonresponse bias.

To ensure that the survey sample reflects geographic differences that may affect health conditions and health-related behaviors, a predetermined number of men and women in 5 age groups (20-44, 45-64, 65-74, 75-79, and ≥ 80 years) are randomly selected from each of the Health Plan's Medical Center service populations, resulting in oversampling of members aged 65 and older. Members are administratively assigned to a Medical Center service population using an algorithm that takes into account the facility where they receive or would be most likely to receive most of their outpatient primary care. Using this approach, we randomly select approximately 2100 current members from 14 of our 19 Medical Center service populations in Northern California, sampling 2400 from our 5 most racially/ethnically diverse service populations. In 1993 and 1996, survey questionnaires were mailed to a stratified random sample of 34,000 adult Health Plan members from 17 Medical Center service populations in the Northern California Region. In 1999 and 2002, the

sample size was increased to 40,000 from 18 Medical Center service populations, and starting in 2005, to approximately 44,000 from 19 Medical Center service populations. In 2014, the decision was made to split data collection for the full sample over 2 years, with independent samples selected each year. Because samples are independently sampled for each survey, there is very little overlap of respondents across multiple survey years.

Questionnaires are mailed out in the spring of a survey year, followed by up to 2 additional mailings in early and late summer. Starting in 2005, members could also complete the survey online at the KPNC Division of Research's secure Web site, and telephone administration has always been available upon request. Before the 2014 to 2015 survey cycle, the survey was conducted only in English owing to cost considerations and our experience of very low response rates to a 2006 pilot mailing of a Spanish-language questionnaire to members whose primary language was Spanish.[4] However, as part of the 2015 survey cycle, in Spring 2016 a separate sample of limited-English proficient Spanish speakers aged 25 to 64 years will be sent up to 2 mailings of a slightly modified bilingual (Spanish/English) version of the 2015 MHS questionnaire.

Each survey respondent is assigned a poststratification weighting factor based on the number of members of his/her sex and age group (five-year intervals) in the Medical Center service population from which s/he was sampled. Weighting factors are also created to use with data combined from two or more survey years. The weighted respondent data are then used to describe the sociodemographic characteristics and health-related characteristics of adults in the KPNC Region, individual Medical Center service populations, and population segments (eg, members with a specific sex, race/ethnicity, chronic condition, risk factor, etc).

Although the overall survey response rate has been declining over time (58.7% in 1993 to 39.5% in 2011), the response rate among those aged 65 and older has consistently been approximately 70%. The overall response rate is comparable with the response rates for recent random-digit dial (RDD) telephone surveys such as the CHIS and California BRFSS (approximately 35% for each in 2011) and significantly higher than the RDD Pew Internet and Society surveys and Gallup-Healthways Well-Being Index surveys (each approximately 11%), all of which are used to support policy-making.[5-8] Table 2

shows the numbers of MHS respondents in each survey year.

Impact of Member Health Survey Results

MHS results have been used by KPNC researchers and Health Education Departments to help identify and estimate number of members with health conditions (such as diabetes, hypertension, urinary incontinence, insomnia, and heartburn) and behavioral/lifestyle risks (such as smoking, obesity, sedentary lifestyle, and stress) known to increase the risk of chronic illness; to examine how sociodemographic and health characteristics vary across Medical Center service populations; and to characterize subgroups of adults who are most likely to have these health problems and risks. Reports profiling the sociodemographic and health-related characteristics of young, middle-aged, and older adults in the KPNC Region and the different Medical Center service populations are produced for each survey cycle. Additional reports show trends in selected characteristics over time or focus on specific health topics, such as race/ethnic differences in education and income, health conditions/ risks, and Internet access. Many reports and presentations are shared with the research community and general public

Table 2. Size of Kaiser Permanente Northern California Member Health Survey final respondent samples, 1993-2011, by survey year and age-sex group							
	Survey year						
Respondent age-sex groups[a]	1993	1996	1999	2002	2005	2008	2011
All respondents							
≥ 20	19,561	17,735	18,937	18,604	18,733	16,960	16,968
25-79[b]	18,137	16,339	17,243	16,874	16,957	15,352	15,353
≥ 80	689	564	1085	1045	1120	1046	1060
Women							
≥ 20	10,529	9665	10,343	10,087	10,357	9461	9084
25-44	3902	3380	3124	3023	3022	2736	2552
45-64	3446	3130	3229	3161	3171	2940	2820
65-79	2379	2379	3045	2955	3149	2883	2863
≥ 80	375	268	510	507	553	519	513
Men							
≥ 20	9032	8070	8594	8517	8376	7499	7884
25-44	2932	2400	2152	2106	1870	1580	1649
45-64	3030	2628	2669	2730	2640	2308	2661
65-79	2448	2422	3024	2899	3105	2905	2808
≥ 80	314	296	575	538	567	527	547

[a] Age in years.
[b] Trends across survey years and by race/ethnicity are generally restricted to respondents aged 25-79.

via the MHS Web site as well as through presentations and publications.

KPNC researchers have used the survey data alone or combined with supplemental information from KP clinical and administrative data for many purposes, resulting in numerous publications in peer-reviewed professional journals. For example, researchers have used MHS data to estimate the prevalence of health risks; to describe characteristics of adults with specific health conditions or health risks or for population subgroups (eg, by race/ethnicity, age); to create comparison groups for epidemiologic studies; to study accuracy (validity) of member-reported health information; to estimate underrecording of health conditions and behavioral risks in EHRs (based on member-reported health information), and under- or overestimation of these conditions and behaviors for a population based on survey data; and to identify the most promising Medical Center service populations for intervention studies.

The survey has been used to study changes over time in sociodemographic composition of the membership and prevalence of health and lifestyle risks[9]; how prevalence of health conditions and behavioral/lifestyle risks differ by age group, sex, race/ethnicity, and sexual orientation[4,9-14]; trends and differences in complementary and alternative medicine and dietary supplement use[15-18]; senior health[19-21]; health problems, utilization, and cost of care for obesity,[22] alcohol consumption,[23] and smoking[24]; access to digital technology and preferred modalities for receiving health information and advice[25-27]; and methodological issues.[28-30] Presentations and reports can be downloaded from the Special Reports section of the MHS Web site.

KPNC regional and medical facility Health Education Departments have used the survey data to compare and to discern trends in health-related behaviors (eg, prevalence of smoking, fruit/vegetable consumption, exercise frequency) at regional and Medical Center service population levels; to educate health professionals within KPNC and in the community about social determinants of health and health care (eg, stress, financial strain, educational attainment, Internet access) that affect the total health of adults; and to examine differences
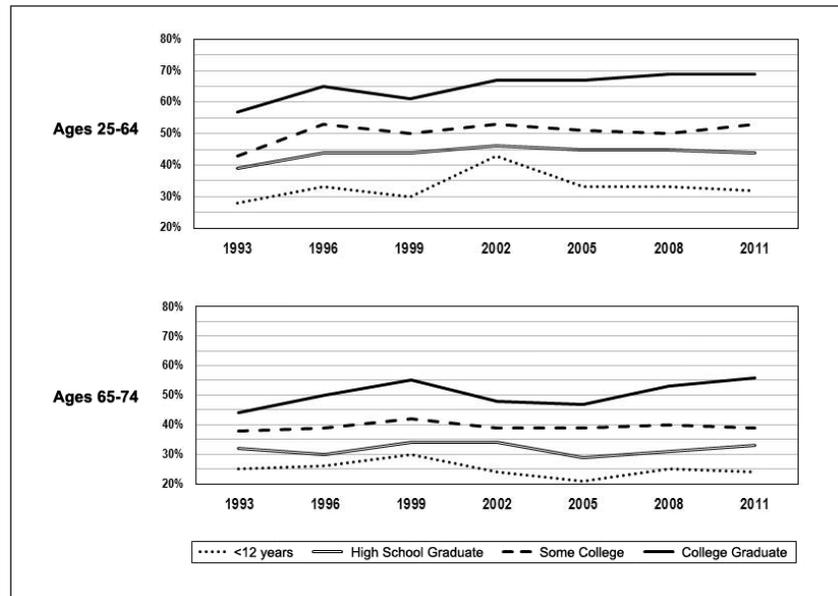

Figure 1. Percentages of adults who considered their health to be very good or excellent, by level of education, 1993-2011.

in health-related behaviors and psychosocial characteristics of women and men with different levels of obesity severity.

The estimates of digital technology access and health education modality preferences, and especially how these vary across different demographic segments, have provided valuable information for planning of patient education interventions by Operations and Research Departments. Because members don't always need to register for health education classes or to sign on to the Health Plan Web site to access most online health information and health education materials and programs, the estimates of modalities used in the past year help KPNC's regional Health Education and Digital Services Departments monitor member use of and preferences for different types of health information resources overall and by different subgroups of the membership.

Selected Member Health Survey Trends in Membership Characteristics Over Time

Trends in selected sociodemographic, health, and information technology characteristics 1999 to 2011 are shown for adults aged 25 to 79 years, and for ages 25 to 64 years and 65 to 79 years by sex, in Table 3 (available at: www.thepermanentejournal.org/files/15-225-1.pdf).

During that 10-year interval, the adult Health Plan membership became better educated and less non-Hispanic white, with the latter change associated with a significant increase in percentage of Asian members. Compared with 1999, in 2011, the prevalence of self-reported diabetes and hypertension significantly increased in most age-sex groups. There was a small but statistically significant increase in the percentage of those aged 25 to 64 years who considered their health to be very good or excellent, but Figure 1 suggests that increases were primarily among those with higher educational attainment. There was an increase in the percentage of adults who indicated that physical or emotional health problems interfered at least moderately with their daily activities. Prevalence of current smoking, ever smoking, and exercise less than once a week was significantly lower, whereas obesity was significantly higher. The percentage of adults consuming at least 3 servings of fruits/vegetables daily was significantly higher but still less than 50%. Percentages of adults who tried to eat reduced/low fat foods, who experienced chronic stress, and who experienced an episode of depression or anxiety remained relatively flat across the study period. Belief that habits and lifestyle can greatly impact

health significantly increased across all age-sex groups, and as Figures 2 and 3 show, the increase occurred across all levels of education and all race/ethnic groups. A comparison of access to and use of digital technology in 2011 versus 2002 showed large and significant increases across all age groups in percentages with access to a computer, the Internet, e-mail, and health information from Web sites.

Use of the Member Health Survey to Identify Differences Across Race/Ethnic Groups

A comparison of non-Hispanic whites (whiteNHs) with black, Latino, Filipino, and Chinese Health Plan members aged 25-79 years on selected sociodemographic and health characteristics is found in Table 4 (available at: www.theperma-nentejournal.org/files/15-225-2.pdf). Prevalence estimates are derived from pooled 2008 and 2011 survey data that were weighted to the 2011 membership and then analyzed using SAS Proc Sur-veyreg[31,32] (SAS Institute, Cary, NC) to standardize the age-gender composition of the race-ethnic groups. The results show significant race/ethnic differences in education, income, and self-reported health and behavior/psychosocial health risks.

Latinos are significantly less likely than all the other groups to have attended any amount of college, and blacks and Latinos are significantly less likely and Filipinos and Chinese significantly more likely than whiteNHs to have a college degree. Blacks, Latinos, and Filipinos are significantly more likely than whiteNHs to have a household income of $35,000 or less and to worry a great deal about their or their family's financial security. Compared with whiteNHs, blacks, Latinos, and Filipinos are significantly less likely than whiteNHs to report being in very good/excellent health.

With regard to health behavior/lifestyle risks, blacks, Latinos, and Filipinos are significantly more likely than whiteNHs to get exercise less than once a week (age 25-64 years) and to get less than 6 hours sleep per night ("short sleep"), and they are significantly less likely to get exercise at least 5 times a week and to consume at least 3 servings of fruit/vegetables a day. Blacks and Latinos are significantly more likely and Filipinos and Chinese significantly
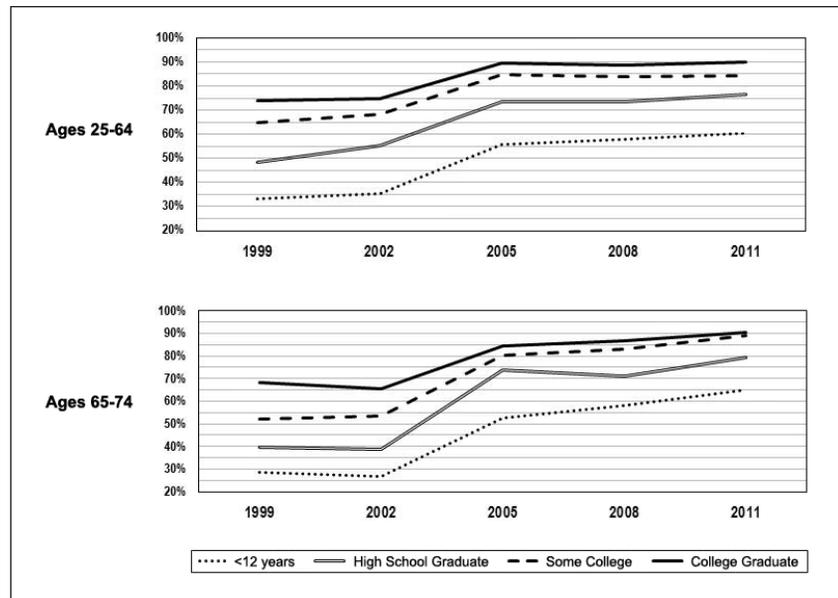

Figure 2. Percentages of adults who believe that their habits/lifestyle (eg, diet, exercise, weight) can affect their health quite a bit, by level of education, 1999-2011.
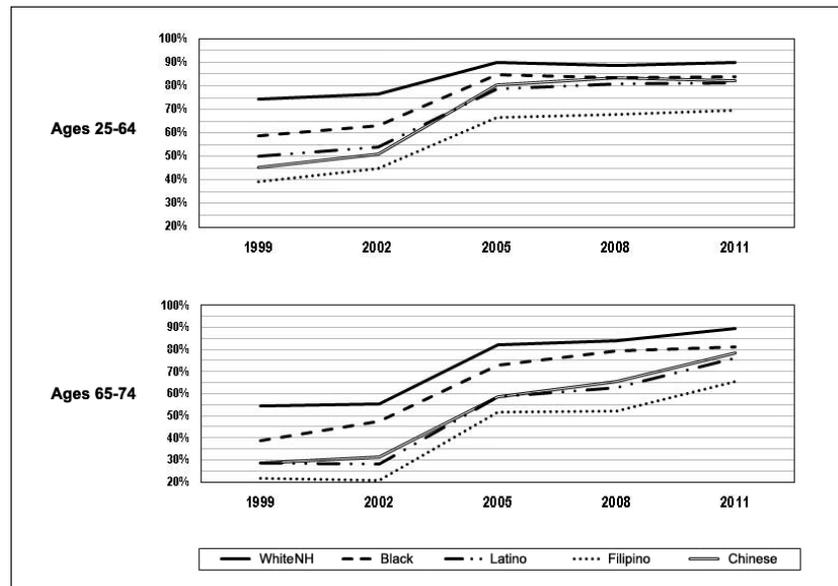

Figure 3. Percentages of adults who believe that their habits/lifestyle (eg, diet, exercise, weight) can affect their health quite a bit, by race/ethnicity, 1999-2011.

WhiteNH = non-Hispanic whites.

less likely than whiteNHs to be obese, and Latinos, Filipinos, and Chinese are less likely than whiteNHs to have ever smoked. Blacks in all age-sex groups and Latinos aged 25-64 years are significantly more likely than whiteNHs to report at least 1 episode of discrimination/harassment in the prior year, and blacks and Latinos

across all age groups are significantly less likely to have had a dental exam in the past 12 months.

Figure 3 shows that whiteNHs are significantly more likely than all the other race/ethnic groups to believe that their health-related behaviors/lifestyle can affect their health quite a bit. Table 5 shows that

Table 5. Internet and e-mail access and preferences for selected health information modalities in 2011 among English-proficient Health Plan members aged 25-79 years, by race/ethnicity[a]

Age-sex group	Race/ethnicity[b]				
	WhiteNH	**Black**	**Latino**	**Filipino**	**Chinese**
Able to use the Internet to get information from Web sites on own or with help					
All age 25-79	97.4 (0.1)	94.7 (0.5)[c]	94.4 (0.5)[c]	93.1 (0.7)[c]	96.6 (0.6)
Women age 25-64	98.7 (0.2)	97.1 (0.7)	96.4 (0.8)[d]	95.0 (1.1)[d]	98.2 (0.7)
Men age 25-64	> 99.9 (--)	> 99.9 (--)	> 99.9 (--)	> 99.9 (--)	> 99.9 (--)
Women age 65-79	86.5 (0.9)	71.1 (3.9)[d]	75.1 (3.2)[c]	65.2 (4.6)[c]	85.3 (4.3)
Men age 65-79	87.5 (0.8)	73.7 (3.7)[c]	72.8 (3.2)[c]	85.3 (4.3)	81.5 (4.8)
Able to use e-mail on own or with help					
All age 25-79	95.0 (0.2)	88.4 (1.1)[d]	90.5 (0.7)[c]	90.1 (0.9)[c]	94.6 (0.8)
Women age 25-64	97.7 (0.3)	94.4 (1.1)[c]	94.8 (0.9)[d]	94.5 (1.2)[d]	96.3 (1.3)
Men age 25-64	96.3 (0.4)	90.4 (2.2)[d]	95.0 (1.0)	95.0 (1.4)	98.3 (0.6)[d]
Women age 65-79	83.1 (0.9)	64.5 (4.2)[c]	67.1 (3.5)[c]	59.3 (4.8)[c]	79.8 (4.7)
Men age 65-79	84.7 (0.9)	60.8 (4.3)[c]	65.0 (3.6)[c]	70.3 (4.4)[d]	80.0 (4.8)
Got health information from a Web site in the past 12 months					
All age 25-79	49.2 (0.7)	40.7 (1.8)[c]	39.4 (1.4)[c]	39.1 (1.9)[c]	44.8 (2.0)[e]
Women age 25-64	58.0 (10)	48.8 (2.6)[d]	47.7 (2.2)[c]	47.1 (2.8)[c]	49.6 (3.2)[e]
Men age 25-64	45.3 (1.2)	35.4 (3.3)[e]	34.8 (2.4)[d]	34.2 (3.3)[e]	42.6 (3.4)
Women age 65-79	42.2 (1.3)	28.2 (3.6)[d]	27.0 (3.6)[c]	28.2 (4.3)[d]	40.3 (6.2)
Men age 65-79	39.3 (1.3)	34.3 (5.2)	27.7 (3.5)[d]	29.5 (5.0)	32.5 (5.6)
Interested in getting health information/advice from Web sites[f]					
All age 25-79	42.7 (0.7)	40.7 (1.8)[c]	32.0 (1.5)[c]	41.1 (2.1)	47.3 (2.3)
Women age 25-64	58.0 (1.0)	48.8 (2.6)[d]	34.2 (2.2)[c]	46.7 (3.0)	49.7 (3.5)
Men age 25-64	45.0 (1.3)	36.6 (3.8)[e]	34.3 (2.6)[c]	39.8 (3.8)	51.6 (3.7)
Women age 65-79	29.1 (1.3)	17.1 (3.3)[c]	17.4 (3.7)[d]	19.5 (4.3)[e]	33.5 (6.9)
Men age 65-79	33.4 (1.5)	25.8 (5.7)	22.0 (3.6)[d]	38.3 (6.0)	24.0 (6.0)
Interested in getting health information/advice from Web videos[f]					
All age 25-79	19.7 (0.6)	21.1 (1.8)	17.3 (1.2)	21.4 (1.8)	21.7 (.9)
Women age 25-64	20.5 (0.9)	19.2 (2.2)	19.2 (1.8)	19.3 (2.4)	19.8 (2.8)
Men age 25-64	21.4 (1.1)	26.1 (3.5)	18.9 (2.1)	26.2 (3.4)	27.9 (3.4)
Women age 65-79	12.2 (1.0)	11.8 (2.7)	7.1 (2.4)[e]	13.3 (3.6)	16.7 (5.3)
Men age 65-79	13.8 (1.1)	14.8 (4.9)	8.0 (2.3)[e]	16.7 (5.3)	4.2 (2.2)[c]
Interested in getting health information/advice from e-mailed newsletters[f]					
All age 25-79	36.0 (0.7)	30.4 (1.9)[d]	32.8 (1.5)	36.3 (2.0)	39.8 (2.2)
Women age 25-64	39.0 (1.1)	30.9 (2.6)[d]	34.7 (2.3)	42.2 (3.0)	39.7 (3.3)
Men age 25-64	32.8 (1.2)	31.0 (3.6)	34.3 (2.6)	32.8 (3.6)	43.6 (3.8)[d]
Women age 65-79	34.1 (1.8)	24.6 (3.8)[e]	16.7 (3.3)[c]	19.0 (4.1)[c]	29.3 (6.7)
Men age 65-79	37.2 (1.5)	29.9 (5.8)	31.4 (4.0)	39.2 (6.0)	32.0 (6.8)
Interested in telephone-based health coaching[f]					
All age 25-79	32.3 (0.7)	37.8 (2.1)[e]	30.9 (1.5)	23.3 (1.8)[c]	21.4 (1.8)[c]
Women age 25-64	35.6 (1.1)	35.2 (2.8)	30.8 (2.2)[e]	24.1 (2.6)[c]	27.4 (3.1)[e]
Men age 25-64	29.1 (1.2)	42.6 (3.9)[d]	30.5 (2.6)	22.9 (3.2)	15.3 (2.5)[c]
Women age 65-79	33.6 (1.4)	34.2 (4.1)	28.6 (4.3)	25.4 (4.7)	22.4 (5.8)
Men age 65-79	27.7 (1.3)	31.7 (5.6)	37.1 (4.2)	17.6 (4.6)[c]	17.9 (5.5)

[a] Percentages for race/ethnic groups derived from Member Health Survey 2011 data weighted to the 2011 age × sex × service area composition in 2011 and then standardized to the age-sex (for age 25-79) or age distribution of the Kaiser Permanente Northern California membership for that age group in 2011. These should not be used as "official" statistics about the Kaiser Permanente Northern California membership.

[b] Data are weighted % (standard error around estimate).

[c] Significantly (p < 0.001) differs (higher or lower) from whiteNH in same age group.

[d] Significantly (p < 0.01) differs (higher or lower) from whiteNH in same age group.

[e] Significantly (p < 0.05) differs (higher or lower) from whiteNH in same age group.

[f] Statistics based on members who indicated at least 1 health education/information modality preference in a checklist.

WhiteNH = non-Hispanic white.

especially among older women, blacks, Latinas, and Filipinas are significantly less likely than whiteNHs to be able to use the Internet and e-mail, to have obtained health information from a Web site in the past year, and to be interested in getting health information and advice from Web sites or e-mailed newsletters.

Comparisons between Filipinos and Chinese show that these Asian ethnic groups significantly differ on several demographic and health-related measures, with Filipinos often looking more similar to black and Latino than Chinese adults despite having educational attainment comparable with Chinese adults. Significantly higher percentages of Filipinos than Chinese have a household income of $35,000 or less, worry a great deal about their financial security, are obese, and among women and men aged 25-64 years, are smokers and short sleepers (< 6 hours). Significantly lower percentages of Filipinos than Chinese usually consume at least 3 servings of fruits/vegetables per day and believe that their health-related behaviors/lifestyle can have a large impact on their health. Among older women, Filipinas are significantly less likely than Chinese to report being able to use e-mail and the Internet to obtain health information.

DISCUSSION

The information presented in this overview demonstrates that data from KPNC's MHS can be a valuable resource for researchers and service planners inside and outside of KPNC to learn about the prevalence of health-related behaviors and psychosocial risks that are not frequently collected in the clinic setting, such as short sleep, chronic high stress, use of dietary supplements, and recency of dental care, as well as digital access and preference factors that may influence use of Health Plan Web sites. Although the exact prevalence estimates for this Northern California population may not be fully generalizable to adults in other parts of the US or other countries, they represent patterns among a very large and diverse community-based population and suggest health risks that might be considered for inclusion in total health assessments in the clinic setting.

The MHS enables study of trends in health and health-related behaviors and risk factors over time, which can help assess whether secular or Health Plan campaigns appear to have improved specific behaviors, and if so, whether improvements are seen across all patient subgroups. For example, our results suggest that major strides have been made across all race/ethnic groups, age groups, and levels of education in convincing adults that their health-related behaviors and lifestyle can have a major impact on their health. However, this increase in positive health beliefs has not translated into major improvements in fruit and vegetable consumption, exercise frequency, or obesity.

MHS data can also be used to study how health-related characteristics and social determinants of health and health care, including use of digital technology, differ by race-ethnicity, age cohort, education, and income in an insured adult population. Such documented differences can provide the basis for further research, as well as have implications for developing total health assessment questionnaires for adults, population management activities, and translational patient intervention research. Because MHS data are linkable to a state-of-the-art EHR, as well as geocoded data, the survey can also be used to address important methodologic issues, such as sources and effects of nonresponse bias in surveys, how well estimates of health characteristics based on survey data match estimates based on Health Plan clinical data, and whether accuracy of self-report data differs by race/ethnicity, sex, or level of education.

CONCLUSION

In this era of "big data" generated through rapidly expanding EHRs and other clinical and administrative data sources, surveys such as the KPNC MHS provide important complementary data that can inform on patient characteristics over time. The MHS is unique in that it can be readily linked at the individual-patient level to facilitate novel research using combined clinical and self-reported data to address research questions that can have clinical and public health implications. The MHS represents a great

resource for new collaborative research, and KPNC encourages pursuing those collaborative opportunities to increase the benefit of this survey to the broader community. ❖

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Serious Business

Good health is a serious business.
Like life itself, it has to be worked at and
it takes on added meaning with effort.

— Norman Cousins, 1915-1990, American political journalist, author, professor, and world peace advocate

Table 3. How sociodemographic and health characteristics of the adult membership of Kaiser Permanente Northern California have changed over time: women and men ages 25-79[a]					
Sociodemographic and health characteristics	Survey year[b]				
	1999	2002	2005	2008	2011
Non-Hispanic white					
All	64.2 (0.5)	65.3 (0.5)	62.2 (0.5)	59.8 (0.5)	59.4 (0.5)[c]
Women age 25-64	62.6 (0.7)	62.8 (0.7)	60.2 (0.7)	57.4 (0.7)	56.2 (0.7)[c]
Men age 25-64	61.2 (0.8)	63.6 (0.8)	59.8 (0.8)	57.5 (0.9)	57.7 (0.9)[d]
Women age 65-79	78.5 (0.9)	76.3 (0.9)	75.3 (0.9)	74.0 (0.9)	73.6 (1.0)[c]
Men age 65-79	78.1 (0.9)	79.8 (0.9)	75.4 (0.9)	75.0 (0.9)	72.9 (1.0)[c]
At least some college education					
All	78.5 (0.4)	80.5 (0.4)	82.0 (0.4)	81.8 (0.4)	80.7 (0.4)
Women age 25-64	81.2 (0.5)	84.7 (0.5)	86.1 (0.5)	85.5 (0.5)	83.5 (0.6)[d]
Men age 25-64	81.9 (0.6)	81.9 (0.6)	82.7 (0.7)	82.1 (0.7)	81.0 (0.7)
Women age 65-79	55.2 (1.0)	57.4 (1.0)	62.2 (1.0)	64.8 (1.0)	72.2 (1.0)[c]
Men age 65-79	65.0 (1.0)	71.5 (1.0)	73.2 (0.9)	74.9 (0.9)	71.8 (1.0)[c]
College/college graduate					
All	38.6 (0.5)	41.7 (0.5)	44.0 (0.5)	45.4 (0.5)	48.7 (0.5)[c]
Women age 25-64	38.7 (0.7)	43.4 (0.7)	45.2 (0.7)	47.7 (0.7)	49.7 (0.8)[c]
Men age 25-64	42.9 (0.8)	44.5 (0.8)	47.1 (0.9)	46.6 (0.9)	50.9 (0.9)[c]
Women age 65-79	19.9 (0.8)	21.9 (0.9)	26.3 (0.9)	28.5 (1.0)	39.7 (1.1)[c]
Men age 65-79	32.3 (1.0)	36.5 (1.1)	38.4 (1.0)	41.1 (1.1)	40.7 (1.1)[c]
Very good/excellent health					
All	50.9 (0.5)	55.1 (0.5)	54.2 (0.5)	55.6 (0.5)	56.7 (0.5)[c]
Women age 25-64	52.7 (0.7)	56.8 (0.7)	57.0 (0.7)	58.7 (0.7)	61.1 (0.7)[c]
Men age 25-64	52.0 (0.8)	58.8 (0.8)	57.0 (0.8)	57.0 (0.9)	56.7 (0.9)[c]
Women age 65-79	41.4 (1.0)	37.3 (1.0)	36.6 (1.0)	41.0 (1.1)	42.8 (1.1)
Men age 65-79	41.1 (1.1)	39.7 (1.1)	38.6 (1.0)	41.9 (1.1)	44.6 (1.1)
Very good/excellent emotional/mental health					
All	58.1 (0.5)	59.3 (0.5)	60.5 (0.5)	61.2 (0.5)	61.8 (0.5)[c]
Women age 25-64	55.4 (0.7)	55.7 (0.7)	57.9 (0.7)	59.1 (0.7)	60.2 (0.7)[c]
Men age 25-64	61.0 (0.8)	64.4 (0.8)	63.6 (0.8)	63.0 (0.9)	63.2 (0.8)
Women age 65-79	55.6 (1.0)	52.0 (1.0)	56.5 (1.0)	60.6 (1.1)	61.2 (1.1)[c]
Men age 65-79	61.0 (1.0)	60.4 (1.1)	62.0 (1.0)	64.8 (1.0)	64.1 (1.1)
Physical and/or emotional problems interfere at least moderately with daily activities					
All	18.6 (0.4)	n/a	24.5 (0.4)	23.0 (0.4)	23.9 (0.4)[c]
Women age 25-64	18.6 (0.6)	21.9 (0.6)	23.4 (0.6)	21.7 (0.6)	22.1 (0.6)[d]
Men age 25-64	16.9 (0.7)	n/a	23.9 (0.7)	22.3 (0.8)	24.0 (0.7)[c]
Women age 65-79	26.4 (1.0)	32.3 (1.0)	31.1 (0.9)	29.3 (1.0)	29.2 (1.0)
Men age 65-79	20.7 (0.9)	28.9 (1.0)	28.9 (0.9)	28.1 (1.0)	28.4 (1.0)[c]
Has been or is being treated for diabetes[e]					
All	6.0 (0.2)	6.8 (0.2)	8.3 (0.2)	8.8 (0.3)	8.9 (0.3)[c]
Women age 25-64	4.1 (0.3)	4.4 (0.3)	5.7 (0.3)	6.5 (0.4)	5.5 (0.3)[c]
Men age 25-64	5.6 (0.3)	6.1 (0.3)	7.8 (0.4)	8.0 (0.4)	9.0 (0.5)[c]
Women age 65-79	11.5 (0.7)	13.8 (0.7)	15.3 (0.7)	15.5 (0.8)	19.2 (0.9)[c]
Men age 65-79	15.4 (0.8)	18.4 (0.9)	21.5 (0.9)	22.6 (0.9)	17.7 (0.8)
Has been or is being treated for high blood pressure[e]					
All	18.2 (0.3)	19.1 (0.3)	24.3 (0.4)	26.6 (0.4)	26.8 (0.4)[c]
Women age 25-64	13.3 (0.4)	13.4 (0.4)	17.3 (0.5)	19.2 (0.6)	18.9 (0.6)[c]
Men age 25-64	14.7 (0.5)	14.2 (0.5)	20.0 (0.6)	23.4 (0.7)	23.3 (0.7)[c]
Women age 65-79	45.8 (1.0)	51.4 (1.0)	58.3 (1.0)	60.0 (1.1)	59.6 (1.1)[c]
Men age 65-79	42.0 (1.0)	50.5 (1.1)	57.2 (1.0)	59.1 (1.1)	58.5 (1.1)[c]

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Table 3. How sociodemographic and health characteristics of the adult membership of Kaiser Permanente Northern California have changed over time: women and men ages 25-79[a]					
Sociodemographic and health characteristics	**Survey year[b]**				
	1999	**2002**	**2005**	**2008**	**2011**
Current smoker					
All	12.5 (0.3)	12.1 (0.3)	9.2 (0.3)	9.9 (0.3)	8.7 (0.3)[c]
Women age 25-64	11.6 (0.4)	10.9 (0.4)	8.2 (0.4)	8.9 (0.4)	7.7 (0.4)[c]
Men age 25-64	14.8 (0.6)	14.6 (0.6)	10.9 (0.5)	12.4 (0.6)	10.9 (0.5)[c]
Women age 65-79	8.7 (0.6)	8.4 (0.6)	6.9 (0.5)	5.3 (0.5)	5.7 (0.5)[c]
Men age 65-79	9.5 (0.6)	9.3 (0.6)	7.6 (0.6)	6.2 (0.5)	5.8 (0.5)[c]
Ever smoker					
All	38.6 (0.5)	34.3 (0.4)	32.1 (0.4)	32.1 (0.5)	30.5 (0.4)[c]
Women age 25-64	33.3 (0.6)	29.3 (0.6)	27.3 (0.6)	28.0 (0.6)	25.3 (0.6)[c]
Men age 25-64	40.1 (0.8)	34.7 (0.8)	31.5 (0.8)	31.3 (0.8)	29.6 (0.8)[c]
Women age 65-79	42.0 (1.0)	41.1 (1.0)	42.1 (1.0)	42.5 (1.1)	46.6 (1.1)[d]
Men age 65-79	62.4 (1.0)	47.3 (1.1)	56.3 (1.0)	53.7 (1.1)	46.8 (1.1)[c]
BMI ≥ 30					
All	21.5 (0.4)	23.9 (0.4)	25.5 (0.4)	26.5 (0.5)	26.9 (0.4)[c]
Women age 25-64	22.5 (0.6)	24.7 (0.6)	26.8 (0.6)	27.2 (0.6)	26.8 (0.7)[c]
Men age 25-64	21.3 (0.7)	23.5 (0.7)	24.6 (0.7)	26.6 (0.8)	27.5 (0.8)[c]
Women age 65-79	21.4 (0.9)	24.1 (0.9)	25.5 (0.9)	26.1 (1.0)	25.7 (1.0)[d]
Men age 65-79	15.7 (0.8)	21.1 (0.9)	22.1 (0.9)	22.2 (0.9)	25.5 (1.0)[c]
BMI ≥ 35					
All	7.3 (0.2)	8.7 (0.3)	9.5 (0.3)	10.7 (0.3)	10.8 (0.3)[c]
Women age 25-64	9.1 (0.4)	11.1 (0.4)	12.1 (0.5)	12.9 (0.5)	12.5 (0.5)[c]
Men age 25-64	6.2 (0.4)	7.0 (0.4)	7.4 (0.5)	9.3 (0.5)	9.3 (0.7)[c]
Women age 65-79	6.4 (0.5)	8.3 (0.6)	9.3 (0.6)	9.5 (0.6)	9.3 (0.7)[c]
Men age 65-79	3.1 (0.4)	4.0 (0.4)	5.7 (0.5)	6.3 (0.5)	9.1 (0.7)[c]
Exercises less than once per week					
All	18.9 (0.4)	18.2 (0.4)	16.8 (0.4)	16.4 (0.4)	14.6 (0.4)[c]
Women age 25-64	20.3 (0.6)	20.2 (0.6)	19.0 (0.5)	17.8 (0.6)	15.6 (0.6)[c]
Men age 25-64	18.8 (0.7)	17.3 (0.6)	15.2 (0.6)	15.7 (0.7)	13.5 (0.6)[c]
Women age 65-79	17.4 (0.8)	17.2 (0.8)	17.5 (0.8)	15.1 (0.8)	14.0 (0.8)[c]
Men age 65-79	12.3 (0.7)	11.7 (0.7)	11.5 (0.7)	11.7 (0.7)	14.5 (0.8)
Exercises ≥ 5 days per week					
All	25.5 (0.4)	23.5 (0.3)	25.7 (0.4)	26.3 (0.4)	28.9 (0.4)[c]
Women age 25-64	21.2 (0.6)	18.4 (0.5)	20.6 (0.6)	21.8 (0.6)	25.2 (0.7)[c]
Men age 25-64	26.8 (0.7)	26.2 (0.7)	28.0 (0.8)	27.8 (0.8)	30.5 (0.8)[c]
Women age 65-79	31.0 (1.0)	28.0 (0.9)	31.1 (1.0)	31.0 (1.0)	34.5 (1.1)
Men age 65-79	41.4 (1.0)	34.9 (1.0)	42.3 (1.1)	42.3 (1.1)	36.4 (1.1)[d]
Eats ≥ 3 servings fruit/vegetables per day					
All	41.5 (0.5)	43.2 (0.5)	43.0 (0.5)	45.1 (0.5)	48.1 (0.5)[c]
Women age 25-64	48.5 (0.8)	50.9 (0.7)	51.6 (0.7)	54.0 (0.7)	55.6 (0.7)[c]
Men age 25-64	32.4 (0.9)	32.6 (0.8)	32.1 (0.8)	34.9 (0.9)	39.4 (0.9)[c]
Women age 65-79	54.2 (1.1)	59.2 (1.0)	56.8 (1.0)	56.8 (1.1)	49.4 (1.1)[d]
Men age 65-79	36.3 (1.1)	38.9 (1.1)	36.0 (1.0)	35.0 (1.0)	48.5 (1.1)[c]
Usually tries to eat low/reduced-fat foods					
All	45.7 (0.5)	44.0 (0.5)	40.1 (0.5)	47.5 (0.5)	47.2 (0.5)
Women age 25-64	49.5 (0.8)	46.4 (0.7)	39.1 (0.7)	50.4 (0.7)	51.3 (0.8)
Men age 25-64	37.3 (0.9)	37.2 (0.8)	35.7 (0.8)	41.3 (0.9)	40.1 (0.9)
Women age 65-79	61.1 (1.1)	57.6 (1.0)	57.5 (1.0)	60.1 (1.1)	54.4 (1.1)[c]
Men age 65-79	55.7 (1.1)	54.9 91.1)	52.7 (1.0)	53.2 (1.1)	53.2 (1.1)

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Sociodemographic and health characteristics	Survey year[b]				
	1999	2002	2005	2008	2011
Table 3. How sociodemographic and health characteristics of the adult membership of Kaiser Permanente Northern California have changed over time: women and men ages 25-79[a]					
Felt very stressed/tense much of time during the past year					
All	17.8 (0.4)	19.6 (0.4)	16.5 (0.4)	18.1 (0.4)	17.0 (0.4)
Women age 25-64	23.8 (0.7)	24.8 (0.6)	23.1 (0.6)	24.8 (0.6)	22.5 (0.6)
Men age 25-64	15.4 (0.7)	18.3 (0.6)	13.4 (0.6)	15.2 (0.7)	15.0 (0.6)
Women age 65-79	6.4 (0.5)	10.6 (0.7)	6.5 (0.5)	6.4 (0.5)	5.9 (0.5)
Men age 65-79	3.7 (0.4)	3.3 (0.4)	3.4 (0.4)	3.5 (0.4)	5.8 (0.5)
Felt depressed or very anxious for at least 2 weeks during the past year					
All	15.6 (0.3)	13.0 (0.3)	15.1 (0.3)	16.0 (0.4)	16.8 (0.4)
Women age 25-64	20.2 (0.5)	17.7 (0.5)	19.7 (0.5)	21.3 (0.6)	20.8 (0.6)
Men age 25-64	11.4 (0.5)	8.6 (0.4)	11.2 (0.5)	11.1 (0.6)	13.1 (0.6)
Women age 65-79	16.6 (0.8)	15.8 (0.7)	15.3 (0.7)	16.7 (0.8)	16.4 (0.8)
Men age 65-79	9.9 (0.6)	6.9 (0.7)	8.8 (0.6)	10.0 (0.6)	13.3 (0.8)[c]
Believes that habits/lifestyle (such as exercise, diet, weight) can affect their health quite a bit					
All	63.1 (0.5)	65.6 (0.4)	83.7 (0.3)	83.4 (0.4)	85.6 (0.4)[c]
Women age 25-64	67.9 (0.7)	70.4 (0.6)	86.9 (0.5)	86.3 (0.5)	88.3 (0.5)[c]
Men age 25-64	62.3 (1.0)	65.9 (0.8)	82.5 (0.6)	81.5 (0.7)	82.3 (0.7)[c]
Women age 65-79	52.3 (1.1)	50.9 (1.0)	78.7 (0.8)	79.7 (0.9)	85.4 (0.8)[c]
Men age 65-79	46.8 (1.1)	49.1 (1.1)	75.5 (0.9)	79.2 (0.8)	86.6 (0.7)[c]
Got a dental exam in the past year					
All	65.0 (0.5)	76.2 (0.4)	77.6 (0.4)	77.8 (0.4)	79.6 (0.4)[c]
Women age 25-64	68.3 (0.7)	80.0 (0.6)	80.4 (0.6)	81.3 (0.6)	81.7 (0.6)[c]
Men age 25-64	63.2 (0.8)	73.2 (0.7)	76.1 (0.7)	75.2 (0.8)	77.6 (0.7)[c]
Women age 65-79	62.5 (1.1)	74.6 (1.0)	74.3 (0.9)	75.3 (1.0)	78.5 (0.9)[c]
Men age 65-79	55.7 (1.1)	71.4 (1.0)	71.8 (1.0)	72.7 (1.0)	78.8 (0.9)[c]
Got a flu shot for past flu season					
All	37.3 (0.4)	35.7 (0.4)	28.0 (0.4)	44.2 (0.5)	54.8 (0.5)[c]
Women age 25-64	32.1 (0.6)	30.4 (0.6)	21.5 (0.6)	41.6 (0.7)	52.1 (0.8)[c]
Men age 25-64	28.4 (0.7)	26.7 (0.7)	18.1 (0.6)	35.8 (0.9)	49.2 (0.9)[c]
Women age 65-79	80.2 (0.8)	77.3 (0.9)	76.2 (0.9)	77.9 (0.9)	77.7 (0.9)
Men age 65-79	83.1 (0.8)	79.6 (0.9)	76.9 (0.9)	77.6 (0.9)	76.9 (1.0)[c]
Has access to a computer (desktop, laptop, netbook)					
All	74.1 (0.4)	84.6 (0.3)	88.4 (0.3)	90.9 (0.3)	95.0 (0.2)[c,f]
Women age 25-64	79.9 (0.5)	90.4 (0.4)	92.5 (0.4)	93.9 (0.3)	97.4 (0.2)[c,f]
Men age 25-64	79.2 (0.7)	88.3 (0.5)	92.0 (0.4)	93.5 (0.3)	97.4 (0.2)[c,f]
Women age 65-79	34.7 (1.0)	50.5 (1.0)	61.0 (1.0)	70.2 (1.0)	82.0 (0.8)[c,f]
Men age 65-79	45.9 (1.1)	61.2 (1.0)	69.4 (1.0)	76.5 (0.9)	83.8 (0.8)[c,f]
Has access to the Internet (at home or at another location) or has someone who goes online for them					
All	62.3 (0.5)	82.3 (0.3)	87.0 (0.3)	90.2 (0.3)	96.6 (0.1)[c,f]
Women age 25-64	68.0 (0.7)	88.3 (0.4)	91.3 (0.4)	93.7 (0.3)	97.9 (0.2)[c,f]
Men age 25-64	67.8 (0.9)	86.5 (0.5)	91.0 (0.5)	93.0 (0.5)	99.9 (< 0.1)[c,f]
Women age 65-79	23.0 (0.9)	45.8 (1.1)	57.6 (1.0)	67.4 (1.0)	83.3 (0.8)[c,f]
Men age 65-79	32.0 (1.0)	57.3 (1.1)	66.4 (1.0)	74.3 (0.9)	84.7 (0.7)[c,f]
Has access to e-mail					
All	n/a	78.2 (0.4)	87.0 (0.3)	87.1 (0.3)	93.7 (0.2)[f]
Women age 25-64	n/a	84.2 (0.5)	91.3 (0.4)	90.4 (0.4)	96.7 (0.3)[f]
Men age 25-64	n/a	81.9 (0.6)	91.0 (0.5)	90.6 (0.5)	95.6 (0.3)[f]
Women age 65-79	n/a	43.7 (1.1)	57.6 (1.0)	62.0 (1.0)	79.2 (0.8)[f]
Men age 65-79	n/a	54.6 (1.1)	66.4 (1.0)	69.3 (1.0)	80.9 (0.8)[f]

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Table 3. How sociodemographic and health characteristics of the adult membership of Kaiser Permanente Northern California have changed over time: women and men ages 25-79[a]					
Sociodemographic and health characteristics	**Survey year[b]**				
	1999	**2002**	**2005**	**2008**	**2011**
Got health information from a Web site in the past 12 months					
All	12.9 (0.4)	17.2 (0.4)	22.0 (0.4)	33.4 (0.5)	45.5 (0.5)[c,f]
Women age 25-64	16.0 (0.5)	18.5 (0.5)	25.8 (0.6)	40.2 (0.7)	53.1 (0.8)[c,f]
Men age 25-64	12.2 (0.6)	18.6 (0.7)	21.2 (0.7)	30.4 (0.9)	39.9 (0.9)[c,f]
Women age 65-79	5.6 (0.5)	9.6 (0.6)	11.8 (0.7)	20.9 (0.9)	37.8 (1.1)[c,f]
Men age 65-79	5.4 (0.5)	9.2 (0.6)	12.9 (0.7)	19.9 (0.9)	38.4 (1.1)[c,f]

[a] Percentages are derived from self-report survey data that was weighted to the age x sex x service area composition of the adult membership in that survey year. These should not be used as "official" data about the Kaiser Permanente Northern California membership.

[b] Data are weighted % (standard error around estimate).

[c] Significant ($p < 0.001$) difference between 1999 and 2011.

[d] Significant ($p < 0.01$) difference between 1999 and 2011.

[e] People who report having been or are being treated for, or are taking medicine for this condition in the past 12 months.

[f] Significant ($p < 0.001$) difference between 2002 and 2011.

BMI = body mass index (calculated as weight in kilograms divided by height in meters squared); n/a = not available for that survey year.

Table 4. Race/ethnicity differences in sociodemographic and health-related characteristics of English-proficient adult Health Plan members aged 25-79[a]

Sociodemographic and health characteristics	Race/ethnicity[b]				
	WhiteNH	**Black**	**Latino**	**Filipino**	**Chinese**
At least some college education (including college graduate)					
All age 25-79	83.0 (0.4)	77.4 (1.1)[c]	65.9 (1.0)[c]	85.7 (0.9)[c]	90.1 (0.8)[c]
Women age 25-64	86.2 (0.5)	82.2 (1.4)[d]	72.1 (1.4)[c]	89.6 (1.2)[d]	91.5 (1.2)[d]
Men age 25-64	83.1 (0.6)	76.6 (2.2)[d]	67.0 (1.7)[c]	85.7 (1.6)[c]	93.5 (1.2)[c]
Women age 65-79	69.6 (0.8)	65.4 (2.5)	39.7 (2.8)[c]	73.0 (2.9)	70.0 (3.9)
Men age 65-79	77.4 (0.7)	65.2 (3.3)[c]	51.4 (2.7)[c]	76.9 (3.2)	85.5 (2.7)[d]
College graduate					
All age 25-79	48.7 (0.5)	31.6 (1.3)[c]	26.5 (0.9)[c]	55.4 (1.3)[c]	68.9 (1.3)[c]
Women age 25-64	51.1 (0.7)	33.1 (1.8)[c]	28.6 (1.3)[c]	63.2 (1.8)[c]	70.7 (1.9)[c]
Men age 25-64	50.0 (0.8)	33.0 (2.5)[c]	28.2 (1.6)[c]	50.0 (2.4)	73.7 (2.2)[c]
Women age 65-79	33.1 (0.9)	23.1 (2.4)[c]	11.4 (1.8)[c]	52.5 (3.3)[c]	40.2 (4.4)
Men age 65-79	44.8 (0.9)	24.5 (3.0)[c]	20.9 (2.3)[c]	55.0 (3.8)[d]	63.9 (3.8)[c]
Household income ≤ $35,000 (considered low income for an individual in the San Francisco Bay Area)					
All age 25-79	13.5 (0.3)	25.5 (1.2)[c]	20.8 (0.8)[c]	20.9 (1.0)[c]	11.2 (0.8)[e]
Women age 25-64	11.8 (04)	24.9 (1.7)[c]	19.0 (1.2)[c]	16.1 (1.7)[d]	8.7 (1.1)[e]
Men age 25-64	9.5 (0.5)	20.0 (2.2)[c]	13.8 (1.2)[d]	16.0 (1.7)[c]	7.0 (1.3)
Women age 65-79	36.1 (0.9)	55.6 (3.0)[c]	56.0 (3.0)[c]	55.2 (3.4)[c]	35.0 (4.6)
Men age 65-79	20.6 (0.7)	25.8 (3.2)[c]	31.8 (2.5)[c]	38.8 (3.7)[c]	23.1 (3.3)
Overall health is very good or excellent					
All age 25-79	60.0 (0.4)	41.8 (1.4)[c]	48.0 (1.0)[c]	49.8 (1.3)[c]	56.1 (1.5)[c]
Women age 25-64	64.5 (0.6)	46.2 (1.9)[c]	51.0 (1.5)[c]	53.4 (1.9)[c]	58.8 (2.1)[c]
Men age 25-64	60.4 (0.8)	43.6 (2.6)[c]	50.2 (1.8)[c]	52.8 (2.7)[d]	58.5 (2.5)
Women age 65-79	46.5 (0.9)	24.0 (2.4)[c]	32.1 (2.7)[c]	30.8 (3.1)[c]	40.4 (4.4)
Men age 65-79	47.5 (0.9)	24.5 (3.0)[c]	35.1 (2.7)[c]	31.7 (3.5)[c]	43.1 (4.1)
Overall emotional/mental health is very good or excellent					
All age 25-79	62.7 (0.4)	56.4 (1.4)[c]	57.8 (1.0)[c]	63.0 (1.3)	60.1 (1.5)
Women age 25-64	61.7 (0.7)	50.0 (1.9)[c]	53.7 (1.5)[d]	63.8 (1.8)	60.5 (2.1)
Men age 25-64	63.0 (0.8)	63.3 (2.5)	62.7 (1.7)	68.1 (2.2)[e]	62.4 (2.5)
Women age 65-79	63.6 (0.9)	55.1 (2.8)[d]	53.8 (3.0)[d]	59.2 (3.3)	50.3 (4.6)[c]
Men age 65-79	66.9 (0.9)	58.6 (3.6)[e]	60.4 (2.8)[e]	46.4 (3.9)[c]	56.3 (4.1)[e]
Physical or emotional health problems interfere with daily activities moderately or quite a bit					
All age 25-79	22.4 (0.4)	26.7 (1.2)[c]	27.4 (0.9)[c]	23.3 (1.1)	18.7 (1.2)[c]
Women age 25-64	20.7 (0.6)	28.7 (1.7)[c]	27.3 (1.4)[c]	19.2 (1.5)	16.1 (1.6)[d]
Men age 25-64	22.0 (0.7)	26.7 (2.3)	26.6 (1.6)	25.3 (2.1)	20.6 (2.1)
Women age 65-79	28.8 (0.8)	35.2 (2.5)[c]	30.4 (2.6)	29.5 (2.9)	19.9 (3.7)[e]
Men age 65-79	28.4 (0.8)	32.1 (3.3)	28.7 (2.4)	31.0 (3.5)	23.3 (3.4)
Current smoker					
All age 25-79	9.4 (0.3)	15.4 (1.0)[c]	8.1 (0.5)[e]	9.4 (0.8)	4.5 (0.6)[c]
Women age 25-64	9.0 (0.4)	14.7 (1.3)[c]	6.5 (0.7)[d]	6.1 (0.9)[d]	3.2 (0.8)[c]
Men age 25-64	11.3 (0.5)	18.8 (2.1)[c]	10.5 (1.1)	14.9 (1.7)[e]	6.9 (1.2)[d]
Women age 65-79	5.2 (0.4)	6.7 (1.4)	4.7 (1.2)	1.7 (1.1)[c]	0.3 (0.3)[c]
Men age 65-79	6.3 (0.4)	10.4 (2.1)	7.4 (1.6)	8.0 (2.0)	3.3 (1.6)
Ever smoker					
All age 25-79	34.9 (0.4)	34.6 (1.3)	26.6 (0.9)[c]	20.7 (1.1)[c]	11.7 (0.9)[c]
Women age 25-64	30.9 (0.6)	31.7 (1.7)	21.2 (1.2)[c]	13.0 (1.3)[c]	8.6 (1.2)[c]
Men age 25-64	33.0 (0.7)	32.0 (2.4)	28.5 (1.6)[e]	28.2 (2.1)	12.8 (1.6)[c]
Women age 65-79	46.4 (0.9)	45.0 (2.7)	30.5 (2.7)[c]	10.2 (2.1)[c]	11.8 (2.9)[c]
Men age 65-79	57.3 (0.9)	54.4 (3.5)	45.5 (2.8)[c]	35.1 (3.6)[c]	24.6 (3.6)[c]

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Table 4. Race/ethnicity differences in sociodemographic and health-related characteristics of English-proficient adult Health Plan members aged 25-79[a]					
Sociodemographic and health characteristics	**Race/ethnicity[b]**				
	WhiteNH	**Black**	**Latino**	**Filipino**	**Chinese**
BMI ≥ 30					
All age 25-79	27.1 (0.4)	43.1 (1.4)[c]	36.8 (1.0)[c]	15.2 (1.0)[c]	6.7 (0.7)[c]
Women age 25-64	26.7 (0.6)	48.2 (1.8)[c]	36.9 (1.4)[c]	14.1 (1.3)[c]	8.6 (1.2)[c]
Men age 25-64	28.1 (0.7)	39.5 (2.6)[c]	39.1 (1.8)[c]	17.8 (1.9)[c]	6.4 (1.2)[c]
Women age 65-79	26.7 (0.8)	44.0 (2.7)[c]	29.3 (2.6)	11.2 (2.0)[c]	6.6 (2.4)[c]
Men age 65-79	24.5 (0.8)	30.6 (3.3)	32.2 (2.6)[d]	12.2 (2.5)[c]	2.2 (1.0)[c]
BMI ≥ 35					
All age 25-79	10.6 (0.3)	20.0 (1.1)[c]	16.1 (0.8)[c]	4.6 (0.6)[c]	1.8 (0.4)[c]
Women age 25-64	12.4 (0.4)	24.1 (1.6)[c]	19.1 (1.2)[c]	4.5 (0.7)[c]	2.1 (0.6)[c]
Men age 25-64	9.3 (0.5)	17.2 (2.1)[c]	15.2 (1.3)[c]	5.4 (1.2)[d]	1.4 (0.6)[c]
Women age 65-79	10.0 (0.5)	17.5 (2.2)[c]	12.2 (1.9)	4.0 (1.3)[c]	3.6 (2.1)[c]
Men age 65-79	7.4 (0.5)	12.0 (2.5)	6.3 (1.3)	1.3 (0.9)[c]	< 0.1 (--)[c]
Exercise less than once per week					
All age 25-79	13.3 (0.3)	18.9 (1.1)[c]	18.0 (0.8)[c]	20.2 (1.1)[c]	18.0 (1.1)[c]
Women age 25-64	13.7 (0.5)	20.1 (1.5)[c]	19.7 (1.2)[c]	22.9 (1.6)[c]	21.4 (1.8)[c]
Men age 25-64	12.7 (0.6)	18.6 (2.1)[c]	15.8 (1.3)[c]	19.6 (1.9)[c]	17.4 (2.0)[c]
Women age 65-79	15.2 (0.6)	16.6 (2.1)	22.4 (2.5)[d]	15.1 (2.5)	12.6 (2.9)
Men age 65-79	11.7 (2.5)	15.9 (2.5)	13.9 (2.0)	12.7 (2.3)	6.9 (2.0)[d]
Exercise ≥ 5 times a week					
All age 25-79	31.0 (0.4)	23.1 (1.2)[c]	22.3 (0.9)[c]	20.2 (1.0)[c]	24.6 (1.2)[c]
Women age 25-64	27.3 (0.6)	19.1 (1.5)	17.0 (1.1)[c]	15.4 (1.4)[c]	20.2 (1.7)[c]
Men age 25-64	32.7 (0.8)	27.4 92.4)[e]	25.8 (1.6)[c]	20.3 (1.9)[c]	23.2 (2.2)[c]
Women age 65-79	32.8 (0.9)	18.9 (2.2)[c]	21.8 (2.4)[c]	26.5 (2.9)[e]	34.7 (4.3)
Men age 65-79	42.4 (0.9)	28.1 (3.1)[c]	36.5 (2.7)[c]	42.8 (3.8)	48.3 (4.2)
Usually eats ≥ 3 servings of fruits/vegetables per day					
All age 25-79	54.3 (0.4)	33.1 (1.3)[c]	34.8 (1.0)[c]	22.5 (1.1)[c]	44.2 (1.5)[c]
Women age 25-64	64.0 (0.7)	40.5 (1.8)[c]	44.4 (1.5)[c]	25.6 (1.7)[c]	51.0 (2.2)[c]
Men age 25-64	44.0 (0.8)	25.8 (2.4)[c]	25.6 (1.6)[c]	17.9 (1.9)[c]	37.5 (2.5)[c]
Women age 65-79	63.5 (0.9)	41.1 (2.8)[c]	34.9 (2.8)[c]	26.8 (3.1)[c]	46.3 (4.5)[c]
Men age 65-79	39.8 (0.9)	19.5 (2.8)[c]	25.7 (2.5)[c]	24.3 (3.5)[c]	36.8 (4.1)
Usually tries to eat reduced-fat (low-fat or nonfat) foods					
All age 25-79	48.8 (0.5)	40.9 (1.3)[c]	45.9 (1.0)[d]	41.4 (1.3)[c]	44.5 (1.4)[d]
Women age 25-64	53.0 (0.7)	40.5 (1.8)[c]	50.2 (1.5)	40.8 (1.9)[c]	49.3 (2.2)
Men age 25-64	41.6 (0.8)	37.0 (2.5)	38.3 (1.7)	36.8 (2.3)[e]	35.7 (2.4)
Women age 65-79	60.0 (0.9)	56.2 (2.8)	53.4 (2.8)[d]	59.6 (3.3)	54.9 (4.5)
Men age 65-79	51.2 (0.9)	48.6 (3.5)	53.2 (2.8)	50.8 (3.8)	51.8 (4.2)
Usually gets < 6 hours sleep					
All age 25-79	5.2 (0.2)	14.7 (0.9)[c]	8.2 (0.6)[c]	15.0 (0.9)[c]	7.2 (0.7)[d]
Women age 25-64	5.1 (0.3)	14.6 (1.3)[c]	8.9 (0.9)[c]	16.5 (1.4)[c]	6.6 (1.0)
Men age 25-64	5.6 (0.4)	15.6 (1.8)[c]	7.3 (0.9)	13.1 (1.6)[c]	5.9 (1.1)
Women age 65-79	5.1 (0.4)	12.7 (2.0)[c]	11.2 (1.9)[c]	19.1 (2.7)[c]	16.0 (3.2)[c]
Men age 65-79	3.6 (0.3)	12.4 (2.5)[c]	6.1 (1.2)	12.0 (2.5)[c]	7.2 (2.2)
Feels very tense, anxious, or very stressed much of the time					
All age 25-79	18.6 (0.4)	19.0 (1.1)	18.1 (0.8)	13.8 (1.0)[c]	11.3 (0.9)[c]
Women age 25-64	25.0 (0.6)	27.0 (1.7)	25.8 (1.3)	17.6 (1.4)[c]	17.0 (1.8)[c]
Men age 25-64	16.5 (0.6)	15.4 (1.9)	14.3 (1.2)	12.7 (1.7)	7.9 (1.4)[c]
Women age 65-79	6.7 (0.4)	6.1 (1.3)	6.2 (1.5)	5.6 (1.5)	4.1 (1.8)
Men age 65-79	4.4 (0.4)	3.2 (1.3)	5.0 (1.3)	4.4 (1.7)	2.9 (1.5)

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Table 4. Race/ethnicity differences in sociodemographic and health-related characteristics of English-proficient adult Health Plan members aged 25-79[a]					
Sociodemographic and health characteristics	**Race/ethnicity[b]**				
	WhiteNH	**Black**	**Latino**	**Filipino**	**Chinese**
Felt harassed or discriminated against at least once in the past 12 months					
All age 25-79	4.5 (0.2)	10.0 (0.8)[c]	7.6 (0.6)[c]	5.0 (0.6)	5.4 (0.7)
Women age 25-64	5.3 (0.5)	12.7 (1.2)[c]	8.5 (0.8)[c]	4.6 (1.0)	6.0 (1.0)
Men age 25-64	4.4 (0.3)	8.2 (1.3)[d]	8.7 (1.0)[c]	6.6 (1.2)	5.3 (1.1)
Women age 65-79	2.3 (0.3)	6.3 (1.4)[d]	2.3 (0.8)	1.9 (0.9)	3.4 (1.6)
Men age 65-79	2.1 (0.2)	6.4 (1.9)[e]	2.4 (0.8)	2.5 (1.2)	4.6 (1.7)
Worried a great deal about own or family's financial security in the past 12 months					
All age 25-79	27.0 (0.4)	37.0 (1.3)[c]	34.0 (1.0)[c]	34.1 (1.3)[c]	19.8 (1.2)[c]
Women age 25-64	32.7 (0.6)	45.4 (1.8)[c]	39.5 (1.5)[c]	39.7 (1.9)[c]	22.2 (1.8)[c]
Men age 25-64	26.3 (0.7)	35.5 (2.5)[c]	34.9 (1.7)[c]	33.1 (2.5)[d]	21.2 (2.1)
Women age 65-79	15.4 (0.6)	19.2 (2.1)	19.3 (2.2)	22.4 (2.8)[c]	8.6 (2.3)[d]
Men age 65-79	10.1 (0.6)	13.0 (2.3)	12.0 (1.7)	17.5 (2.8)[e]	9.7 (2.5)
Had teeth examined and cleaned by a dental professional in the past 12 months					
All age 25-79	80.3 (0.4)	69.4 (1.3)[c]	74.8 (0.9)[c]	78.2 (1.1)	84.2 (1.1)[d]
Women age 25-64	82.6 (0.5)	73.9 (1.7)[c]	78.1 (1.2)[c]	83.2 (1.4)	87.7 (1.4)[c]
Men age 25-64	78.4 (0.7)	67.5 (2.5)[c]	72.9 (1.6)[d]	76.6 (2.0)	82.3 (2.1)
Women age 65-79	79.5 (0.7)	63.1 (2.8)[c]	69.5 (2.7)[c]	66.7 (3.2)[c]	82.7 (3.6)
Men age 65-79	77.6 (0.7)	60.0 (3.6)[c]	70.8 (2.6)[e]	68.7 (3.7)[e]	74.8 (3.6)
Had a flu shot for the past flu season					
All age 25-79	49.5 (0.4)	41.8 (1.3)[c]	47.9 (1.0)	58.6 (1.3)[c]	52.9 (1.4)[e]
Women age 25-64	46.8 (0.7)	36.8 (1.8)[c]	45.3 (1.5)	56.1 (1.9)[c]	46.5 (2.2)
Men age 25-64	41.9 (0.8)	37.5 (2.5)	39.5 (1.8)	52.4 (2.4)[c]	48.3 (2.5)[c]
Women age 65-79	78.0 (0.8)	67.5 (2.6)[c]	79.6 (2.3)	84.2 (2.3)[e]	87.0 (3.1)[d]
Men age 65-79	77.1 (0.8)	68.2 (3.2)[d]	76.3 (2.5)	76.6 (3.3)	79.9 (3.4)

[a] Percentages for race/ethnic groups derived from pooled Member Health Survey 2008 and Member Health Survey 2011 data, weighted to the 2011 age x sex x service area composition in 2011 and then standardized to the age-sex (for age 25-79) or age distribution of Kaiser Permanente Northern California members for that subgroup in 2011. All estimates are based on self-reported data and should not be used as "official" statistics about Kaiser Permanente Northern California membership.

[b] Data are weighted % (standard error around estimate).

[c] Significantly (p < 0.001) differs (higher or lower) from whiteNH in same age group.

[d] Significantly (p < 0.01) differs (higher or lower) from whiteNH in same age group.

[e] Significantly (p < 0.05) differs (higher or lower) from whiteNH in same age group.

BMI = body mass index (calculated as weight in kilograms divided by height in meters squared); WhiteNH = non-Hispanic white.