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# Data Quality Assessment of the 2014 Native Hawaiian and Pacific Islander National Health Interview Survey

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## Data Quality Assessment of the 2014 Native Hawaiian and Pacific Islander National Health Interview Survey

Data Evaluation and Methods Research

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## Abstract

### Background

The 2014 Native Hawaiian and Pacific Islander National Health Interview Survey (NHPI NHIS) is the first federal survey designed exclusively to measure the health of the noninstitutionalized civilian NHPI population of the United States.

### Purpose and Methods

This report assesses the quality of the 2014 NHPI NHIS data, by examining if and how estimates of NHPI population characteristics calculated using the survey's data differ from estimates of the same characteristics calculated using data from two other sources: the U.S. Census Bureau's American Community Survey (the sampling frame for the 2014 NHPI NHIS) and the annual NHIS for combined years 2010–2014.

### Results

Estimates of 13 of the 18 demographic characteristics were similar. The NHPI NHIS estimate of the percentage of the NHPI population with the marital status "separated" was higher, and the percentage that was Hispanic was lower, relative to corresponding estimates from the other two data sources. The percentages of NHPI households that were rented, had only one NHPI resident, and had at least one Hispanic resident, were lower. Three of the 24 NHPI NHIS population health estimates differed from the same estimates calculated using the 2010–2014 NHIS data, but they mirrored trends in the broader population between 2010 and 2014.

### Conclusions

The results suggest that the 2014 NHPI NHIS sample, with appropriate caveats, will be useful for estimating prevalence and predictors of health outcomes of NHPI persons in the United States.

**Keywords:** survey error • bias • evaluation • National Health Interview Survey

# Data Quality Assessment of the 2014 Native Hawaiian and Pacific Islander National Health Interview Survey

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## Executive Summary

The 2014 Native Hawaiian and Pacific Islander National Health Interview Survey (NHPI NHIS) is the first survey of its kind, namely a national survey of the health of the noninstitutionalized civilian NHPI population of the United States with a sample size larger than a few hundred NHPI households. The survey was conducted by the National Center for Health Statistics (NCHS), which also conducts the annual National Health Interview Survey (NHIS), the flagship federal health survey of the noninstitutionalized civilian population of the United States. NHPI NHIS was conducted by trained NHIS field interviewers, using the 2014 NHIS survey instrument. However, rather than using an area frame typical of NHIS, it used addresses from a single year of the U.S. Census Bureau's American Community Survey (ACS) as its frame. Specifically, the frame for the 2014 NHPI NHIS consisted of all addresses identified in a recent year of ACS with at least one resident of any age who was reported to have an NHPI racial identity, alone or in combination with one or more other racial identities. Because ACS had not previously been used as a frame for a follow-back survey of a rare (numerically small) population, and because both ACS frame data and annual NHIS data were available to assess the representativeness of the final NHPI NHIS sample, NCHS conducted a quality assessment of the 2014 NHPI NHIS data. This assessment considers the ways and degree to which estimates of NHPI population characteristics calculated using data from the 2014 NHPI NHIS differ from estimates of the same population characteristics calculated using data from ACS and the annual NHIS (the two benchmarks).

This report first presents an overview of the NHPI NHIS design and operations and explains how the frame was defined and constructed. It then presents the results of three types of comparisons designed to assess the representativeness of the sample. All analyses used weights to produce national population estimates.

First, estimates of eight person-level and 10 household-level NHPI demographic characteristics calculated using 2014 NHPI NHIS data were compared with the same estimates calculated using ACS frame data and 5 years (2010–2014) of NHIS data. At both the person and household levels, some of these population estimates differed statistically across surveys. At the person level, the estimate of the percentage of the NHPI population that was Hispanic was lower when calculated using the 2014 NHPI NHIS data than when calculated using the other two data sources. The estimate of the percentage of the NHPI population (aged 15 and over) with the marital status "separated" was higher when calculated using 2014 NHPI NHIS data than when calculated using the other two data sources. At the household level, compared with the population estimates calculated using ACS frame data and the 2010–2014 combined NHIS data, the population estimates calculated

using the 2014 NHPI NHIS data differed in the following ways: the population represented by the 2014 NHPI NHIS had a lower percentage of NHPI households with at least one Hispanic resident, a lower percentage of NHPI households with only one NHPI person, and a higher percentage of NHPI households that are resident owned, compared with the population represented by the other two data sets.

In the second comparison, estimates of 18 health characteristics of the NHPI population calculated using the 2014 NHPI NHIS data were compared with estimates of the same health characteristics of the NHPI population calculated using the 2010–2014 NHIS data. Three characteristics were examined in the total population, six were examined separately among the child and adult populations, five were examined only among the adult population, and four were examined only among the child population, for a total of 24 comparisons. Three of the 24 population estimates calculated using the 2014 NHPI NHIS data differed from the same estimates calculated using the 2010–2014 NHIS data, but these differences mirrored trends in the broader population between 2010 and 2014.

In the third comparison, logistic regression models (using sex and age to predict NHPI health outcomes) were constructed using both the 2014 NHPI NHIS data and, separately, the 2010–2014 NHIS data. While not speaking directly to the representativeness of the final sample, finding that nearly all associations identified in each model were within the confidence intervals (CIs) of the corresponding associations identified in the other model would provide evidence of a lack of selection bias in the sample. In fact, this was the case.

In conclusion, in some regards the NHPI population estimates calculated using the 2014 NHPI NHIS data differ significantly from the NHPI population estimates calculated using ACS frame data and 2010–2014 NHIS data. Data users should be aware of these differences and may want to include caveats regarding these differences when presenting results from the 2014

NHPI NHIS, especially if the health characteristics examined are strongly related to Hispanic ethnicity, marital status, or homeownership. However, for most analytic purposes, these differences between the samples were not substantial enough to raise concerns about the underlying quality of the 2014 NHPI NHIS data. The results from these three sets of analyses suggest that the 2014 NHPI NHIS sample, with appropriate caveats, will be useful for estimating prevalence and predictors of health-related characteristics of NHPI persons in the United States.

# Introduction

In 1997, the Office of Management and Budget (OMB) mandated the federal use of a new racial category that disaggregated Native Hawaiian people and Pacific Islander people (NHPI) from Asian people (1). The new category was defined as "A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands." Approximately 0.4% of the total U.S. population identifies as NHPI alone or in combination with one or more other races, according to 2010 census data (2).

It is a challenge to include NHPI people in sufficient numbers in most population-based surveys, because the small population size and geographic concentration (or "clustering") of a substantial fraction of the population in certain states and areas make traditional oversampling strategies prohibitively expensive. Geographic concentration does not mean that NHPI people live only in certain areas, but rather that a substantial fraction are clustered in certain states and areas, while the rest are widely dispersed across the country. Because the population is numerically small, in any given area of the country in which the NHPI population is not concentrated, there are very few NHPI people. Therefore, using traditional oversampling strategies to obtain representative NHPI samples in areas of the country in which the NHPI population is not concentrated, hundreds or even thousands of households would likely need to be screened per NHPI household

identified. As a result, NHPI people are not typically oversampled, and only small samples of NHPI people are available in even the largest health surveys. To respect respondent confidentiality and meet reliability standards, NHPI health statistics are usually suppressed.

As one of the largest national health surveys, the NHIS is one of the few sources of national health data on the NHPI population. Beginning in 1997, complying with OMB Statistical Directive 15 (1), NHIS began disaggregating NHPI statistics from Asian statistics. However, because the sample sizes were so small (between 100 and 250 households with NHPI persons per year), many NHPI statistics were unreliable and were not released for public use, and NHPI identity cannot be released in the public-use file to avoid inadvertent data disclosure. Analysts could apply to use the restricted NHIS data files, and combine multiple years of data, to obtain an identifiable and larger NHPI sample and calculate more reliable NHPI statistics. Yet, it can be difficult to interpret statistics calculated using multiple years of data, and such statistics conceal the variation that may have occurred between years. To address this problem, NCHS has been looking for a way to obtain an NHPI sample of a size sufficient to calculate reliable single-year statistics.

In 2012, a new policy on the use of the ACS as a frame for federal follow-back surveys introduced a mechanism that made a solution possible. ACS is an ongoing U.S. household survey that collects information from about 3.5 million sample households a year on a wide range of demographic, economic, social, and housing indicators. As the successor to the decennial census long form, response to ACS is required by law. NCHS decided that a frame drawn from ACS was the best available sampling frame for the NHPI population, given that ACS:

- Has high response rates (96.7% among U.S. housing units in the United States in 2014, see https://www.census.gov/acs/www/

methodology/sample-size-and-data-quality/response-rates/ for more details).

- Implements a range of robust operations and procedures designed to assess and assure data quality (3).
- Identifies thousands of households each year that contain at least one person who identifies as NHPI alone or in combination with one or more other races.

Using ACS in this way was expected to be an efficient and cost-effective method of yielding a representative sample of the NHPI population that was sufficiently large to calculate reliable statistics. There was, however, a tempered a priori expectation for the sample yield, given that the NHPI population has a very high level of population mobility and of racial identity response variance (4–6). Nonetheless, because this frame was the best available, and the need for NHPI health data is so great, the decision was made to apply to use ACS as a frame for an NHPI health survey.

In 2013, NCHS applied and was approved, to use a single recent year of ACS as a frame for this survey. Specifically, the frame for the 2014 NHPI NHIS consisted of all noninstitutional addresses identified in the most recent year of ACS available as of 2013 with at least one resident of any age who was reported to have an NHPI racial identity, alone or in combination with one or more other racial identities. Residents of noninstitutional group quarters, such as college dormitories, were not available for NHPI NHIS (such residents compose approximately 2% of the NHPI population). In this report, the term "NHPI people" refers to people with an NHPI racial identity, alone or in combination with one or more other racial identities.

Because ACS had not previously been used as a frame for a follow-back survey of a rare population, and because both frame (ACS) and annual NHIS data were available, NCHS conducted a quality assessment of the 2014 NHPI NHIS data. The overall purpose of this report is to investigate the quality of the 2014 NHPI NHIS data by investigating the representativeness of the final 2014 NHPI NHIS sample. To achieve this end, this report presents estimates of the demographic and health characteristics of the NHPI population calculated using data from the 2014 NHPI NHIS, and examines how (and the degree to which) they differ from estimates of the same characteristics of the NHPI population calculated using data from ACS and the 2010–2014 combined years of the annual NHIS (the two benchmarks).

# Overview of NHPI NHIS Design and Operations

## Sample Selection

NHPI NHIS data collection began in February 2014 and concluded in November 2014. Households were screened using the household roster of the NHIS instrument. Only households with one or more civilian NHPI residents (civilian residents identified as NHPI alone or in combination with one or more other racial identities) screened in and were eligible to participate. If there were multiple families within a household, only those families with a civilian NHPI member were selected to be interviewed. No attempt was made to verify that the residents at the address in 2014 were the same as the residents who had responded to ACS. No attempt was made to follow NHPI residents who had moved between the year of ACS frame and 2014 (when NHPI NHIS was fielded).

## Questionnaire and Interviewing Procedures

To maintain comparability with the annual NHIS, the procedures for collecting information on the 2014 NHPI NHIS paralleled those of the annual NHIS. The U.S. Census Bureau, under a contractual agreement, is the data collection agent for NHIS. Accordingly, the field staff coordinating and conducting the 2014 NHPI NHIS interviewers were trained NHIS interviewers from U.S. Census Bureau. Those NHIS interviewers used the standard 2014 NHIS survey instrument, modified for the 2014 NHPI NHIS in two ways:

1. The sample control (screening rule) logic of the instrument was modified, to implement the screening process described in the "Sample Selection" section above.
2. Medicare numbers and the last four digits of the Social Security number—data used to link to other Department of Health and Human Services data sets—were not collected, because such linking is not permitted under the legislative authority governing the 2014 NHPI NHIS.

As in the annual NHIS, the interviews were conducted face-to-face in respondents' homes, although telephone follow-ups were permitted when necessary to complete interviews. No compensation or other incentives were provided for participation in the 2014 NHPI NHIS.

## Respondent Materials, Outreach, and Interviewer Training

To achieve maximum cooperation, NCHS and the Census Bureau implemented extensive outreach efforts before and during the field period and tailored the respondent materials to ensure NHPI cultural appropriateness. For example, NCHS tailored the standard advance and thank you letters to include greetings and expressions of thanks in more than 20 NHPI languages, and developed a culturally appropriate brochure about the survey (provided to respondents and distributed as part of the outreach efforts). Outreach packets and information about the survey were distributed widely via conventional mail, e-mail and listservs, traditional media, and social media. Recipients included key NHPI stakeholders in the community and government, NHPI-focused listservs, and NHPI community-serving faith-based organizations and community health

centers around the country. For more information on the multifaceted outreach efforts, most of which have no parallel in the operations of the annual NHIS, see the 2014 NHPI NHIS Survey Description (7). In addition, NCHS and the Census Bureau provided special training to all interviewers working on the 2014 NHPI NHIS, covering the special procedures for the survey and NHPI cultural sensitivity, and emphasizing standard NHIS procedures of particular importance in NHPI NHIS. For example, because many NHPI people identify as more than one race, interviewers were reminded that if a respondent mentioned only one race, the interviewer might need to gently probe ("anything else?") to indicate to the respondent that the instrument could capture as many races as they felt were applicable.

## Frame Refinement

In the early stages of this quality assessment research, after data collection was complete, it was discovered that the rules used by the Census Bureau and ACS for recoding and thereby defining racial identity differ from those used by NHIS. Specifically, the Census and ACS rules (henceforth referred to as ACS rules or criteria) are more inclusive than those of NHIS. ACS accepts all indications of all racial identities as valid, while NHIS accepts most but not all racial identity responses as valid. This has implications for the definition of the 2014 NHPI NHIS frame.

By definition, all ACS households identified by ACS as containing one or more NHPI people (the initial frame) contained at least one resident who met ACS criteria for NHPI racial identity. However, not all such households contained at least one resident who met the NHIS criteria for an NHPI identity. Because the purpose of the 2014 NHPI NHIS was to collect NHPI health data in such a way that the results would be comparable with the health data collected for all races in the annual NHIS, in hindsight, it may have been better to apply NHIS racial identity classification and edit rules to ACS data from the beginning when identifying

households in ACS "with one or more NHPI residents." However, because the ACS rule was used initially, the 2014 NHPI NHIS provided an unexpected opportunity to compare these two sets of criteria. Before presenting the results from this comparison, first the one way that ACS and NHIS racial identity coding differ is explained. In all but this one way, ACS and NHIS definitions of an NHPI identity are identical. In both surveys:

- If one or more of the racial identity options Native Hawaiian, Samoan, or Guamanian or Chamorro are selected or given as a verbatim answer, that response is considered valid evidence of an NHPI racial identity.
- If the "Other Pacific Islander" (OPI) option is selected and no further verbatim information is provided in the "Other Specify" line or followup-question to the OPI checkbox or choice, that response is considered valid evidence of an NHPI racial identity.
- If a verbatim answer of any other specific (e.g., "Tongan" or "Fijian") or general (e.g. "Micronesian" or "Pacific Islander") NHPI group is provided at any point in the racial identity section, that response is considered valid evidence of an NHPI racial identity.

The one exception to the otherwise identical racial identity coding criteria is the following: when the OPI checkbox or choice is indicated, and a non-NHPI race is provided for the "Other Specify" line or follow-up question to the OPI checkbox or choice, and no other indication is given of any other general or specific NHPI identity. One example of this would be a person who indicates "Other Pacific Islander," indicates Filipino (an Asian race) in the "Other Specify" verbatim follow-up to the OPI checkbox or choice, and does not provide any other indication of an NHPI racial identity. In such cases, ACS codes that person as both NHPI and the provided verbatim non-NHPI race. In the example just mentioned, that person would be coded both NHPI and Asian in ACS. In contrast, in NHIS, that person is coded as the provided verbatim non-NHPI race

(in the example, that would be Asian) but is not coded as NHPI. For both the annual NHIS and the 2014 NHPI NHIS, during the interview, all races provided are treated as valid (ACS rule). The more restrictive NHIS race recoding rule is applied only during post-data-collection processing. As a result, a small number of households that screened in to the 2014 NHPI NHIS initially (because according to ACS rule as applied at the time of NHPI NHIS, the household had a civilian NHPI resident) were recoded during data processing as screening out. This occurred when all of the NHPI racial identities reported by people at that address in the 2014 NHPI NHIS fell in the NHIS "exception" category.

Table 1 separates ACS addresses originally identified by ACS as containing at least one NHPI resident into two groups, shown in the last two columns: those that met the NHIS criteria for having a resident with NHPI identity in ACS ($n = 7,074$), and those that did not ($n = 1,153$). It then shows, in the rows, the screen-in, screen-out, and no interview rates for those two groups in the 2014 NHPI NHIS, before and after NHPI NHIS race recoding. Screen in means that the 2014 NHPI NHIS determined that the household had at least one civilian NHPI resident at the time of, and was therefore eligible for, the 2014 NHPI NHIS. Screen out means that the household was not eligible because the household had no such civilian NHPI resident. See Appendix II for more information on the meaning of these categories.

## Summary of results from Table 1

- Of the 8,227 addresses originally identified by ACS as containing at least one NHPI resident, 13.8% (1,153 addresses) did not meet NHIS criteria for having a resident in ACS with an NHPI identity.
- Of the 1,153 addresses that did not meet NHIS criteria for having a resident in ACS with an NHPI identity:
  - Very few (7.6%) screened in to the 2014 NHPI NHIS and most (76.2%) screened out as

non-NHPI, using only the racial identity coding rules that both surveys agree on, before the more stringent NHIS racial identity rule was applied.

  ○ These percentages changed to 3.8% and 80.0%, respectively, after NHIS race recoding (which applies the more restrictive NHIS racial identity coding rule to the NHIS racial identity variables).

- In comparison, of the 7,074 addresses that did meet NHIS criteria for having an NHPI resident in ACS:
  ○ Nearly one-half (46.1%) screened in to the 2014 NHPI NHIS and only a one-third (33.5%) screened out as non-NHPI, using only the racial identity coding rules that both surveys agree on, before the more stringent NHIS racial identity rule was applied.
  ○ The percentages that screened in and out barely changed (to 45.4% and 34.2% respectively, after NHIS race recoding (which applies the more restrictive NHIS racial identity coding rule to the NHIS racial identity variables).

During postprocessing of the 2014 NHPI NHIS data, the 2014 NHPI NHIS outcome code given to households at these 1,153 addresses, which did not meet NHIS criteria for having a resident in ACS with an NHPI identity, was changed to indicate that the households were "out of scope," regardless of what outcome code was originally assigned.

As a result of this analysis, the 7,074 addresses from ACS that met NHIS criteria for containing at least one NHPI person were determined to  constitute the final frame for the 2014 NHPI NHIS. In the remainder of this report, all analyses of ACS frame data are conducted using household data from these 7,074 addresses. This is the main reason that estimates reported here will not match published ACS estimates for the NHPI population.

# Methods

## Analytical Data Sets and Sample Size

In this report the NHPI people and households identified in the 2014 NHPI NHIS (referred to as the "2014 NHPI NHIS') are compared to two benchmarks: the NHPI people and households identified in ACS (referred to as the 'ACS frame'), and the NHPI people and households identified in the 2010–2014 NHIS (referred to as the 'NHPI sample from the 2010–2014 NHIS'). Each analytical data set has the following sample size:

1. The 2014 NHPI NHIS consists of 3,195 NHPI addresses, 3,197 NHPI households, and 8,661 NHPI persons.
2. ACS frame consists of 7,074 NHPI addresses/households (the ACS data set did not distinguish between the two) and 16,912 NHPI persons
3. The NHPI sample from the 2010–2014 NHIS consists of 919 NHPI households and 2,217 NHPI persons.

Combining multiple years of NHIS was necessary to obtain an adequate sample size for analysis. The sample sizes of NHPI persons and households in the annual NHIS are so small, however, that even when combining 5 years of data many estimates are still not reliable. The analyses described below focus on measures with reliable estimates.

## Weighting and Variance Estimation

In all analyses, the weights and variance estimation variables and techniques appropriate for each data source (survey) were used to calculate national population estimates and standard errors.

### 2014 NHPI NHIS

To calculate the weighted 2014 NHPI NHIS estimates the 2014 NHPI NHIS person, household, sample adult, and sample child weights as appropriate

for the analysis were used (7). The standard errors of the 2014 NHPI NHIS estimates were calculated using the NHPI NHIS variance estimation variables and Taylor series linearization methods in SUDAAN software. The procedure for creating weights for the 2014 NHPI NHIS was similar to the annual NHIS weight creation procedure, which is described elsewhere (8). For more information about the weights and variance estimation variables in the 2014 NHPI NHIS, see the 2014 NHPI NHIS Survey Description document (7).

### ACS frame

To calculate the weighted ACS frame estimates, ACS household- and person-level weights were used. The standard errors of ACS frame estimates were calculated using ACS replicate weights and SUDAAN software.

### 2010–2014 NHIS

To calculate the weighted 2010–2014 NHIS estimates the 2010–2014 NHIS person, household, sample adult, and sample child weights as appropriate for the analysis were used. The standard errors of the 2010–2014 NHIS estimates were calculated using the variance estimation variables and SUDAAN software. For more information about the weights and variance estimation variables in NHIS, see the 2014 NHIS Survey Description document (9).

Because the 2010–2014 NHIS has a different sample design than ACS, it is not appropriate to combine the NHIS data with the other two data sets. Attempts to link ACS and NHPI NHIS samples were only partially successful, yielding a data set that was not useful for analysis. As a result, all calculations of percentages and standard errors were done separately for each analytical data set. The *t* tests were then calculated using those results. Differences between percentages were evaluated by using two-sided significance tests at the 0.05 level.

These analyses were conducted under the assumption of no overlap between the samples, although the linkage analysis showed that there is a non-zero level of correlation between ACS and NHPI NHIS data sets. By not

taking this correlation into account, there is a possibility of increased Type II error (concluding there is no difference when one truly exists). To consider the differences with a lower likelihood of Type II error, the differences between ACS and NHPI NHIS percentages were also evaluated using a two-sided significance test at the 0.1 alpha level. The results did not change.

## Analytical Methods

The following three comparisons were conducted to determine how representative the final 2014 NHPI NHIS sample is of the underlying NHPI population.

Comparison 1—First, estimates of eight person-level and 10 household-level demographic characteristics of the NHPI population calculated using the 2014 NHPI NHIS data were compared with the same estimates calculated using ACS frame and the NHPI sample from the 2010–2014 NHIS.

If the the population estimates calculated using the 2014 NHPI NHIS sample looked similar enough to estimates calculated using ACS frame and the NHPI sample from the 2010–2014 NHIS, the sample could be considered representative. The interpretation of these results takes into account that:

1.  Both these benchmark surveys are also subject to various kinds of survey error.
2.  There are methodological differences between the 2014 NHPI NHIS and the ACS.
3.  There are period differences between the 2014 NHPI NHIS and both the ACS frame and the 2010–2014 NHIS.

There are two particularly important methodological differences between the 2014 NHPI NHIS and ACS. First, NHPI NHIS was conducted in person, with telephone follow-ups only when necessary, while the ACS survey was mailed to households, with telephone follow-ups and in-person follow-ups only when necessary. Second, the NHPI NHIS questionnaire embeds sociodemographic questions in what is primarily a set of detailed health questions, while ACS questionnaire embeds health questions in what is primarily a set of sociodemographic questions. Differences would be expected in estimates between these two surveys as a result of differences in mode and question context. When examining the results, therefore, the focus was on consistent differences between the 2014 NHPI NHIS and both benchmarks (ACS frame and the 2010–2014 NHPI NHIS).

Comparison 2—Second, estimates of 18 health characteristics of the NHPI population calculated using the 2014 NHPI NHIS were compared with estimates of the same health characteristics calculated using the NHPI sample from the 2010–2014 NHIS (Table 4) (No comparable health data are available in ACS). Three characteristics were examined in the total population, six were examined separately among the child and adult populations, five were examined only among the adult population, and four were examined only among the child population, for a total of 24 comparisons.

Because the 2014 NHPI NHIS used the same mode, instrument, measurement procedures, and survey staff as NHIS, it is reasonable to compare prevalences from the 2014 NHIS NHPI with prevalences calculated using 5 years of data from NHIS. There are, however, period differences between the 2014 NHPI NHIS and the 2010–2014 NHIS. The characteristics examined here are those with adequate sample size in the NHPI sample from the 2010–2014 NHIS to obtain a reliable estimate and whose measurement in the annual NHIS has not changed over this period. Again, if the prevalences look similar to each other across the two surveys, or if the differences between them mirror trends in the larger population, this provides evidence that the 2014 NHPI NHIS sample is representative.

Comparison 3—Third, the direction and strength of associations between health outcome variables and two key demographic variables—sex and age— were compared across models constructed using the two data sets. Specifically, this analysis compares the results of multiple logistic regression models constructed using the sample of NHPI persons from the 2014 NHPI NHIS with the results of models constructed using the NHPI sample from the 2010–2014 NHIS. The CI of each odds ratio was examined to determine if it encompassed the corresponding odds ratio from the other data set's model. In particular, the focus was on consistent patterns: models where the point estimates for the odds ratio in both data sets' models fell outside the CI of the corresponding odds ratio in the other data set's model. While not speaking directly to the representativeness of the final sample, if odds ratios from one model estimated using one analytic data set are within the CIs for the corresponding odds ratios from the same model estimated using the other other analytic data set, evidence exists of a lack of selection bias in the sample. Had the 2014 NHPI NHIS systematically screened out unhealthy older people, for example, while retaining all young people and healthy older people, then the same associations between age and certain health outcomes common among older people but rarer in young people might not be seen between the 2014 NHPI NHIS and the benchmark.

In all of these comparisons, not only statistical significance but also the magnitude and direction and, therefore, meaning of any statistically significant differences identified are considered..

# Results

## Comparison 1: Sociodemographic Characteristics

### Summary of results from Table 2 – Person level

Table 2 shows the comparison of the estimates of eight person-level sociodemographic characteristics of the NHPI population as calculated using the 2014 NHPI NHIS sample with the same estimates calculated using ACS frame, and the NHPI sample from the 2010–2014 NHIS. This analysis

was restricted to variables for which comparable variables were available from both ACS and the 2014 NHPI NHIS. Only two measures had consistent differences between the 2014 NHPI NHIS and both benchmarks:

- The 2014 NHPI NHIS estimates of the percentage of NHPI persons who are Hispanic is lower than the estimates calculated using ACS frame and the 2010–2014 NHIS (10% compared with 13.5% in the ACS frame and 17.1% in the 2010–2014 NHIS).
- The 2014 NHPI NHIS estimate of the percentage of NHPI persons aged 15 and over whose marital status was "separated" is higher than the same estimates calculated using the two benchmarks (7.2% compared with 2.4% in the ACS frame and 2.1% in the 2010–2014 NHIS).
- For six characteristics (sex, age, NHPI alone compared to NHPI in combination with one or more other race, other race among NHPI in combination, educational attainment, and place of birth or citizenship status) the 2014 NHPI NHIS estimates did not differ significantly from at least one of the two corresponding estimates calculated using the benchmark survey data.

## Summary of results from Table 3 – Household level

Table 3 shows the comparison of the estimates of 10 household-level sociodemographic characteristics of the NHPI population calculated using the 2014 NHPI NHIS sample with the same estimates calculated using the NHPI households (households with at least one NHPI resident) identified in ACS frame and the NHPI households identified in the 2010–2014 NHIS. This analysis was restricted to variables for which comparable variables were available in both ACS frame and the 2010–2014 NHIS. Here it is seen that:

- The estimate of the percentage of NHPI households with only one NHPI resident calculated using the 2014 NHPI NHIS (36.9%) was

lower than that same estimate when calculated using ACS frame (45.6%) and the 2010–2014 NHIS (46.2%). Also, the estimate of the percentage of NHPI households with seven or more NHPI residents calculated using the 2014 NHPI NHIS (5.2%) was higher than that same estimate when calculated using the ACS frame (3.6%) and the 2010–2014 NHIS (2.8%).

- The estimate of the percentage of NHPI households with at least one Hispanic resident calculated using the 2014 NHPI NHIS (14.8%) was lower than that same estimate calculated using the two benchmarks (21.6% in ACS frame and 21.2% in the 2010–2014 NHIS).
- The estimate of the percentage of NHPI households with all residents under age 25 calculated using the 2014 NHPI NHIS (1.5%) was lower than that same estimate calculated using the two benchmarks (5.0% in ACS frame and 7.5% in the 2010–2014 NHIS). The estimate of the percentage of NHPI households that were resident-owned calculated using the 2014 NHPI NHIS (60.2%) was higher than that same estimate calculated using the ACS frame (48.3%) and the NHPI sample from the 2010–2014 NHIS (48.7%).
- For seven characteristics (all residents were NHPI alone, number of people in the household, number of children in the household, maximum educational attainment of residents, immigrant status of residents, state, and region), the 2014 NHPI NHIS estimates did not differ significantly from at least one of the two corresponding estimates calculated using data from the benchmark surveys.

A disadvantage of conducting a follow-back survey is that some persons may have moved between surveys. Households that rent are more likely to be mobile and, therefore, missed in the follow-back survey. In addition, the fact that residents of noninstitutional group quarters (such as college dormitories) were not available for NHPI NHIS may explain part of the difference in

the percentage of households with all residents under age 25.

## Comparison 2: Health Characteristics

### Summary of results from Table 4

Table 4 shows the comparison of estimates of 18 person-level health characteristics of the NHPI population calculated using the 2014 NHPI NHIS with the same estimates calculated using the NHPI sample from the 2010–2014 NHIS. Three characteristics were examined in the total population, six were examined separately among the child and adult populations, five were examined only among the adult population, and four were examined only among the child population, for a total of 24 comparisons. Here it is seen that:

- For 21 of the 24 comparisons, there were no statistically significant differences across estimates from the two surveys.
- Three differences were found between estimates calculated using the 2014 NHPI NHIS and those calculated using the NHPI sample from the 2010–2014 NHIS: two differences among adults and one among children. The estimate of the percentage of NHPI adults who are former smokers calculated using the 2014 NHPI NHIS is higher than the same estimate calculated using the 2010–2014 NHIS (19.5% compared with 13.1%). Also, the estimate of the percentage of NHPI adults who had the flu vaccine in the past 12 months calculated using the 2014 NHPI NHIS is higher than the same estimate calculated using 2010–2014 NHIS (42.5% compared with 34.8%). Finally, the estimate of the percentage of NHPI children who had a dental visit in the past year calculated using the 2014 NHPI NHIS was higher than the same percentage calculated using the 2010–2014 NHIS (83.0% compared with 71.8%). All three of these differences mirror trends in the broader population of decreased

smoking and increased access to and utilization of care over the years 2010–2014 (10–12). In addition, seasonal administration of the flu vaccine in combination with the different calendar periods of data collection of the surveys (January through December for NHIS, and February through November for the 2014 NHPI NHIS), could account for differences in the population estimates for the percentage of NHPI adults who had the flu vaccine in the past 12 months. Other differences between estimates calculated using the two analytical data sets, which did not rise to statistical significance, also trended in a direction consistent with these broader changes in health care utilization.

## Comparison 3: Direction and Strength of Associations Between Health Outcomes and Age, Sex

### Summary of results from Table 5

Finally, in Table 5 associations are compared between health variables and two demographic predictors (sex and age) in the NHPI population as estimated using the 2014 NHPI NHIS with the same population associations estimated using the NHPI sample from the 2010–2014 NHIS. Multiple logistic regression models were used to estimate the associations. Health outcomes selected were those for which there were sufficient numbers of NHPI persons in the combined years of NHIS to calculate a reliable estimate (a total of 22 models). Overall:

- For all health measures examined, no significant differences were found in the direction of the odds ratios across the models constructed using the two analytical data sets.
- For all but one coefficient for one outcome (sex in the adult aerobic activity model), the CIs overlap across models.
- In most cases when a coefficient

from one model fell outside the CI of the other data set's model's corresponding coefficient, it was the NHIS coefficient that was outside the NHPI NHIS CI. The CIs for the NHPI NHIS models were mostly narrower, indicating more reliable estimates.

- In none of the models did the point estimates for the age coefficients in both data sets' models fall outside the CIs of the corresponding coefficients in the other data set's model.
- For only five of the 22 outcomes examined did the point estimate for the sex odds ratio in both data sets' models fall outside the CI of the corresponding odds ratio in the other data set's model. Specifically, this is the case for the adult hypertension, child skin allergy, adult aerobic activity, total population public or private comprehensive health coverage, and total population dental visit in the past year models.

## Discussion

The 2014 NHPI NHIS is the first national NHPI health survey with a sample size larger than a few hundred NHPI households and is the first survey to use ACS as a frame for a follow-back survey of a numerically small population. Because ACS had not previously been used as a frame for a follow-back survey of a rare population, and because both the ACS frame and annual NHIS data were available to assess the representativeness of the final 2014 NHPI NHIS sample, NCHS conducted a quality assessment. The goal of this investigation was to describe patterns of differences between the sample obtained in NHPI NHIS and the sample obtained in the two benchmark surveys. For simplicity, and to keep the focus on the issue most relevant to data users, this report did not examine the reasons underlying these patterns of differences.

In some regards, the 2014 NHPI NHIS sample differs significantly from the ACS frame and the NHPI sample identified in the 2010–2014 NHIS. The NHPI population as measured using

the 2014 NHPI NHIS sample has a lower percentage of Hispanic NHPI persons, households with at least one Hispanic resident, households where all residents were under age 25, and households with a single NHPI person, and a higher percentage of persons (aged 15 and over) whose marital status was "separated" and households with seven or more NHPI person or that are resident-owned compared with the NHPI population measured using the other two benchmarks.

The survey design and period differences may explain some of these differences, as discussed above. Data users should be aware of these differences and may wish to include caveats regarding these differences when presenting results from the 2014 NHPI NHIS, especially if the health characteristics examined are strongly related to Hispanic ethnicity, marital status, homeownership, or household racial composition. However, for most analytic purposes, these differences are not likely to influence the results in a manner substantial enough to raise concerns about the underlying fitness of the data.

The other two comparisons found a pattern of similarities and only isolated differences. Of the 24 comparisons of 18 population health estimates calculated using the 2014 NHPI NHIS and the NHPI sample from the 2010–2014 NHIS, only three differed, and there are plausible period explanations for those differences. Finally, a range of associations found in the NHPI population using the 2014 NHPI NHIS are consistent with those found using the NHPI sample from the 2010–2014 NHIS.

In conclusion, results from these three sets of analyses suggest that the 2014 NHPI NHIS sample, with appropriate caveats, will be useful for estimating prevalence and predictors of health-related characteristics of NHPI persons.

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**Table 1. Percent distribution of American Community Survey addresses containing at least one Native Hawaiian or Pacific Islander resident, by 2014 Native Hawaiian and Pacific Islander National Health Interview Survey sample disposition and presence of Native Hawaiian or Pacific Islander residents according to National Health Interview Survey criteria**

| NHPI NHIS address disposition | Total (n = 8,227) | At least one resident NHPI by NHIS criteria, in ACS (n = 7,074) | No resident NHPI by NHIS criteria, in ACS (n = 1,153) |
|---|---|---|---|
| | | Percent | |
| Before NHIS race recoding: | | | |
| Screened in (at least one NHPI resident) . . . . . . . . . . . . . . . . . | 40.7 | 46.1 | 7.6 |
| Screened out (no NHPI resident) . . . . . . . . . . . . . . . . . . . . . . . | 39.5 | 33.5 | 76.2 |
| Not interviewed . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 19.8 | 20.4 | 16.2 |
| Total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 100.0 | 100.0 | 100.0 |
| After NHIS race recoding: | | | |
| Screened in (at least one NHPI resident) . . . . . . . . . . . . . . . . . | 39.6 | 45.4 | 3.8 |
| Screened out (no NHPI resident) . . . . . . . . . . . . . . . . . . . . . . . | 40.6 | 34.2 | 80.0 |
| Not interviewed . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 19.8 | 20.4 | 16.2 |
| Total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 100.0 | 100.0 | 100.0 |

NOTES: NHPI is Native Hawaiian and Pacific Islander. NHIS is National Health Interview Survey. ACS is American Community Survey. NHIS criteria for an NHPI identity are identical to ACS criteria for an NHPI identity during NHIS data collection. Only during race recoding, after data collection is completed, are the more stringent NHIS criteria were applied. The last two columns refer to the stringent NHIS definition applied to NHIS data collected in ACS.

**Table 2. Weighted percentages of sociodemographic characteristics of Native Hawaiian and Pacific Islander people, by survey**

| Sociodemographic characteristics | ACS frame (SE) (n = 16,912) | 2010–2014 NHIS (SE) (n = 2,217) | 2014 NHPI NHIS (SE) (n = 8,661) |
|---|---|---|---|
| Male | 49.3 (0.31) | 52.1 (1.14) | 50 (0.6) |
| Age (years): | | | |
| Under 5 | 10.8 (0.28) | 10.0 (0.82) | 10.8 (0.55) |
| 5 – 17 | 25.3 (0.38) | 26.0 (1.28) | 24.7 (0.67) |
| 18 – 24 | 11.9 (0.33) | 12.0 (1.25) | 12.0 (0.56) |
| 25 – 34 | 15.7 (0.34) | 16.2 (1.12) | 15.6 (0.57) |
| 35 – 44 | 12.6 (0.33) | 12.9 (0.86) | 12.5 (0.46) |
| 45 – 54 | 11.0 (0.27) | 11.7 (1.03) | 11.2 (0.50) |
| 55 – 64 | 7.3 (0.20) | 6.7 (1.03) | 7.6 (0.28) |
| 65 – 74 | 3.6 (0.13) | 2.6 (0.46) | 3.9 (0.26) |
| 75 and over | 1.8 (0.11) | 1.8 (0.47) | 1.9 (0.14) |
| Hispanic ethnicity[1] | 13.5 (0.53) | 17.1 (2.43) | 10.0 (0.92) |
| NHPI alone | 51.7 (0.67) | 60.7 (5.16) | 51.2 (1.48) |
| Among NHPI in combination, other race: | | | |
| White | 31.8 (1.00) | 34.0 (5.68) | 32.7 (1.44) |
| Asian | 24.4 (0.97) | 26.1 (3.89) | 28.5 (1.20) |
| White and Asian | 28.6 (0.86) | 21.0 (4.84) | 28.3 (1.78) |
| All other combinations[1] | 15.2 (0.81) | 19.0 (3.55) | 10.4 (0.81) |
| Marital status (aged 15 and over): | | | |
| Now married, except separated | 43.5 (0.47) | 49.7 (1.87) | 45.2 (1.02) |
| Widowed | 3.6 (0.15) | 2.8 (0.72) | 3.2 (0.25) |
| Divorced | 8.9 (0.38) | 6.4 (0.80) | 6.9 (0.48) |
| Separated[1] | 2.4 (0.22) | 2.1 (0.50) | 7.2 (0.59) |
| Never married | 41.6 (0.49) | 39.0 (1.55) | 37.5 (0.89) |
| Educational attainment (aged 25 and over): | | | |
| Less than high school diploma | 12.3 (0.53) | 12.4 (1.47) | 10.7 (0.58) |
| High school graduate (includes equivalency) | 33.4 (0.82) | 37.1 (3.67) | 37.1 (1.31) |
| Some college or associate's degree | 35.9 (0.72) | 30.2 (1.93) | 34.1 (1.28) |
| Bachelor's degree | 12.9 (0.54) | 12.9 (1.77) | 12.1 (0.80) |
| Graduate or professional degree | 5.5 (0.27) | 7.3 (1.29) | 6.1 (0.52) |
| Place of birth, citizenship staus: | | | |
| U.S. citizen (native born or born abroad to U.S. parents) | 86.8 (0.39) | 85.6 (2.28) | 89.1 (0.89) |
| Foreign born, naturalized | 5.4 (0.31) | 6.2 (1.48) | 5.1 (0.49) |
| Foreign born, not a U.S. citizen | 7.8 (0.34) | 8.2 (1.33) | 5.8 (0.59) |

[1]2014 NHPI NHIS estimate differs significantly from both 2010–2014 NHIS estimate and ACS estimate.

NOTES: NHPI is Native Hawaiian and Pacific Islander. NHIS is National Health Interview Survey. ACS is American Community Survey. All other combinations includes "Some other race" in ACS. There is no value of "Some other race" in NHIS. SE is standard error.

**Table 3. Weighted percentages of sociodemographic and health characteristics of Native Hawaiian and Pacific Islander households, by survey**

| Sociodemographic characteristics | ACS frame (SE) (n = 7,074) | 2010–2014 NHIS (SE) (n = 919) | 2014 NHPI NHIS (SE) (n = 3,197) |
|---|---|---|---|
| All NHPI residents were NHPI alone | 44.9 (0.77) | 55.3 (3.64) | 43.0 (1.23) |
| **Number of NHPI people in household:** | | | |
| 1[1] | 45.6 (0.75) | 46.2 (2.86) | 36.9 (1.28) |
| 2 | 20.1 (0.62) | 19.6 (1.53) | 20.1 (0.87) |
| 3 | 13.5 (0.47) | 13.3 (1.68) | 16.8 (0.90) |
| 4 | 9.5 (0.39) | 8.4 (1.08) | 10.6 (0.85) |
| 5 | 4.8 (0.36) | 7.3 (1.19) | 7.0 (0.82) |
| 6 | 2.9 (0.27) | 2.3 (0.60) | 3.4 (0.43) |
| 7 or more[1] | 3.6 (0.31) | 2.8 (0.68) | 5.2 (0.51) |
| **Number of people in household:** | | | |
| 1 | 11.7 (0.50) | 14.6 (1.67) | 13.5 (1.05) |
| 2 | 26.1 (0.68) | 26.8 (1.85) | 25.6 (0.79) |
| 3 | 20.9 (0.57) | 20.1 (1.48) | 19.3 (0.91) |
| 4 | 18.1 (0.63) | 15.0 (1.44) | 17.4 (0.84) |
| 5 | 10.7 (0.43) | 12.6 (1.39) | 11.4 (0.67) |
| 6 | 6.0 (0.43) | 5.4 (0.95) | 5.7 (0.76) |
| 7 | 3.0 (0.29) | 3.0 (0.73) | 3.5 (0.45) |
| 8 | 1.6 (0.17) | 1.8 (0.79) | 1.7 (0.16) |
| 9 or more | 1.9 (0.17) | 0.7 (0.32) | 2.0 (0.34) |
| At least one resident was Hispanic[1] | 21.6 (0.63) | 21.2 (2.24) | 14.8 (0.85) |
| **Number of children (under age 18) in household:** | | | |
| 0 | 47.7 (0.63) | 47.3 (1.95) | 50.8 (1.20) |
| 1 | 20.8 (0.57) | 20.6 (1.60) | 18.7 (0.69) |
| 2 | 16.3 (0.54) | 17.1 (1.63) | 15.0 (0.63) |
| 3 | 8.7 (0.46) | 9.2 (1.19) | 9.2 (0.74) |
| 4 | 4.1 (0.38) | 3.8 (0.63) | 3.7 (0.51) |
| 5 or more | *2.4 (0.27) | 2.0 (0.72) | 2.6 (0.41) |
| **Maximum educational attainment (among residents aged 25 or over:** | | | |
| No one was aged 25 or over[1] | 5.0 (0.32) | 7.5 (1.46) | 1.5 (0.29) |
| No resident aged 25 or over had a high school degree or higher | 3.9 (0.31) | 5.3 (0.90) | 4.4 (0.39) |
| At least one resident aged 25 or over had a high school degree but no one had a bachelor's degree or higher | 60.4 (0.73) | 56.0 (3.48) | 62.4 (1.05) |
| At least one resident aged 25 or over had a bachelor's degree or higher | 30.8 (0.74) | 31.2 (2.73) | 31.7 (0.84) |
| **Immigrant status of residents:** | | | |
| All residents were U.S. natives | 62.8 (0.74) | 73.7 (2.80) | 76.9 (0.74) |
| At least one resident but not all residents were immigrants | 28.8 (0.72) | 19.8 (1.88) | 19.2 (0.81) |
| All residents were immigrants | 8.5 (0.40) | 6.5 (1.58) | 3.9 (0.29) |
| **Tenure:** | | | |
| Owner[1] | 48.3 (0.83) | 48.7 (2.43) | 60.2 (0.90) |
| Renter[1] | 49.5 (0.82) | 48.2 (2.62) | 37.1 (0.97) |
| Occupied without payment of rent | 2.2 (0.23) | 3.1 (0.83) | 2.7 (0.38) |
| **State:** | | | |
| Hawaii | 28.3 (0.57) | 25.3 (13.37) | 38.7 (0.81) |
| California | 23.5 (0.67) | 21.8 (4.34) | 22.0 (0.74) |
| All other states | 48.3 (0.72) | 52.9 (9.65) | 39.3 (0.78) |
| **Region:** | | | |
| Northeast | 4.6 (0.38) | 5.2 (1.39) | 2.8 (0.15) |
| Midwest | 6.5 (0.33) | 7.8 (1.93) | 4.9 (0.31) |
| South | 15.9 (0.56) | 16.2 (3.32) | 11.6 (0.54) |
| West | 72.9 (0.66) | 70.8 (5.60) | 80.7 (0.62) |

* Estimates are considered unreliable. Data preceded by an asterisk have a relative standard error (RSE) greater than 30% and less than or equal to 50% and should be used with caution.
[1] The 2014 NHPI NHIS estimate differs significantly from both 2010–2014 NHIS estimate and ACS estimate.

NOTE: NHPI is Native Hawaiian and Pacific Islander. NHIS is National Health Interview Survey. ACS is American Community Survey SE is standard error..

**Table 4. Weighted percentages of health characteristics of Native Hawaiian and Pacific Islander people, by survey**

| Characteristic | 2010–2014 NHIS | 2014 NHPI NHIS |
|---|---|---|
| Health status | | |
| Total: | | |
| Reported general health: | | |
|   Excellent, very good or good . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 90.8 (1.07) | 90.4 (0.52) |
|   Fair or poor . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 9.2 (1.07) | 9.6 (0.52) |
| Adult: | | |
|   Currently obese . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 42.9 (3.26) | 42.6 (1.42) |
|   Ever had diabetes . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 10.1 (1.67) | 12.1 (0.80) |
|   Ever had hypertension . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 27.2 (2.89) | 22.5 (1.03) |
|   Ever had asthma . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 18.9 (2.44) | 20.0 (1.19) |
|   Current asthma . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 9.5 (1.65) | 9.6 (0.84) |
| Child: | | |
|   Ever had chickenpox . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 14.2 (2.89) | 9.6 (1.25) |
|   Respiratory allergy in past 12 months . . . . . . . . . . . . . . . . . . . . . . . . . . | 10.2 (1.98) | 8.7 (0.93) |
|   Skin allergy in past 12 months . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 16.3 (3.06) | 14.6 (1.39) |
|   Cold in past 2 weeks . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 13.8 (3.24) | 16.4 (1.60) |
|   Ever had asthma . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 20.9 (3.77) | 16.5 (1.13) |
|   Current asthma . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 13.5 (3.39) | 11.0 (1.03) |
| Adult health behaviors | | |
| Smoking: | | |
|   Current . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 19.0 (2.43) | 17.0 (1.17) |
|   Former[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 13.1 (1.82) | 19.5 (1.23) |
|   Never . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 67.9 (2.78) | 63.5 (1.54) |
| Combined aerobic and strengthening guidelines: | | |
|   Met neither guideline . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 38.6 (3.57) | 38.0 (1.30) |
|   Met muscle-strengthening guideline . . . . . . . . . . . . . . . . . . . . . . . . . . | *5.2 (1.66) | 3.0 (0.54) |
|   Met aerobic guideline . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 28.6 (2.77) | 31.4 (1.48) |
|   Met both guidelines . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 27.6 (3.18) | 27.6 (1.49) |
| Health care utilization and access | | |
| Total: | | |
|   Did not get needed medical care due to cost . . . . . . . . . . . . . . . . . . . . . | 6.4 (1.02) | 4.3 (0.38) |
|   Delayed needed medical care due to cost . . . . . . . . . . . . . . . . . . . . . . . | 8.0 (1.28) | 6.2 (0.42) |
| Adult: | | |
|   Flu vaccine in past 12 months[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 34.8 (2.79) | 42.5 (1.60) |
|   Interval since last dental visit: | | |
|     Past year . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 55.8 (3.16) | 58.3 (1.70) |
|     Over 1 year, but under 5 years . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 30.8 (2.76) | 26.9 (1.40) |
|     Over 5 years, never . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 13.4 (1.98) | 14.8 (1.23) |
|   Did not get dental care due to cost . . . . . . . . . . . . . . . . . . . . . . . . . . . | 14.7 (2.49) | 12.6 (0.79) |
|   Have a usual source of care . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 78.7 (3.71) | 86.1 (1.01) |
| Child: | | |
|   Flu vaccine in past 12 months . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 56.2 (4.18) | 57.0 (3.08) |
|   Interval since last dental visit: | | |
|     Past year[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 71.8 (4.08) | 83.0 (1.59) |
|     Over 1 year, but under 5 years . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 11.3 (3.06) | 6.0 (0.88) |
|     Over 5 years, never . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 16.9 (3.04) | 11.0 (1.55) |
|   Did not get dental care due to cost . . . . . . . . . . . . . . . . . . . . . . . . . . . | 6.3 (1.77) | 4.8 (0.69) |
|   Have a usual source of care . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 92.7 (2.03) | 96.1 (0.74) |

* Estimates are considered unreliable. Data preceded by an asterisk have a relative standard error (RSE) greater than 30% and less than or equal to 50% and should be used with caution.
[1]The 2014 NHPI NHIS estimate differs significantly from 2010–2014 NHIS estimate.

NOTE: NHPI is Native Hawaiian and Pacific Islander. NHIS is National Health Interview Survey. ACS is American Community Survey.

**Table 5. Odds ratios from multiple logistic regression models of select health outcomes on sex and age among Native Hawaiian and Pacific Islander people, by survey**

| Characteristic | NHIS 2010 (CI) | NHPI NHIS (CI) |
|---|---|---|
| Health status and conditions | | |
| Sample adult ever had diabetes: | | |
| Men . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.52 (0.61–3.79) | 1.36 (0.90–2.07) |
| Age (years): | | |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 7.36 (3.32–16.32) | 8.40 (5.41–13.04) |
| Sample adult ever had hypertension: | | |
| Men[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.50 (0.26–0.99) | 1.18 (0.86–1.62) |
| Age (years): | | |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 5.25 (2.84–9.71) | 7.47 (5.36–10.41) |
| Sample adult or sample child ever had asthma: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 (0.65–1.56) | 0.89 (0.67–1.20) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.64 (0.75–3.59) | 0.87 (0.68–1.11) |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.59 (0.77–3.31) | 1.14 (0.91–1.43) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| Sample adult or sample child currently has asthma: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.73 (0.43–1.24) | 0.67 (0.46–0.97) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.60 (0.86–2.99) | 1.26 (0.91–1.76) |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.30 (0.51–3.36) | 1.25 (0.94–1.67) |
| Sample adult or sample child had asthma episode (of those who ever had asthma), past year: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.43 (0.19–0.98) | 0.91 (0.60–1.40) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.41 (0.58–3.43) | 2.23 (1.38–3.60) |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.77 (0.49–6.39) | 1.91 (1.02–3.55) |
| Sample child ever had chicken pox: | | |
| Boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.43 (0.58–3.51) | 1 .00 (0.51–1.95) |
| Sample child had respiratory allergy, past 12 months: | | |
| Boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.94 (0.42–2.10) | 1.22 (0.61–2.44) |
| Sample child had skin allergy, past 12 months: | | |
| Boys[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.54 (0.23–1.30) | 1.36 (0.58–3.20) |
| Sample child had cold, past 2 weeks: | | |
| Boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.99 (0.30–3.26) | 1.24 (0.81–1.89) |
| Persons in fair or poor health: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.85 (0.56–1.29) | 0.92 (0.74–1.14) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 3.76 (1.69–8.36) | 5.39 (3.36–8.62) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 13.6 (6.34–29.17) | 17.30 (11.78–25.39) |
| Sample adult is obese: | | |
| Men . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.98 (0.61–1.56) | 1.16 (0.87–1.54) |
| Age (years): | | |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.03 (0.63–1.70) | 0.83 (0.64–1.08) |
| Health behaviors | | |
| Sample adult meets guidelines for aerobic activity: | | |
| Men[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.66 (1.66–4.26) | 1.07 (0.86–1.33) |
| Age (years): | | |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.38 (1.16–4.87) | 1.75 (1.39–2.20) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| Sample adult is current smoker: | | |
| Men . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.82 (0.93–3.55) | 1.56 (1.09–2.23) |
| Age (years): | | |
| 18–49 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.28 (0.64–2.56) | 1.34 (0.95–1.89) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |

See footnotes at end of table.

**Table 5. Odds ratios from multiple logistic regression models of select health outcomes on sex and age among Native Hawaiian and Pacific Islander people, by survey—Con.**

| Characteristic | NHIS 2010–2104 (CI) | NHPI NHIS 2014 (CI) |
|---|---|---|
| Health insurance | | |
| Persons having any public or private comprehensive health insurance: | | |
| Men and boys[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.65 (0.48–0.88) | 0.89 (0.70–1.13) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.87 (1.95–4.21) | 3.53 (2.48–5.01) |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.67 (1.68–4.24) | 2.49 (1.81–3.42) |
| Persons having private comprehensive health insurance: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.02 (0.83–1.27) | 1.10 (1.00–1.21) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.69 (1.35–2.13) | 1.64 (1.42–1.89) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.72 (1.24–2.40) | 1.65 (1.18–2.30) |
| Persons having public comprehensive health insurance: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.71 (0.58–0.87) | 0.85 (0.76–0.94) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 3.19 (2.38–4.26) | 2.63 (2.25–3.08) |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.38 (1.75–3.24) | 2.53 (2.00–3.20) |
| Health care access and utilization | | |
| Sample adult or sample child has a usual source of care: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.62 (0.34–1.13) | 0.55 (0.36–0.84) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 4.20 (2.32–7.61) | 5.12 (3.31–7.91) |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.71 (1.22–6.02) | 2.86 (2.14–3.81) |
| Persons did not get needed medical care because of cost: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.75 (0.44–1.27) | 0.99 (0.82–1.21) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 5.40 (2.60–11.21) | 2.37 (1.62–3.47) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 3.12 (1.37–7.09) | 2.86 (1.64–4.97) |
| Persons delayed needed medical care because of cost: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.73 (0.49–1.09) | 0.84 (0.70–1.01) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.75 (1.56–4.85) | 2.62 (1.76–3.89) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.59 (0.72–3.48) | 3.07 (1.79–5.27) |
| Sample adult or sample child had a dental visit in past year, aged 1 year and over: | | |
| Men and boys[1] . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.29 (0.84–1.99) | 0.78 (0.62–0.98) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.28 (1.51–3.46) | 3.90 (2.79–5.47) |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.76 (1.07–2.90) | 1.42 (1.05–1.92) |
| Sample adult or sample child did not get dental care because of cost: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.73 (0.42–1.26) | 0.68 (0.54–0.86) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 2.95 (1.53–5.68) | 2.87 (1.94–4.22) |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.44 (0.59–3.55) | 2.67 (1.90–3.76) |
| Sample adult or sample child had flu vaccination, past year: | | |
| Men and boys . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 0.65 (0.43–0.97) | 0.84 (0.68–1.04) |
| Age (years): | | |
| Under 18 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 3.32 (2.21–4.99) | 2.37 (1.82–3.08) |
| 18–49. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 1.00 | 1.00 |
| 50 and over . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . | 3.32 (1.94–5.68) | 2.53 (2.03–3.16) |

... Category not applicable.

[1]The point estimate for the odds ratio for this predictor in both data sets' models falls outside the CI of the corresponding odds ratio in the other data set's model.

NOTE: NHPI is Native Hawaiian and Pacific Islander. NHIS is National Health Interview Survey. ACS is American Community Survey. CI is confidence interval.

# Appendix I. Definition of selected terms

*Diabetes and hypertension* —In separate questions, respondents were asked if they had ever been told by a doctor or other health professional that they had hypertension (or high blood pressure) or diabetes (or sugar diabetes; female respondents were instructed to exclude pregnancy-related diabetes).

Responses from persons who said they had "borderline" diabetes were treated as unknown with respect to diabetes.

*Obese*—Obesity is defined as Body Mass Index (BMI) greater than or equal to 30.0. BMI is calculated from the sample adult's responses to survey questions regarding height and weight and is defined as BMI = Weight (in kg)/ [Height (in m)]$^2$. Note that self-reported height and weight may differ from actual measurements.

*Smoking status*—Current smokers have smoked at least 100 cigarettes in their lifetime and still currently smoke. Former smokers have smoked at least 100 cigarettes in their lifetime but currently do not smoke at all. Nonsmokers have never smoked or smoked fewer than 100 cigarettes in their lifetime.

*Leisure-time physical activity and muscle-strengthening activities*—All survey questions related to leisure-time physical activity were phrased in terms of current behavior and lack a specific prior reference period, and reflect the federal "2008 Physical Activity Guidelines for Americans" (available from: http://www.health.gov/PAGuidelines/). The 2008 federal guidelines recommend that for substantial health benefits, adults should perform at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination. Aerobic activity should be performed in episodes of at least 10 minutes and preferably should be spread throughout the week. The 2008 federal guidelines also recommend that adults perform muscle-strengthening activities

of moderate or high intensity that involve all major muscle groups on 2 or more days a week for additional health benefits.

Categories with respect to the full guidelines are mutually exclusive. Adults who met neither the aerobic nor muscle-strengthening 2008 federal guidelines may have engaged in lesser amounts of activity. Meeting the full muscle-strengthening guidelines only means participating in leisure-time muscle-strengthening activities 2 or more days per week with either no leisure-time aerobic activity or aerobic activity that did not meet the guidelines. Meeting the full aerobic activity guidelines only means participating in moderate-intensity leisure-time physical activities 150 minutes or more per week or vigorous-intensity activities 75 minutes or more per week, or an equivalent combination, and not meeting the muscle-strengthening guidelines.

In addition, estimates presented in these tables are limited to leisure-time physical activity only. The 2008 federal physical activity guidelines refer to any kind of aerobic and muscle-strengthening activities, not just to leisure-time aerobic and muscle-strengthening activities. Therefore, the leisure-time aerobic and muscle-strengthening activity estimates in these tables may underestimate the frequencies and percentages of adults who met the guidelines for aerobic and muscle-strengthening activities.

*Influenza vaccination*—Influenza vaccination estimates include both the seasonal influenza shot and seasonal intranasal influenza vaccination. Estimates are subject to recall error, which will vary depending on when the question is asked because the receipt of an influenza vaccination is seasonal. The prevalence of influenza vaccination during the past 12 months may differ from season-specific coverage (13) (estimates available from: http://www.cdc.gov/flu/fluvaxview).

*Usual place of health care*—Based on a survey question that asked whether

respondents had a place they usually went to when they were sick or needed advice about their health. If the response was "yes" or "there is more than one place," they were asked, "What kind of place [is it/do you go to most often]—a clinic, a doctor's office, an emergency room, or some other place?" Response choices for this second question are: "clinic or health center," "doctor's office or HMO," "hospital emergency room," "hospital outpatient department," "some other place," or "doesn't go to one place most often." Although "hospital emergency room" is not considered a "usual place of health care" in other publications (e.g., NCHS' Health, United States and the National Health Interview Survey Early Release reports), in these tables it is combined with "hospital outpatient clinic" and considered "a usual place of health care."

# Appendix II. Technical Notes

In NHPI NHIS, each family within a household at an address was assigned a survey outcome disposition. Most addresses had only one outcome disposition, but a small fraction of addresses had more than one, either because extra units (households) were identified at the address or because multiple families lived at the address. For the Frame Refinement analysis whose results are shown in Table 1, such addresses were assigned a 2014 NHPI NHIS disposition using the following rules: If any families screened in at the address, the household was considered a screen in. If no families screened in but at least one family screened out, the household was considered a screen out. If no families screened in and no families screened out, it was a non-interview.

Screen in means that the 2014 NHPI NHIS determined that the household had at least one civilian NHPI resident at the time of, and was therefore eligible for, the 2014 NHPI NHIS. Screen out means that the household was not eligible because the household had no such civilian NHPI resident. No interview means that either the household was not eligible for a reason other than screen out (e.g., vacant or demolished), or is treated as if it were eligible despite the fact that it did not respond (e.g., refusal), or in a few cases was known to be eligible but nonresponding (e.g., some insufficient partial interviews).

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The last Series 16 report was published in 1996. All reports are available online; compilations are no longer needed.

**Series 20.** **Data on Mortality**
Reports include analyses by cause of death and demographic variables, and geographic and trend analyses. The last Series 20 report was published in 2007; these reports are now included in Series 3.

**Series 21.** **Data on Natality, Marriage, and Divorce**
Reports include analyses by health and demographic variables, and geographic and trend analyses. The last Series 21 report was published in 2006; these reports are now included in Series 3.

**Series 22.** **Data From the National Mortality and Natality Surveys**
The last Series 22 report was published in 1973. Reports from sample surveys of vital records were included in Series 20 or 21, and are now included in Series 3.

**Series 23.** **Data From the National Survey of Family Growth**
Reports contain statistics on factors that affect birth rates, factors affecting the formation and dissolution of families, and behavior related to the risk of HIV and other sexually transmitted diseases. The last Series 23 report was published in 2011; these reports are now included in Series 3.

**Series 24.** **Compilations of Data on Natality, Mortality, Marriage, and Divorce**
The last Series 24 report was published in 1996. All reports are available online; compilations are no longer needed.