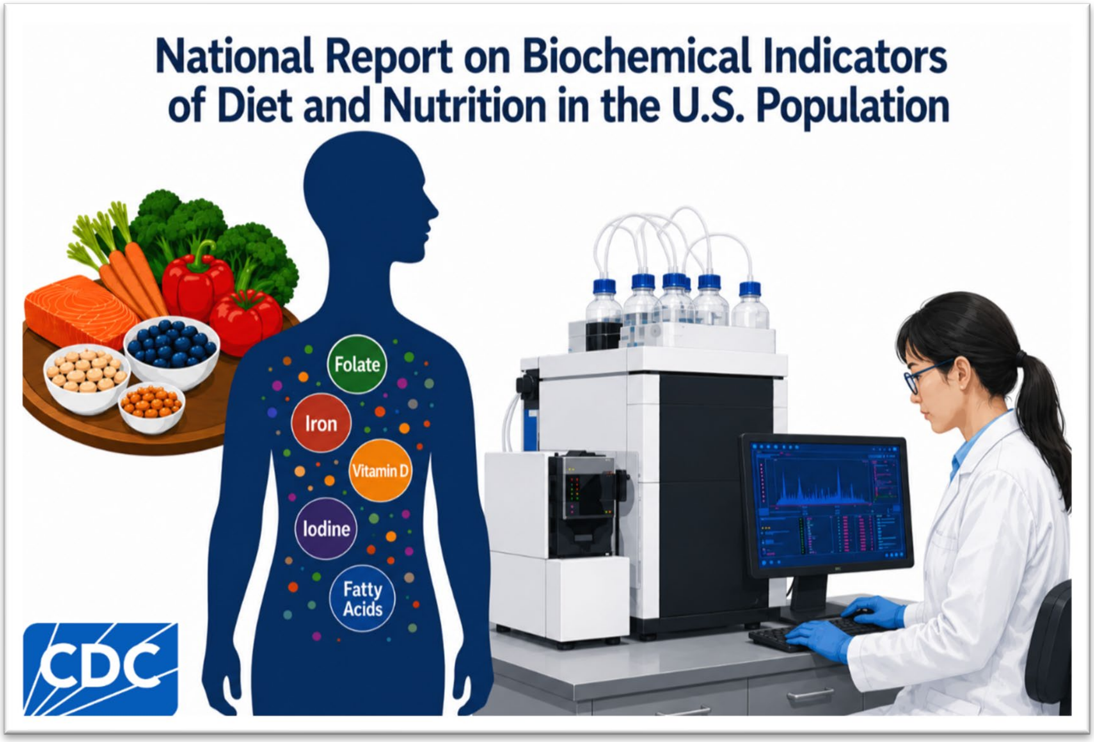

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Introduction

Background

The *National Report on Biochemical Indicators of Diet and Nutrition in the U.S. Population*, also known as the *CDC Nutrition Report*, is an online publication that provides ongoing assessment of the nutritional status of the U.S. population (Pfeiffer 2026). It does this by measuring concentrations of diet-and-nutrition biochemical indicators in blood or urine samples. The Centers for Disease Control and Prevention's (CDC) Division of Laboratory Sciences at the National Center for Environmental Health (NCEH/DLS) conducted the laboratory analyses for 131 indicators presented in the 2026 report as part of the National Health and Nutrition Examination Survey (NHANES) protocol. These indicators were measured in specimens from a representative sample of the U.S. population participating in the NHANES. The CDC's National Center for Health Statistics (NCHS) conducts the NHANES, which collects data on the health and nutritional status of the U.S. population. The indicator data analyzed for this report span the continuous NHANES from 1999–2000 to August 2021–August 2023.

The *CDC Nutrition Report* focuses on biochemical measurements, which are a key aspect of assessing the nutritional status of the U.S. population. However, it does not include other nutrition-related data from the NHANES, such as dietary intake, dietary supplement usage, hematologic measurements, and anthropometric body measurements. Two earlier publications of the *CDC Nutrition Report* provided reference information for 27 (NHANES 1999–2002) and 58 (NHANES 2003–2006) biochemical indicators (U.S. Centers for Disease Control and Prevention 2012).

In this report, a biochemical indicator refers to a nutrient (such as a vitamin, fatty acid, or trace element), a metabolite (such as homocysteine or methylmalonic acid), or a dietary indicator with potential health relevance (such as an isoflavone or lignan) measured in blood or urine. While most indicators presented in this report enter the human body from foods or supplements, some are produced by the body in response to dietary intake or environmental exposure. The concentrations of these indicators in blood and urine reflect the actual amount of nutrients and dietary compounds in the body or being excreted.

The biochemical indicators covered in the *CDC Nutrition Report* are:

- Water-soluble vitamins and metabolites: this includes biomarkers of multiple B vitamins and vitamin C
- Fat-soluble vitamins and (micro)nutrients: this includes biomarkers of vitamins A and E, carotenoids, vitamin D, and *cis*-fatty acids
- Trace elements: this includes biomarkers of iron status and other trace elements
- Bioactive compounds: this includes phytoestrogens, caffeine and metabolites, acrylamide adducts, and *trans*-fatty acids

Addressing Data Needs

The 2026 *CDC Nutrition Report* provides reference information on measurement data from NCEH/DLS for a wide range of biochemical indicators of diet and nutrition, collected over more than 20 years of the continuous NHANES survey, starting in 1999. The report covers 131 biochemical indicators and consists of over 2700 tables and 500 figures. Data are presented in standardized tables, allowing for comparisons over time, across demographic subgroups, and across biochemical indicators. Figures illustrate trends in concentrations over time and show age patterns by sex and race and Hispanic origin, making the information easy to review. For the first time, the report presents information on biochemical indicator concentrations separately for dietary supplement users and nonusers.

NHANES estimates have been disseminated in a variety of NCHS publications including Data Briefs, Health E-Stats and Series Reports available on the NHANES website: https://www.cdc.gov/nchs/nhanes/about-data/index.html. Reports from surveys prior to the continuous NHANES, of historic value to the nutrition community, are available from the Life Sciences Research Office. **Appendix A** shows selected NCHS publications as well as Life Sciences Research Office reports related to nutrition status.

Public Health Uses

The primary objective of the *CDC Nutrition Report* is to inform public health scientists and policy makers about the concentrations of biochemical indicators of diet and nutrition in the general U.S. population and in selected subpopulations. The report is intended for agencies and organizations focused on population health by developing and monitoring nutrition policies. The data also help physicians, scientists, and public health officials assess inadequate or excess intake and inform analyses on the relation between biochemical indicators and health outcomes. Other objectives and potential public health uses of the information include:

- Establishing and improving population reference levels to help identify individuals or groups with unusually high or low concentrations of diet-and-nutrition biochemical indicators.
- Assessing whether the nutritional status of special population groups, such as children, women of childbearing age, the elderly, or different racial and ethnic groups, differs from other groups, or needs improvement.
- Tracking trends in biochemical indicator concentrations over time.
- Evaluating the effectiveness of public health initiatives aimed at improving the diet and nutritional status of the U.S. population.
- Guiding research for more in-depth analyses of the NHANES data to generate hypotheses for future nutrition and human health studies.

Data Presented for Biochemical Indicators

The *CDC Nutrition Report* includes tables and figures of descriptive statistics on the distribution of concentrations of diet-and-nutrition biochemical indicators measured in blood and urine samples from the NHANES conducted from 1999–2000 through August 2021–August 2023. The statistics presented include unadjusted geometric means (or arithmetic means) and selected percentiles, along with their corresponding confidence intervals for two-year cycles or grouped cycles. Data are presented by approximate decades (e.g., 1999–2010; 2011–2018; August 2021–August 2023). The report will be a “living” online set of tables that will be added to as more data become available.

The *CDC Nutrition Report* presents three types of summary statistics:

Concentrations over time:

- These tables and figures describe biochemical indicator concentrations over time by survey cycle for the total population. They also provide data separated by dietary supplement users and nonusers, based on responses to the question, "Have you used or taken any vitamins, minerals, or other dietary supplements in the past month?"
- Statistics include the 10^{th}, 50^{th}, and 90^{th} percentiles along with the geometric mean.
- Adjustments have been incorporated in analyses for indicators for which measurement methods changed over time (within a decade), as recommended by NHANES data documentation and analytic guidelines, to allow for assessment of long-term trends in concentrations.

Reference interval concentrations:

- These tables describe biochemical indicator concentrations for the total population by combining data from two cycles where available (e.g., 1999–2002, 2003–2006, 2007–2010, 2011–2014, 2015–2018) to ensure a sufficient sample size for tail percentiles.
- Statistics include the 2.5^{th}, 5^{th}, 50^{th}, 95^{th}, and 97.5^{th} percentiles along with the geometric mean.

Multi-level stratified concentrations:

- These tables describe biochemical indicator concentrations for the total population and separately for each race and Hispanic origin group by combining data from two cycles where available to ensure a sufficient sample size for multi-level stratification.
- Statistics include the 10^{th}, 50^{th}, and 90^{th} percentiles along the geometric mean.
- Additionally, figures are provided presenting age-specific geometric means, stratified separately by sex and race and Hispanic origin to highlight demographic patterns.

Appendix B provides an overview of the type of information presented for each biochemical indicator.

The data are presented by age group, sex, or race and Hispanic origin for the first two types of summary statistics and by a combination of age group and sex for the third type. Race and Hispanic origin groups are as follows:

- For 1999–2010, Mexican American, non-Hispanic Black, and non-Hispanic White
- For 2011–2018 and August 2021–August 2023, all Hispanic (combined category of Mexican American and other Hispanic), non-Hispanic Asian, non-Hispanic Black, and non-Hispanic White

When the eligible sample population changed across survey cycles, a common denominator approach (i.e., a consistent age range) was used for total, sex-specific, and race and Hispanic origin-specific estimates to ensure comparability across survey cycles. For example, vitamin D included participants 6 years and older for the 1999–2000 cycle and eligibility was expanded to participants 1 year and older beginning with the 2003–2004 cycle. Therefore, data for participants 6 years and older were used as the common denominator. When data for younger age groups were available, we included age-specific estimates for these groups to capture relevant subgroup differences.

A geometric mean provides a better estimate of central tendency for data distributions with a long tail at the upper end of the distribution because it is less influenced by these high values as compared to the arithmetic mean. This type of distribution is common when measuring biochemical indicators. In cases where the distribution is approximately symmetric (e.g., vitamin C, vitamin D, and body iron index), the arithmetic mean is reported instead of the geometric mean. Scientists can use the presented percentile levels to determine which serum, blood, or urine indicator concentrations are common to people in the U.S. population and which concentrations are unusual. The central 95% reference interval (2.5th to 97.5th percentile) is commonly used to define normal concentration ranges within a generally healthy population, which NHANES participants are assumed to be. Values falling outside this interval are typically regarded as abnormal or uncommon. For urine measurements, data are shown for both the measured concentration and after adjustment for urine flow effects (e.g., creatinine normalized concentrations for iodine and phytoestrogens or excretion rates for caffeine and metabolites).

Interpreting the Data

Blood or urine concentrations of biochemical indicators can help assess the adequacy of intake for the U.S. population. These measurements reflect cumulative intakes from foods, some fortified with micronutrients (e.g., iron, thiamin, riboflavin, niacin, folate, vitamin A, vitamin D), as well as from dietary supplements containing vitamins, minerals, or both. However, these concentrations can also be influenced by factors other than diet, such as various diseases or exposures. For nutrients without defined adequate intakes (e.g., carotenoids, phytoestrogens), biochemical indicators are still useful for assessing intake, even if they do not indicate adequacy.

Dietary deficiencies are well documented and have characteristic signs and symptoms. Additionally, less than optimal biochemical concentrations (representing suboptimal status) have been linked to risks of adverse health effects. These risks include cardiovascular disease, stroke, impaired cognitive function, cancer, eye diseases, poor bone health, and other conditions. Consuming excessive amounts of certain nutrients can result in toxicity and other adverse effects. Future research is needed to determine the concentrations of biochemical indicators that may indicate risk for disease versus those that are of negligible health concern. This is beyond the scope of this report. CDC, in collaboration with other agencies and institutions, encourages and conducts research on the relationship between biochemical indicators and related health effects.

This report contains unadjusted geometric mean and selected percentile concentrations of diet-and-nutrition biochemical indicators for the civilian, noninstitutionalized U.S. population. By identifying groups with non-overlapping confidence intervals, it is possible to make limited interpretations of relative differences between population groups. However, these observed differences should not always be interpreted as causal. The intent is to describe the characteristics of the population and of selected subgroups, not to explain why the groups display certain characteristics or why they differ from each other. Furthermore, differences in biochemical indicator concentrations of selected subgroups do not necessarily imply health status problems. Caution should be used when drawing conclusions over time from comparisons of serial cross-sectional NHANES cycles. Although adjustments were made for method changes across cycles within a decade where possible, demographic changes in the U.S. population over time and sampling differences could explain some of the observed changes from one cycle to the next. More in-depth statistical analyses, such as developing models to simultaneously adjust for multiple covariates, and considering interactions between variables, are beyond the scope of this report. Nonetheless, we hope that scientists will be encouraged to further examine the data available at the NHANES Web site: http://wwwn.cdc.gov/nchs/nhanes/.

Laboratories may use different methods for measuring the indicators presented in this report which can result in different method-specific reference intervals. Therefore, health science professionals should verify with their specific laboratory that their methods closely match those used in this report (see **Appendix C**) before applying these results.

Sources of Information on Nutrition Monitoring to Help Interpret the Data

Information about dietary intake is crucial for research into the causes of nutritional inadequacies and for programs aimed at improving diet and nutritional status. Selected NCHS reports provide useful overviews (see **Appendix A**). Additionally, the U.S. Department of Agriculture (USDA) offers valuable databases on food surveys and food composition:

- **What We Eat in America (WWEIA):** This is the dietary intake interview section of NHANES (https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/food-surveys-research-group/docs/wweianhanes-overview/).
- **Food and Nutrient Database for Dietary Studies (FNDDS):** This database includes information on foods, their nutrient values, and the weights of typical food portions (https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/food-surveys-research-group/docs/fndds/). It is used to generate data for WWEIA by applying nutrient values from the National Nutrient Database for Standard Reference (https://fdc.nal.usda.gov/).

The National Health and Nutrition Examination Survey (NHANES)

As part of the NHANES protocol, CDC laboratory scientists measured biochemical indicators of diet and nutrition and the results were released with public data sets. The NHANES, conducted by NCHS, is a series of surveys designed to collect data on the health and nutritional status of the U.S. population (https://www.cdc.gov/nchs/nhanes/index.html). It is the only nationally representative health survey that collects biological samples. The NHANES surveys began in 1960 with the first Health Examination Survey (HES 1), and the nutritional component was added in the early 1970s with NHANES I.

In 1999, NHANES became a continuous survey with participation eligibility starting at birth and data release in two-year cycles. In March 2020, NHANES field operations were suspended due to the COVID-19 pandemic. Data from the abbreviated 2019–March 2020 cycle were not considered nationally representative and were combined with the 2017–2018 cycle (Paulose-Ram 2021). The 2017–March 2020 pre-pandemic dataset was not used to maintain two-year cycle comparisons over time. NHANES resumed operations in August 2021, and the survey cycle concluded in August 2023. Data from all publicly available two-year cycles from 1999–August 2023 were included. NHANES data for August 2021–August 2023 available at the time of report generation were included.

NHANES includes an in-person questionnaire on a wide range of health-related behaviors, conducts health examinations, and collects samples for laboratory tests. Thus, NHANES is unique in its ability to examine public health issues in the U.S. population, such as risk factors for cardiovascular disease. To select a representative sample of the civilian, noninstitutionalized population in the United States, NHANES uses a stratified, multistage, probability sample. This population includes individuals who are neither in the military nor institutionalized (e.g., they are not residents of nursing homes or prisons). Participants ≥18 y consented, parents provided consent for those <18 y, and youth 7–17 y assented. The NCHS Ethics Review Board approved NHANES (https://www.cdc.gov/nchs/nhanes/about/erb.html).

Interview and examination response rates for each NHANES cycle are publicly available (https://wwwn.cdc.gov/nchs/nhanes/responserates.aspx). Although NHANES response rates have declined over time, nonresponse bias assessments performed by NCHS in 2017–2018 (Fakhouri 2020) and August 2021–August 2023 (https://wwwn.cdc.gov/nchs/nhanes/continuousnhanes/overviewbrief.aspx?Cycle=2021-2023) found no major sources of bias that were not accounted for by weighting adjustments.

The NHANES protocol includes a home interview followed by a standardized health examination at a mobile examination center. For participants ages 1 year and older, blood samples are obtained by venipuncture. Urine samples are collected from participants ages 3 years and older. Approximately half of the participants are evaluated after an overnight fast. The remaining participants are roughly equally distributed between those who fasted less than 3 hours and those who fasted between 3 and 8 hours before providing a biological sample. To mitigate the impact of weather on the mobile examination centers, data are collected in northern latitudes during the summer and in southern latitudes during the winter. This seasonal-latitude structure might indirectly affect biochemical indicators.

For more information about the design and operation of the NHANES survey, visit https://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx.

Data Analysis

NCHS has created a comprehensive web-based tutorial to help users understand the complex survey design and to analyze data from NHANES (https://wwwn.cdc.gov/nchs/nhanes/tutorials/default.aspx).

Because the NHANES sample design is a complex, multistage probability sample, weights are used to adjust for the unequal probability of participant selection and potential bias from nonresponse. Demographic data files released by NCHS for each NHANES two-year cycle include both a two-year interview weight and a medical examination weight. In certain cases, specialized weights are provided, such as fasting weights or subsample weights for specific biomarkers measured in a random subset of eligible participants (e.g., phytoestrogens, caffeine and metabolites, *trans*-fatty acids). In the August 2021–August 2023 cycle, a specialized weight known as the phlebotomy weight was introduced for biomarker measurements to address potential non-response bias because nonresponse to the blood draw was inversely related to participant age. All estimates in this report are weighted using the appropriate weight. The selected weight also depends on how many survey cycles are being combined to produce the estimate. Combining data over multiple survey cycles can produce estimates with greater statistical reliability. In cases of combined estimates, new weights were constructed. For example, a four-year estimate for the years 2003–2006 was based on a four-year weight, which was created by assigning half the two-year weight for 2003–2004 or half the two-year weight for 2005–2006, depending on when the person completed the survey.

Results are presented for the total population and broken down by age group, sex, and race and Hispanic origin, as defined by NHANES. For the 1999–2010 survey cycles, race and Hispanic origin was categorized as Mexican American, non-Hispanic Black, and non-Hispanic White (Johnson 2013). During these cycles, oversampling of Mexican-American and non-Hispanic Black persons was included to allow for more detailed analysis of these groups. Starting in 2011, NHANES oversampling of all Hispanic and non-Hispanic Asian persons was added. Consequently, from

2011 onward, race and Hispanic origin was categorized as all Hispanic (combines Mexican American and other Hispanic participants), non-Hispanic Asian, non-Hispanic Black, and non-Hispanic White. Although other racial and ethnic groups were sampled during all cycles, sample sizes were too small to produce statistically reliable estimates per National Center for Health Statistics analytic guidelines (Johnson 2013). Therefore, estimates for these groups are not shown separately; however, they are included in the total population estimates.

Data were analyzed using the statistical software package Statistical Analysis System (SAS, Version 9.4) and SUDAAN (Release 11.0.1). SUDAAN uses sample weights and calculates variance estimates that account for the complex survey design. Guidelines for analyzing NHANES data are provided by NCHS at: http://wwwn.cdc.gov/nchs/nhanes/analyticguidelines.aspx#analytic-guidelines. Utilization of the web-based tutorial can also help users (https://wwwn.cdc.gov/nchs/nhanes/tutorials/default.aspx).

Geometric means were calculated by taking the log of each concentration, calculating the mean of those log values, then taking the antilog of that mean (the calculation can be done by use of any log base, such as 10 or e). The confidence interval uses the standard error and mean on the log scale, along with the appropriate critical value from the t-distribution to calculate upper and lower confidence limits on the log scale. The confidence intervals of geometric means in this report are based on the antilog of those upper and lower confidence intervals.

Standard error estimates were calculated using the Taylor series (linearization) method within SUDAAN. The degrees of freedom for variance estimation are generated by subtracting the number of strata from the number of primary sampling units (PSUs). Estimates are suppressed when the degrees of freedom are fewer than 8, as the corresponding standard errors are considered unreliable due to increased uncertainty.

Percentile estimates were calculated using linear interpolation and the confidence intervals for percentiles were calculated using the Woodruff method (Woodruff 1952). This method uses the standard error of the empirical distribution function at the selected percentile and constructs a 95% confidence interval, followed by back-transformation using the inverse of the empirical distribution (see **Appendix D** for more details). We used the unweighted sample size and assumed an average design effect of 1.4 as a criterion to estimate percentiles of sufficient precision (U.S. Centers for Disease Control and Prevention 1996; Table 1 in Appendix B). At least 112 persons were required to estimate the 10^{th} and 90^{th} percentiles, 224 persons for the 5^{th} and 95^{th} percentiles, and

448 persons for the 2.5th and 97.5th percentiles. Percentiles that did not meet these requirements were flagged and footnoted.

The limit of detection (LOD) is the concentration at which the measurement has a 95% probability of being greater than zero (Taylor 1987). For calculating geometric means, concentrations below the LOD were assigned a value equal to the LOD divided by the square root of 2. If more than 40% of the results were below the LOD (< LOD), geometric means were not calculated. Percentile estimates below the LOD were reported as "< LOD". Most indicators had very few results below the LOD value, so the choice of statistical analysis to handle these results made little practical difference. However, there were a few exceptions (e.g., some serum folate forms, serum *cis-beta*-carotene, retinyl palmitate, and retinyl stearate; urine O-desmethylangolensin and equol), where a larger proportion of results were < LOD. LOD values may change over time due to changes in analytical methods. For the analysis of the combined four-year data, we used the higher of the two LOD values. **Appendix E** contains tables with LOD values for each biochemical indicator by NHANES cycle.

In some cases, due to changes in analytical methods within a decade (e.g., serum folate, RBC folate, plasma total homocysteine, serum 25-hydroxyvitamin D, and serum ferritin) adjustment equations were applied to the data to ensure comparability across survey cycles. These adjustments are documented in the NHANES data documentation and are noted in the table footnotes:

- https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2007/DataFiles/FOLATE_E.htm
- https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/1999/DataFiles/LAB06.htm
- https://wwwn.cdc.gov/nchs/nhanes/vitamind/analyticalnote.aspx?b=2003&d=VID_C&x=htm
- https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2003/DataFiles/L06TFR_C.htm
- https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2009/DataFiles/FERTIN_F.htm

When changes in analytical methods occurred between decades (e.g., serum vitamin B12, serum ferritin), estimates were reported as measured without applying adjustment equations. Data users should review the table footnotes for information on what analytical method was used and should use caution when comparing data across decades. Information about method differences can be found in the NHANES data documentation:

- https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2011/DataFiles/VITB12_G.htm

- https://wwwn.cdc.gov/Nchs/Data/Nhanes/Public/2015/DataFiles/FERTIN_I.htm

For biochemical indicators measured in urine, we present separate tables for the concentration of the indicator expressed as “per volume of urine” (uncorrected table) and the concentration of the indicator expressed as “per gram of creatinine” (creatinine-corrected table; e.g., iodine and phytoestrogens) or the excretion rate of the indicator (e.g., caffeine and metabolites). Adjusting for urine dilution is typically beneficial when comparing an individual participant's result to population data. Study populations of sufficient size can be compared using either uncorrected or corrected units. Because instrument responses are measured in units of weight per volume, LOD calculations were performed using the concentration of the indicator expressed as per volume of urine. Therefore, LOD results for urine measurements in **Appendix E** are in weight per volume of urine. In the creatinine-corrected or excretion rate tables, a result for a geometric mean or a percentile was reported as < LOD if the corresponding geometric mean or percentile was < LOD in the uncorrected table. For example, if the 2.5th percentile for males was < LOD in the uncorrected table, it would also be < LOD in the creatinine-corrected or excretion rate table.

Appendix F contains selected references of descriptive NHANES papers on diet-and-nutrition biochemical indicators.

References

Fakhouri THI, Martin CB, Chen TC, Akinbami LJ, Ogden CL, Paulose-Ram R, et al. An investigation of nonresponse bias and survey location variability in the 2017–2018 National Health and Nutrition Examination Survey. National Center for Health Statistics. Vital Health Stat. 2020;2(185). [cited January 30, 2026]. Available from: https://www.cdc.gov/nchs/data/series/sr_02/s02-185-508.pdf.

Johnson CL, Paulose-Ram R, Ogden CL, Carroll MD, Kruszon-Moran D, Dohrmann SM, Curtin LR. National Health and Nutrition Examination Survey: Analytic guidelines, 1999-2010. National Center for Health Statistics. Vital Health Stat. 2013;2(161). [cited January 11, 2026]. Available from: https://wwwn.cdc.gov/nchs/data/nhanes/analyticguidelines/99-10-analytic-guidelines.pdf.

Paulose-Ram R, Graber JE, Woodwell D, Ahluwalia N. The National Health and Nutrition Examination Survey (NHANES), 2021–2022: Adapting data collection in a COVID-19 environment. Am J Pub Health. 2021;111(12):2149–2156. [cited January 30, 2026]. Available from: https://doi.org/10.2105/AJPH.2021.306517.

Pfeiffer CM, Sternberg MR, Powers CD, Ogden CL, Jefferds MED, Crider KS, Juan W, Gahche JJ, Rybak ME, Fazili Z, et al. Centers for Disease Control and Prevention's 2026 Nutrition Report presents data for 131 biomarkers from the cross-sectional National Health and Nutrition Examination Survey (NHANES 1999–August 2023). Curr Dev Nutr. 2026;10:107688.

Taylor JK. Quality assurance of chemical measurements. Chelsea (MI): Lewis Publishing; 1987.

U.S. Centers for Disease Control and Prevention, National Center for Health Statistics. Analytic and reporting guidelines: The Third National Health and Nutrition Examination Survey, NHANES III (1988–94); October 1996. [cited January 3, 2026]. Available from: https://wwwn.cdc.gov/nchs/data/nhanes/analyticguidelines/88-94-analytic-reporting-guidelines.pdf.

U.S. Centers for Disease Control and Prevention, National Center for Environmental Health. Second National Report on Biochemical Indicators of Diet and Nutrition in the U.S. Population 2012. [cited November 17, 2025]. Available from: https://www.cdc.gov/nutrition-report/media/pdfs/2026/06/Second-Nutrition-Report-2012.pdf.

Woodruff RS. Confidence intervals for medians and other position measures. J Am Stat Assoc. 1952;57:622–627.