

Seafood Consumption Among Youth and Adults: United States, August 2021–August 2023

Nicholas Ansai, M.P.H., Ana L. Terry, M.S., R.D., Bryan Stierman, M.D., M.P.H., and Namanjeet Ahluwalia, Ph.D., D.Sc.

Key findings

Data from the National Health and Nutrition Examination Survey

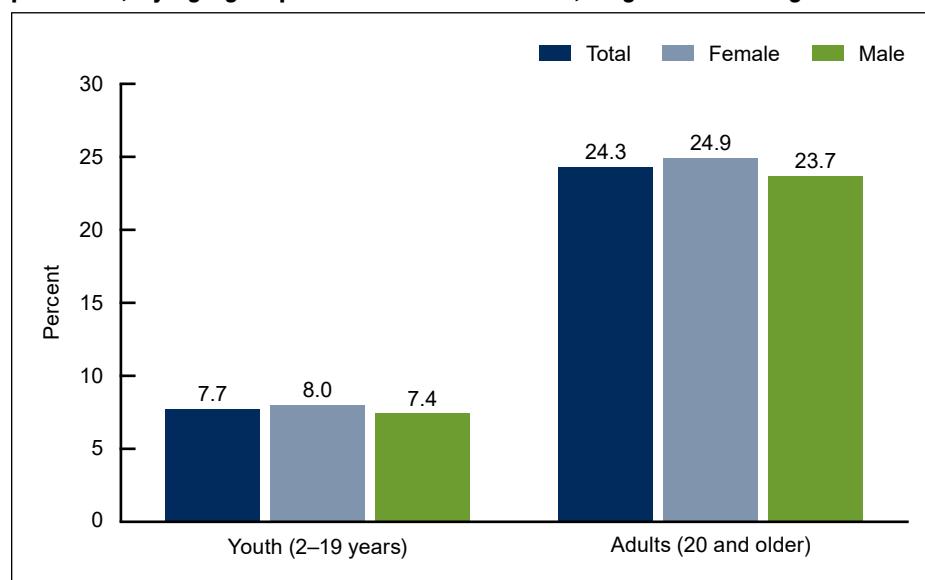
- During August 2021–August 2023, 7.7% of youth ages 2–19 years and 24.3% of adults age 20 and older consumed seafood at least twice per week.
- The percentage of adults who consumed seafood at least twice per week increased with increasing family income.
- The percentage of adults consuming seafood at least twice per week increased between 2013–2014 and August 2021–August 2023.
- Among both youth and adults, shrimp, salmon, tuna, and “other fish” were the most commonly consumed types of seafood.

The 2020–2025 Dietary Guidelines for Americans (DGA) recommends seafood consumption as a source of essential nutrients like protein, omega-3 fatty acids, calcium, and vitamin D (1). For the general population, DGA recommends consuming 8 oz. equivalents, or two servings, of seafood weekly (1). This report presents the percentage of U.S. youth and adults consuming seafood at least twice per week, and the most common types of seafood consumed based on data from the August 2021–August 2023 National Health and Nutrition Examination Survey (NHANES).

What percentage of youth and adults consumed seafood at least twice per week during August 2021–August 2023?

During August 2021–August 2023, 7.7% of youth ages 2–19 years and 24.3% of adults age 20 and older consumed seafood at least twice per week (Figure 1, Table 1).

Figure 1. Percentage of youth and adults consuming seafood at least twice per week, by age group and sex: United States, August 2021–August 2023



NOTE: Seafood includes fish and shellfish.

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

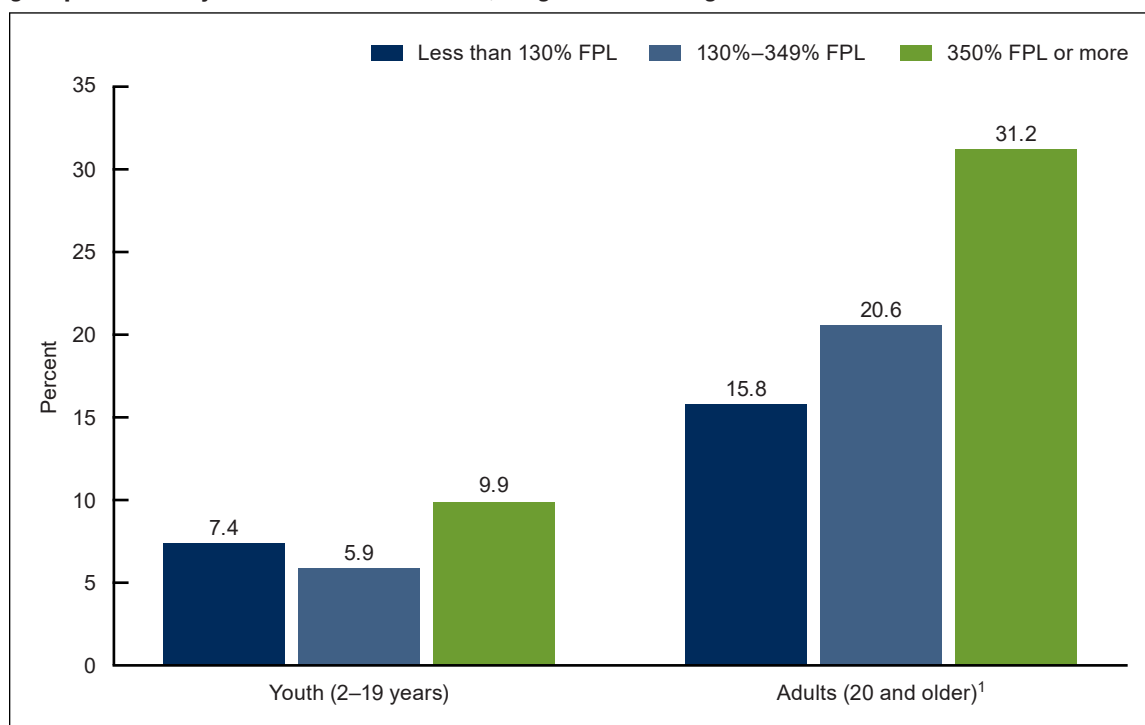
No difference was seen in seafood consumption between males and females among both youth and adults.

Did the percentages of youth and adults who consumed seafood at least twice per week differ by family income during August 2021–August 2023?

The observed differences in seafood consumption among youth by family income were not significant (Figure 2, Table 2).

The percentage of adults consuming seafood at least twice per week increased with increasing family income, from 15.8% among those with family income less than 130% of the federal poverty level (FPL) to 31.2% among those with family income of 350% FPL or more.

Figure 2. Percentage of youth and adults consuming seafood at least twice per week, by age group and family income: United States, August 2021–August 2023



¹Significant linear trend with family income.

NOTES: Seafood includes fish and shellfish. Income level is defined by federal poverty level (FPL); 11.6% of records are missing income information.

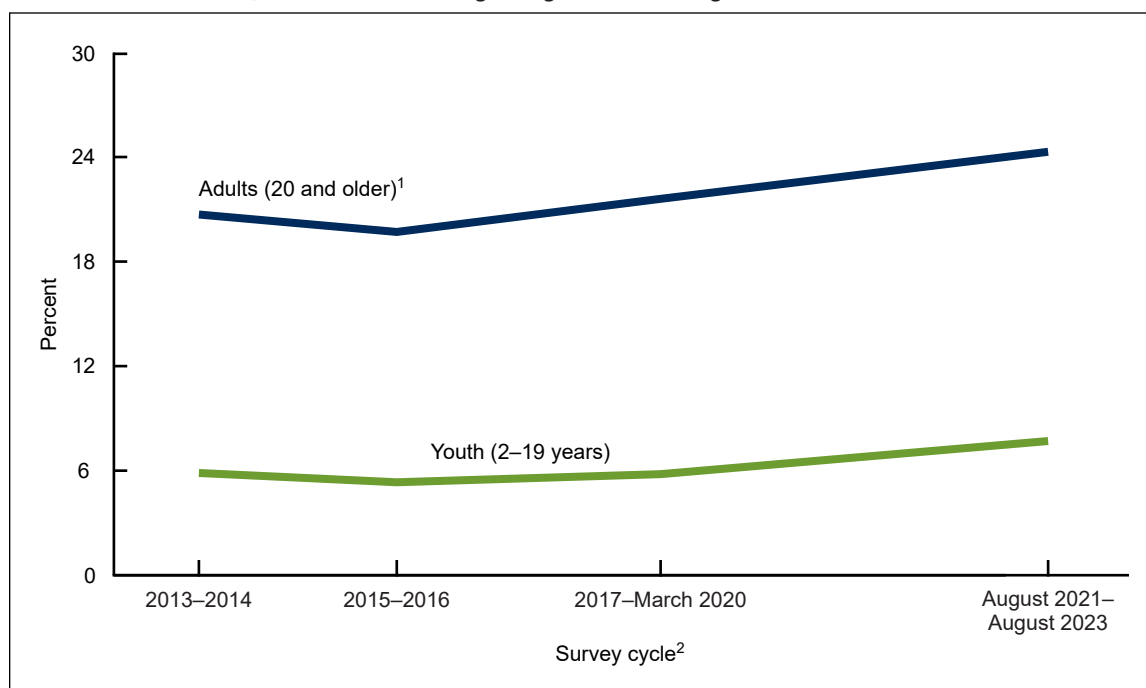
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

What were the trends in the percentage of youth and adults consuming seafood at least twice per week between 2013–2014 and August 2021–August 2023?

Among youth, the change in the percentage consuming seafood at least twice per week from 2013–2014 (5.8%) to August 2021–August 2023 (7.7%) was not significant (Figure 3, Table 3).

The percentage of adults consuming seafood at least twice per week increased from 20.7% during 2013–2014 to 24.3% during August 2021–August 2023.

Figure 3. Trends in the percentage of youth and adults consuming seafood at least twice per week: United States, 2013–2014 through August 2021–August 2023



¹Significant linear trend.

²Estimates from 2013–2014 through 2017–March 2020 were calculated using examination sample weights, while estimates from August 2021–August 2023 were calculated using Day 1 dietary sample weights.

NOTES: Seafood includes fish and shellfish. No significant nonlinear trends were seen for youth or adults.

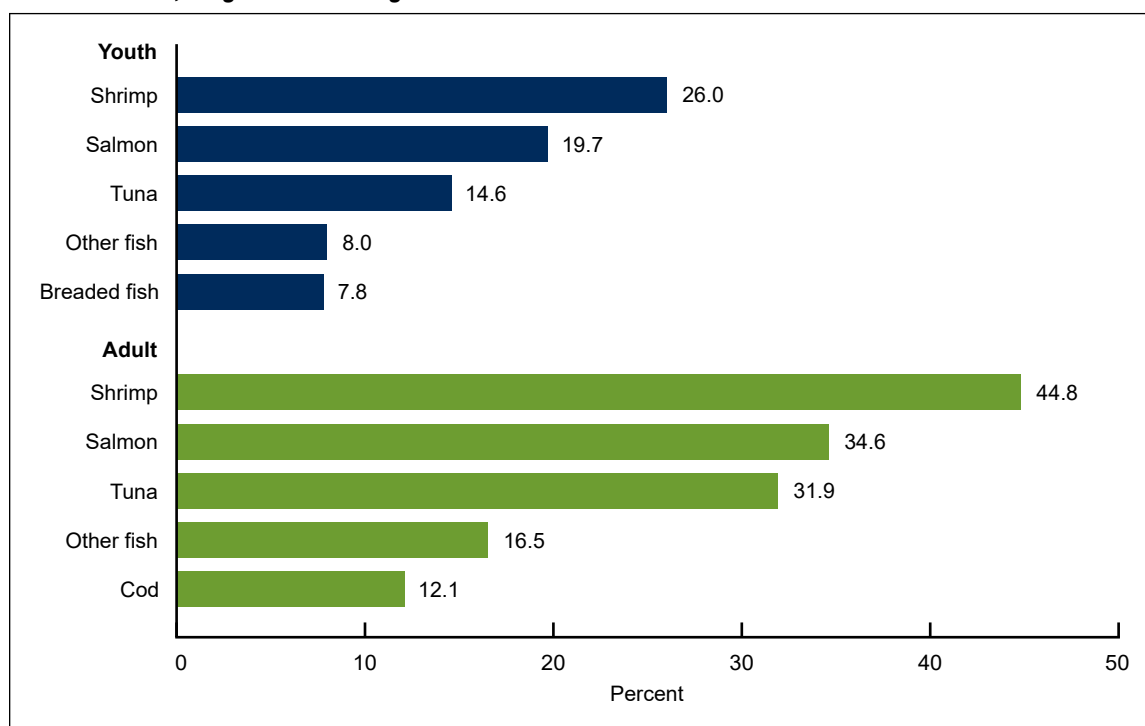
SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, 2013–2014 through August 2021–August 2023.

Which types of seafood were most commonly consumed in the past 30 days by youth and adults during August 2021–August 2023?

The top four most commonly consumed types of seafood were the same for both youth and adults (Figure 4, Table 4). More than one-quarter of youth (26.0%) and 44.8% of adults consumed shrimp. Salmon was the second most common seafood consumed by youth (19.7%) and adults (34.6%). Tuna was consumed by 14.6% of youth and 31.9% of adults. “Other fish” was consumed by 8.0% of youth and 16.5% of adults.

The fifth most common type of seafood differed between the two age groups: breaded fish among youth (7.8%) and cod among adults (12.1%).

Figure 4. Most common types of seafood consumed in the past 30 days, by age group: United States, August 2021–August 2023



NOTES: Seafood includes fish and shellfish. "Other fish" was defined as fish not including any shellfish, breaded fish, tuna, bass, catfish, cod, flatfish, haddock, mackerel, perch, pike, pollock, porgy, salmon, sardines, sea bass, shark, swordfish, trout, or walleye. Youth are ages 2–19 years, and adults are age 20 and older. SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Summary

During August 2021–August 2023, 7.7% of youth and 24.3% of adults consumed seafood at least twice per week, suggesting that most youth and adults do not meet recommended intake levels of seafood. Among youth, no differences were seen in consumption by sex or family income. Among adults, no difference was seen by sex in the percentage that consumed seafood at least twice per week, but seafood consumption increased with increasing family income.

The percentage of adults consuming seafood at least twice per week increased between 2013–2014 and August 2021–August 2023. No changes were found in the percentage of youth consuming seafood at least twice per week during the same time period.

Among both youth and adults, shrimp, salmon, tuna, and "other fish" were the most commonly consumed types of seafood. Nearly 45.0% of adults and 26.0% of youth reported consuming shrimp in the past 30 days.

Definitions

Seafood consumption: The frequency of fish and shellfish consumption over the past 30 days was collected during the survey's dietary interview. Participants were given a list of fish and shellfish and asked, "During the past 30 days, did you eat any types of fish (shellfish) listed on this card? Include any foods that had fish (shellfish) in them, such as sandwiches, soups, or salads." The types of fish listed included breaded fish, tuna, bass, catfish, cod, flatfish, haddock,

mackerel, perch, pike, pollock, porgy, salmon, sardines, sea bass, shark, swordfish, trout, walleye, other fish, and other unknown fish. The shellfish listed included clams, crab, crayfish, lobster, mussels, oysters, scallops, shrimp, other shellfish, and other unknown shellfish (2). “Other fish” was defined as fish not including those listed above and not including shellfish. “Other shellfish” was defined as shellfish not including those listed above and not including fish. To agree with the DGA’s general recommendation of 8 oz. equivalents, or two servings per week (1), this report identified people who reported consuming seafood eight or more times per month as consuming seafood at least twice a week.

Federal poverty level: Family income level was estimated using the U.S. Department of Health and Human Services’ poverty guidelines, which vary by family size and geographic location (3).

Data source and methods

NHANES is a cross-sectional survey conducted by the National Center for Health Statistics. It is designed to monitor the health and nutritional status of the civilian noninstitutionalized U.S. population and consists of home interviews followed by standardized health examinations conducted in mobile examination centers (MECs) (4). During August 2021–August 2023, seafood consumption data were collected over the phone using a nonquantitative, targeted food-frequency questionnaire (FFQ) that focused on fish and shellfish consumption during the previous 30 days. The frequency of each fish or shellfish consumed in the past 30 days was summed for each participant, and those who reported consuming seafood eight or more times in total were considered as consuming seafood at least twice per week. For youth younger than age 6 years, interviews were conducted with a proxy knowledgeable about their intake, while interviews with youth ages 6–11 were conducted with the youth participant and a proxy, and youth age 12 and older answered for themselves (2). In previous survey cycles through March 2020, the FFQ was administered in-person in a MEC. For the August 2021–August 2023 cycle conducted during the COVID-19 pandemic, the collection mode was changed to over the phone to limit the time participants spent in the MEC and reduce risk of exposure to SARS-CoV-2 (4). The FFQ did not collect information on portion sizes consumed; as a result, these data cannot be used to describe the amount of fish or shellfish consumed (2).

The NHANES sample is selected through a complex, multistage probability design. Examination weights were used for analyses of the 2013–2014 to 2017–March 2020 cycles to account for the differential probabilities of selection, nonresponse, and noncoverage. For the August 2021–August 2023 survey cycle, Day 1 dietary sample weights were used to account for additional nonresponse to the component due to the change in dietary data collection mode (4).

Taylor series linearization was used to compute variance estimates. Differences between groups were tested using a univariate *t* statistic. Tests for linear and quadratic trends by family income were evaluated using orthogonal polynomials. Linear and quadratic trends over time were tested using polynomial regression models, accounting for the unequal spacing and lengths of survey cycles. The significance level for statistical testing was set at *p* less than 0.05. All differences reported are statistically significant unless otherwise indicated.

Data management and statistical analyses were conducted using SAS version 9.4 (SAS Institute, Inc., Cary, N.C.), SUDAAN version 11.0 (RTI International, Research Triangle Park, N.C.), and R version 4.4.0, including the R survey package version 4.4–2 (5,6).

About the authors

Nicholas Ansai, Ana L. Terry, Bryan Stierman, and Namanjeet Ahluwalia are with the National Center for Health Statistics, Division of Health and Nutrition Examination Surveys.

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Figure tables

Data table for Figure 1. Percentage of youth and adults consuming seafood at least twice per week, by age group and sex: United States, August 2021–August 2023

Age group and sex	Sample size	Percent	Standard error
2–19 years	1,762	7.7	1.0
Female	892	8.0	1.3
Male	870	7.4	0.9
20 and older.	4,771	24.3	1.2
Female	2,671	24.9	1.4
Male	2,100	23.7	1.3

NOTE: Seafood includes fish and shellfish.

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Data table for Figure 2. Percentage of youth and adults consuming seafood at least twice per week, by age group and family income: United States, August 2021–August 2023

Age group and family income	Sample size	Percent	Standard error
2–19 years			
Less than 130% FPL	527	7.4	1.3
130%–349% FPL	594	5.9	1.4
350% FPL or more	434	9.9	1.7
20 and older ¹			
Less than 130% FPL	866	15.8	2.2
130%–349% FPL	1,589	20.6	1.5
350% FPL or more	1,768	31.2	1.9

¹Significant linear trend with family income.

NOTES: Seafood includes fish and shellfish. Income level is defined by federal poverty level (FPL); 11.6% are missing income information.

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

Data table for Figure 3. Trends in the percentage of youth and adults consuming seafood at least twice per week: United States, 2013–2014 through August 2021–August 2023

Age group and survey cycle	Sample size	Percent	Standard error
2–19 years			
2013–2014	3,007	5.8	0.6
2015–2016	2,885	5.4	0.7
2017–March 2020	4,087	5.8	0.6
August 2021–August 2023	1,762	7.7	1.0
20 and older ¹			
2013–2014	5,029	20.7	1.4
2015–2016	4,988	19.7	1.2
2017–March 2020	7,650	21.6	1.2
August 2021–August 2023	4,771	24.3	1.2

¹Significant linear trend.

NOTES: Seafood includes fish and shellfish. Estimates from 2013–2014 through 2017–March 2020 were calculated using examination sample weights, while estimates from August 2021–August 2023 were calculated using Day 1 dietary sample weights. No significant nonlinear trends were seen for youth or adults.

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, 2013–2014 through August 2021–August 2023.

Data table for Figure 4. Most common types of seafood consumed in the past 30 days, by age group: United States, August 2021–August 2023

Age group and type of seafood	Sample size	Percent	Standard error
2–19 years			
Shrimp	1,762	26.0	0.8
Salmon	1,762	19.7	1.3
Tuna	1,762	14.6	1.5
Other fish	1,762	8.0	0.8
Breaded fish	1,762	7.8	0.9
20 and older			
Shrimp	4,771	44.8	1.1
Salmon	4,771	34.6	1.8
Tuna	4,771	31.9	0.9
Other fish	4,771	16.5	1.1
Cod	4,771	12.1	0.8

NOTE: Seafood includes fish and shellfish.

SOURCE: National Center for Health Statistics, National Health and Nutrition Examination Survey, August 2021–August 2023.

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