

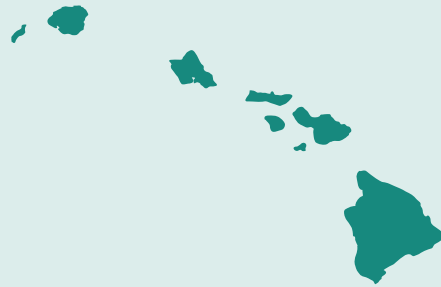


Food and Nutrition Service
U.S. DEPARTMENT OF AGRICULTURE

Statewide Thrifty Food Plan Cost Estimate for Hawaii

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Statewide Thrifty Food Plan Cost Estimate for Hawaii

Executive Summary

Background

The U.S. Department of Agriculture (USDA) reevaluated the Thrifty Food Plan (TFP) Market Basket and its associated cost in the 48 States and the District of Columbia (hereafter referred to as the "mainland United States") in August 2021.¹ Statute (7 U.S.C. § 2012(u)(2)) requires separate cost adjustments to the Thrifty Food Plan for Alaska and Hawaii to reflect the cost of food in those States. USDA published the Thrifty Food Plan Cost Estimates for Alaska and Hawaii in 2023 (hereafter referred to as the "2023 report"), which were based on food prices in Anchorage^a and Honolulu,

respectively, in alignment with current regulations in 7 CFR 273.10(e)(4).^{2 3} USDA included a proposed rule in its spring 2024 Regulatory Agenda that would change the price-of-food adjustment used to calculate the cost of the Thrifty Food Plan for Hawaii from an adjustment for the price of food in Honolulu to an adjustment for the price of food in the State of Hawaii. This report describes the process used to calculate a Thrifty Food Plan cost estimate for Hawaii that is based on food price data from throughout the State of Hawaii in alignment with the proposed rule.

Methods

USDA used the same methodology as previously implemented when calculating cost adjustments to the Thrifty Food Plan for Alaska and Hawaii. This methodology was peer-reviewed and published in 2023.^b The only difference is that this study updates the data sample to include food price data from throughout the State of Hawaii instead of data from Honolulu only.

USDA applied the previously developed bilateral, fixed-basket price index to compare the average cost of purchasing exact amounts of specific

products in the Thrifty Food Plan Market Basket for the reference family of four, defined in statute (7 U.S.C. § 2012(u)) as consisting of a man and a woman twenty through fifty, a child six through eight, and a child nine through eleven years of age, between the mainland United States and the State of Hawaii. This approach holds as many factors as possible constant while capturing only the difference in food prices. The price index can be applied as a price-of-food adjustment to the cost of the Thrifty Food Plan in the mainland United States to yield a Thrifty Food Plan cost estimate for Hawaii.

^a The 2023 report included a TFP cost estimate for Anchorage and did not include TFP cost estimates for urban, rural I, or rural II Alaska. Adjustments to the Anchorage TFP cost estimate to reflect the price of food in urban, rural I, and rural II Alaska were made separate from the 2023 report in alignment with 7 CFR 272.7(b). SNAP maximum allotments for urban, rural I, and rural II Alaska are available at: <https://www.fns.usda.gov/snap/allotment/cola>.

^b Available at: <https://www.fns.usda.gov/cnpp/tfp-akhi>.

The analysis is based on the same 2017 Circana store-based scanner data that was previously used to calculate the Honolulu-based index. The Hawaii State sample covers a slightly higher share of stores and of sales than does the Honolulu County sample that USDA used to calculate the Honolulu-based index for the 2023 report, supporting USDA's conclusion that these data are sufficiently representative of the State of Hawaii. USDA calculated inflation-adjusted average unit prices for over 12,000 products identified by Universal Product Codes (UPCs) from over 40,000

stores in the mainland United States and 97 stores in Hawaii, representing billions of transactions across the year. The average unit prices of the UPCs were compared across locations to calculate the price index. The index represents the average ratio of unit prices between Hawaii and the mainland United States weighted to reflect the contribution of each UPC to the Thrifty Food Plan Market Basket for the reference family of four. In addition, USDA conducted a sensitivity analysis to assess how the choice to use 2017 data rather than 2018 data impacted the results of the analysis.

Results

The food price index for Hawaii that includes food prices from throughout the State is 1.5595. In other words, the prices of foods and beverages in the Thrifty Food Plan Market Basket for the reference family of four were, on average, 55.95 percent higher in the State of Hawaii than in the mainland United States in June 2022. In comparison, the food price index for Honolulu published in the 2023 report was 1.5240. In June 2022, the monthly cost

of the Thrifty Food Plan in the mainland United States for the reference family of four was \$939.90. By applying the price index as a price-of-food adjustment, USDA calculated a Thrifty Food Plan cost estimate of \$1,465.80 for the State of Hawaii, compared to \$1,432.40 when calculated using the Honolulu-based index, a difference of \$33.40 (2.3 percent) between the two estimates.

Discussion

USDA is committed to scientific integrity, quality assurance, and transparency. This report was developed in alignment with best practices in project management and quality assurance, including the identification of a project lead and establishment of project planning documents. The project team implemented internal controls related to data processing, including standards and procedures for code review. All analyses described in this report were subject to a robust quality assurance process. The methodology applied in this report was previously peer-reviewed by experts at USDA as well as

six researchers outside of the Federal Government with demonstrated knowledge and expertise in price indexes, scanner data, and the Thrifty Food Plan. This report integrates additional input provided by experts at the USDA, Food and Nutrition Service's (FNS) Office of Policy Support (OPS); the USDA, Economic Research Service (ERS); and the USDA, Office of the Chief Economist (OCE).

The price index calculated using Circana retail scanner data reflects the best currently available measure of the difference in the price of foods and

beverages in the Thrifty Food Plan Market Basket for the reference family of four between Hawaii and the mainland United States. Considerations and limitations associated with the data and methodology were described in the 2023 report in detail and apply to this analysis as well. Specifically, there are three key considerations and limitations: (1) the nonrandom sample of primarily larger stores in the Circana retail scanner

data acquired by USDA; (2) USDA's use of UPCs as the unit of analysis, which may draw distinctions between products that have no meaningful differences in product attributes; and (3) the statutory and regulatory framework, which precluded USDA from incorporating geographic differences in consumption patterns and food environments as well as consumers' substitution behaviors in response to differences in price levels.

Conclusion

This report describes the calculation of a Thrifty Food Plan cost estimate for Hawaii to align with the proposed change to regulations at 7 CFR 273.10(e)(4). USDA applied the same bilateral, fixed-basket price index that was developed and peer-reviewed in a previous 2023 publication using food prices from 2017 Circana retail scanner data in the mainland United States and the State of

Hawaii. The price index indicated that the June 2022 cost of the Thrifty Food Plan was 55.95 percent higher in Hawaii than in the mainland United States when considering prices from throughout the State, resulting in a Thrifty Food Plan cost estimate approximately 2.3 percent higher than the estimate based on food prices from Honolulu alone.



Statewide Thrifty Food Plan Cost Estimate for Hawaii

Introduction

Background

The Thrifty Food Plan (TFP) represents a nutritious, practical, cost-effective diet, and its cost forms the basis for Supplemental Nutrition Assistance Program (SNAP) benefit levels. The maximum monthly SNAP allotment for each Federal fiscal year beginning October 1 is determined by the cost of the Thrifty Food Plan for the reference family of four, defined in statute as consisting of a man and a woman twenty through fifty, a child six through eight, and a child nine through eleven years of age, in the preceding June (7 U.S.C. § 2012(u)). SNAP allotments for households of different sizes are calculated proportional to the allotments for the reference family of four with economies-of-scale adjustments. Statute (7 U.S.C. § 2012(u)(2)) calls for cost adjustments to the Thrifty Food Plan to reflect the price of food in Alaska and Hawaii, and current regulation (7 CFR 273.10(e)(4)(i)) further specifies that the cost adjustment for Hawaii reflect the price of food in Honolulu.^c

Beginning in the early 1970s, Thrifty Food Plan costs for Hawaii were calculated as the cost of the Thrifty Food Plan in the mainland United States adjusted for the price of food in Honolulu.⁴ Historical documentation suggests that Honolulu was used as the basis for the original cost adjustments because it was the only location in Hawaii where the Bureau of Labor Statistics (BLS) routinely collected food price information. USDA subsequently used BLS

food price information collected for the Consumer Price Index (CPI) as the basis for the Thrifty Food Plan cost for Hawaii through 1977.⁵

In 1978, BLS made major changes in the methods for collecting food price data in the United States, thereby hindering the construction of cost adjustments for Honolulu using BLS data.⁶ With the need for an alternate data source, USDA incorporated data collected in Hawaii from the 1977–1978 Nationwide Food Consumption Survey (NFCS) into a reevaluation of the Thrifty Food Plan in the early 1980s.⁷ The NFCS-based Hawaii Thrifty Food Plan cost for Hawaii was subsequently updated for inflation using the semiannual CPIs for Urban Hawaii through June 2021.

As directed by Congress in the Agricultural Improvement Act of 2018,⁸ USDA published an evidence-driven reevaluation of the Thrifty Food Plan to reflect current food prices, food composition data, consumption patterns, and dietary guidance.¹ The reevaluation, published in August 2021, defined the content of the Thrifty Food Plan Market Baskets for 15 age-sex groups, as well as their costs in the contiguous 48 States and the District of Columbia (hereafter referred to as the "mainland United States"). After accounting for inflation, the reevaluation led to an increase in the Thrifty Food Plan cost of 21.03 percent for the

^c 7 CFR 273.10(e)(4)(i) also specifies that the Thrifty Food Plans for urban, rural I, and rural II parts of Alaska shall be the Thrifty Food Plan for the 48 States and the District of Columbia adjusted by the price of food in Anchorage and further adjusted for urban, rural I, and rural II Alaska as defined in § 272.7(b). Thrifty Food Plan costs for Alaska are outside the scope of this report.

mainland United States. The same 21.03-percent increase was temporarily extended to Alaska and Hawaii in FY2022 and FY2023 until updated analyses for those States could be completed. Inclusive of the temporary adjustment, the Thrifty Food Plan cost for Hawaii in June 2022 was \$1,794.60. Had the temporary adjustment not been applied, the Thrifty Food Plan cost for Hawaii in June 2022 would have been \$1,482.80.

In 2023, USDA published the Thrifty Food Plan Cost Estimates for Alaska and Hawaii report (hereafter referred to as "the 2023 report"), which detailed the identification of a more current food

price data source and the development and application of a price index to these data in alignment with the statutory and regulatory framework. Specifically, the price index is a bilateral, fixed-basket index using price data at the individual product level, identified by Universal Product Codes (UPCs)^d to align with the statutory and regulatory framework, which calls for comparisons between Hawaii (Honolulu) and the mainland United States, reflecting only the price of food. Both the current and the proposed statutory and regulatory framework preclude USDA from developing and implementing a Thrifty Food Plan Market Basket based on State-specific consumption data for Hawaii.

Key Terms:

Cost adjustment or **price-of-food adjustment**: Refers to the legal requirement that USDA account for higher food prices in Alaska and Hawaii in calculating the cost of the Thrifty Food Plan in these States. These terms are used interchangeably in this context.

Price index: A multiplier derived using a method that calculates a weighted average of price differences of individual food and beverage products between two locations. USDA uses the price index as a cost/price-of-food adjustment.

Thrifty Food Plan Cost Estimate: Scientific information that describes the cost of a healthy, practical, cost-effective diet using a particular methodology. Thrifty Food Plan cost estimates may be published but their publication does not imply implementation by USDA programs, such as SNAP.

Thrifty Food Plan cost or **cost of the Thrifty Food Plan**: A subset of Thrifty Food Plan cost estimates that are formally implemented by USDA and inform maximum SNAP allotments. Official Thrifty Food Plan costs are published each month at: <https://www.fns.usda.gov/cnpp/usda-food-plans-cost-food-monthly-reports>.

^d UPCs are 12-digit codes that uniquely identify specific products and typically appear on products as barcodes.

The analysis used 2017 retail scanner data from Circana (formerly Information Resources Inc. or IRI) from over 40,000 stores in the mainland United States and 32 stores in Honolulu, including sales at these stores for over 11,000 unique UPCs to calculate a Thrifty Food Plan cost estimate that aligned with current regulations (7 CFR 273.10(e) (4)). The 2023 report estimated an updated June 2022 Thrifty Food Plan cost for Hawaii based on Honolulu food prices of \$1,432.40, which was about 20 percent lower than the official June 2022 Thrifty Food Plan cost for Hawaii (\$1,794.60) and about 3 percent lower than the legacy Thrifty Food Plan cost for Hawaii (\$1,482.80).^e USDA is currently transitioning to using the updated Thrifty Food Plan cost estimate for Hawaii published in the 2023 report as the basis of the maximum SNAP allotment in Hawaii.

Following the publication of the 2023 report, there was interest in how the use of only Honolulu-based food price data impacted analyses supporting the Thrifty Food Plan cost estimate for Hawaii. Shortly after the publication of the 2023 report, USDA began exploring the availability of food price data in Hawaii outside of Honolulu that might support the development of new Thrifty Food Plan costs in the future, should the statutory and regulatory framework change. As part of this work, USDA posted a

Request for Information (RFI) in the Federal Register requesting comments from the public—including the food industry and research community—to help inform future policy and decisions about potentially updating Thrifty Food Plan cost estimates for the State of Hawaii.⁹ Concurrent with its publication, USDA conducted extensive outreach in Hawaii to spread awareness of and encourage responses to the RFI, which included notifying national and local organizations, universities, Federal agencies, and every SNAP-approved retailer in the State for which USDA had a valid email address (approximately 510 retailers). The RFI comment period closed in March 2024 with USDA receiving a total of 12 comments from 11 respondents. The comments consistently stated that food prices are higher in the Neighbor Islands than in Honolulu, and that, as a result, a Thrifty Food Plan cost for the State of Hawaii based on data from Honolulu alone underestimates the true cost of a healthy, practical, cost-effective diet in the State.

USDA included a proposed rule in its spring 2024 Regulatory Agenda that would update the price-of-food adjustment used to calculate the cost of the Thrifty Food Plan for Hawaii in 7 CFR 273.10(e)(4) from an adjustment for the price of food in Honolulu to an adjustment for the price of food in the State of Hawaii.

^e The official June 2022 Thrifty Food Plan cost included the 21.03 percent temporary adjustment to reflect the 2021 Thrifty Food Plan reevaluation. The legacy June 2022 Thrifty Food Plan cost did not include the 21.03 percent temporary adjustment to reflect the 2021 Thrifty Food Plan reevaluation.

Objectives and Scope

This report is intended to accompany the proposed rule and to provide details on the data and methodology used to calculate a Thrifty Food Plan cost estimate for the State of Hawaii using data from throughout the State rather than from Honolulu alone. The publication of this report informs lawmakers, policy officials, researchers, and the public about the effect of the proposed rule on the Thrifty Food Plan cost for Hawaii.^f This report and the accompanying online supplement also support researchers in reproducing USDA's analysis. This report addresses the same topics as the 2023 report but is streamlined by referencing components of the previously published report rather than reiterating the same information in detail.

The primary research question of this analysis is: **What is the June 2022 cost estimate of the Thrifty Food Plan, 2021 Market Basket in the State of Hawaii?** Two secondary research questions that will be addressed in support of the primary research question are: **Are the Circana retail scanner data representative of the State of Hawaii,** and **how did methodological decisions impact the results?**

The analysis described in this report applies the same data sources and methodology used in the 2023 report but aligns with the proposed regulatory framework that requires the Thrifty Food Plan cost for Hawaii to be calculated based on the price of food in the State of Hawaii rather than the price of food in Honolulu. This report's scope does not include the consideration of potential changes to the previously established price index methodology. By maintaining the same peer-reviewed methodology as the 2023 report, the results presented in this report provide insight into the effect of the proposed rule without confounding due to changes in underlying data and/or methodology. This report also documents a sensitivity analysis related to a methodological decision specific to this application of the previously established methodology. Other potential changes to the statutory and regulatory framework for Hawaii's Thrifty Food Plan cost (e.g., the implementation of separate urban and rural Thrifty Food Plan costs akin to those in place for Alaska) and other information about food price variation within the State of Hawaii (e.g., price index calculations for the Neighbor Islands separate from Honolulu) are not addressed in this report, which is intended to directly accompany the proposed rule that would base Hawaii's Thrifty Food Plan cost on statewide food price data.

^f The proposed rule was designated as not significant, indicating that a Regulatory Impact Analysis (RIA), the typical medium through which USDA would disseminate information about the effects of a proposed rule, is not required. Although this report is published in parallel with the publication of the proposed rule, the report is not intended to be a RIA; it is a scientific activity that is separate from rulemaking activities and is subject to FNS Clearance Procedures for the Release of Scientific Information.

Project Management and Quality Assurance

USDA is committed to scientific integrity, quality assurance, and transparency. This report was developed by a team of economists at the USDA Food and Nutrition Service (FNS), Center for Nutrition Policy and Promotion (CNPP). In developing this report, CNPP identified a project lead and established project planning documents in alignment with the Standard Operating Procedure for Project Management for CNPP Products. Project planning included the creation of a Data Management Plan in alignment with Departmental Regulation (DR) 1020-006: Public Access to Scholarly Publications and Digital Scientific Research Data.¹⁰ In alignment with the DR, digital scientific research data assets will be made available on Ag Data Commons, the publicly available USDA scientific data catalog system, within 1 year of the publication of this report that will support researchers in reproducing USDA's analysis.

As part of this project, CNPP established and executed a quality assurance plan that described the internal controls related to data processing, including standards and procedures for code review, as well as how responsibilities related to the development and review of analytic materials would be divided among project team members to reduce the risk of error and so that no one individual would be responsible for all key aspects of the analysis. Specifically, the calculation of the price index was performed independently by two economists at CNPP using two different statistical computing packages (SAS and R).^{11,12} Data management and analysis results were compared at each step. The economists worked collaboratively to identify and

resolve any inconsistencies that emerged and confirmed that their final analyses yielded consistent results. In addition, all R code used to calculate results presented in this report was reviewed by a third economist at CNPP who was not involved in the development of the code. Code review included checks for program logic and output consistency, accuracy of calculations and formulas, handling of missing values, redaction of sensitive output (if applicable), errors and warning messages, logic errors, data modification, and appropriate implementation of methods. The completion of code review was documented in a checklist, which was reviewed for completeness and approved by the Nutrition and Economic Analysis Branch Chief.

The methodology applied in this report was previously peer-reviewed by experts at the USDA FNS, ERS, and Office of the Chief Economist (OCE) and by six researchers outside of the Federal Government with demonstrated knowledge and expertise in price indexes, scanner data, and the Thrifty Food Plan. A summary of the external peer reviewers' comments and USDA's responses were published alongside the 2023 report.¹³ Because this report used the same peer-reviewed methodology that was used in the 2023 report, the FNS Agency Scientific Integrity Officer determined that formal peer review for this report was not required and documented this decision internally in alignment with the FNS Clearance Procedures for the Release of Scientific Information.¹⁴ This report integrates additional input provided by experts at OPS, ERS, and OCE.

Methodology

In the 2023 report, USDA developed and published a peer-reviewed methodology for calculating Thrifty Food Plan costs outside the mainland United States. To accompany the proposed rule, USDA has applied this previously established methodology to food price data from the State of Hawaii rather than from Honolulu alone. The following sections summarize the previously established methodology and describe how USDA applied it in this context.

USDA previously developed a bilateral, fixed-basket price index to calculate Thrifty Food Plan cost estimates for Alaska and Hawaii. Current regulations state that the Thrifty Food Plan for Hawaii shall be based on the price of food in Honolulu but do not specify whether this refers to municipal or county boundaries. For the 2023 report, USDA opted to base the price index on data from the County of Honolulu. For this report, the price index for the State of Hawaii is based on food price data from stores located anywhere within the State of Hawaii in alignment with the proposed rule.

The Thrifty Food Plan, 2021 is based on UPCs in the Circana store-based scanner data for the years 2015 and 2016 linked to Ensemble Codes (ECs), which are food codes from the USDA nutrient

databases (i.e., the 2015–2016 Food and Nutrient Database for Dietary Studies (FNDDS) and the National Nutrient Database for Standard Reference (SR Legacy)), using the 2015–2016 Purchase to Plate Crosswalk (PPC).^{1 15 16 9} The methodology established in the 2023 report uses UPCs as the unit of analysis for the price index. USDA applied this same methodology to calculate the price index for the State of Hawaii. USDA identified UPCs that make up the foods and beverages underlying the Thrifty Food Plan Market Basket for the reference family of four and are available both in Hawaii and the mainland United States. USDA then calculated the cost share of each of these available UPCs in the index. Average unit prices for these UPCs were calculated using a subset of stores in the 2017 Circana data. These cost shares and the average unit prices are used to calculate the price index, which forms the basis of the price-of-food adjustment.

The Thrifty Food Plan Market Basket for the reference family of four comprises 96,642 unique UPCs, with 12,298 of these UPCs being available in both the mainland United States and the State of Hawaii data. These 12,298 UPCs in Hawaii represent foods and beverages comprising 97.6 percent of the cost of the Thrifty Food Plan Market Basket for the reference family of four.

⁹ USDA, Economic Research Service (ERS) publications related to the PPC use several terms to collectively describe food codes from the USDA nutrient databases, including “EC-8” for food codes from FNDDS, “EC-4/5” for food codes from SR Legacy, or “food codes” more generally. This report uses the term Ensemble Code (EC).

Food Price Data

In the 2023 report, USDA explored available food price data sources and compared the suitability of these data sources for calculating price-of-food adjustment factors for Alaska and Hawaii. Based on that comparison, USDA determined that the 2017 Circana retail scanner data was the best currently available data for this purpose.

The Circana data acquired by USDA provide weekly sales collected through instore scanners and include all food items sold by a set of over 50,000 affiliated grocery stores, mass merchandisers, club stores, convenience stores, drug stores, dollar stores, liquor stores, and Department of Defense (DoD) commissaries in urban, suburban, and rural communities across the United States.¹⁷ The Thrifty Food Plan Market Basket established in 2021 is based on the 2015–16 PPC, which links UPCs available in the 2015–16 retail scanner data to the 2015–16 USDA nutrient databases. Because food codes are added and removed with each update to FNDDS, using versions of the PPC other than 2015–16 for analyses of the 2021 Thrifty Food Plan Market Basket would leave certain foods and beverages in the 2021 Thrifty Food Plan Market Basket without links to either food composition or retail scanner data. For this reason, analyses of the Thrifty Food Plan, 2021 are conducted using the 2015–16 PPC.^h Circana also implemented major changes to the product dictionary in 2019, making the 2015–16 PPC largely incompatible with data after 2018.¹⁶ In the 2023 report, USDA used 2017 food price data as the basis for the price index.

The main reason for this was that only in 2017 did the data include enough geographic detail to identify a sufficient sample size in Honolulu. Specifically, some retailers allow USDA to access sales data at the store level, while others release data at the retailer marketing area (RMA) level. The geographic boundaries for RMAs are defined by the retailers and may cross State and/or county borders.¹⁸ All Hawaii grocery store data in 2015, 2016, and 2018 were released to USDA as RMAs that included store locations outside of Honolulu while the 2017 data was released at the store-level, making it possible to attribute sales to store locations in Honolulu. Because the analysis described in this report uses data from throughout the State of Hawaii, attributing sales to specific store locations is not a concern, as long as all data can be attributed to store locations in the State of Hawaii. USDA examined both the 2017 and 2018 retail scanner data for their suitability as the basis of the price index.ⁱ USDA determined that the 2017 data remained the best choice for this analysis for two reasons: (1) for consistency and comparability with the Thrifty Food Plan cost estimate for Hawaii published in 2023 (i.e., comparing the results of this analysis to the Honolulu-based results from the 2023 report would be directly reflective of the effect of the proposed rule and would not be confounded by a change in underlying data or methodology), and (2) because there are fewer matches when applying the 2015–16 PPC to the 2018 data, reducing the number of UPCs in the analysis from 12,298 to 11,056. To examine the effects of this methodological choice, USDA conducted the analysis using data from 2018 as a sensitivity analysis (see [Sensitivity Analysis](#)).

^h Although a newer version of the PPC is now available that links data from 2017–18, the 2021 Thrifty Food Plan Market Basket is best defined using the same 2015–16 PPC that supported the 2021 Thrifty Food Plan reevaluation.

ⁱ Although sales data from 2015 and 2016 could be used to calculate the price index for the State of Hawaii, USDA did not consider using these data to calculate a Thrifty Food Plan cost estimate for the State of Hawaii because they are less current than the 2017 data used in the 2023 report.

Inclusion Criteria

USDA used the same inclusion criteria for the stores included in the analysis that were developed in the 2023 report. The inclusion criteria are: (1) only including stores in the mainland United States for which store weights are available, (2) alignment with geographic boundaries (i.e., all store locations within an RMA being located in either Hawaii or the mainland United States), and (3) including only store types

for which data are available in both Hawaii and the mainland United States. As in the 2023 report, USDA applied store weights to stores located in the mainland United States to make the data more nationally representative but did not apply these weights when calculating average prices for Hawaii because the weights are not appropriate for these smaller geographic areas.^{j 19}

Analytic Sample

After applying the inclusion criteria outlined above, this analysis included over 40,000 stores in the mainland United States and 97 stores in Hawaii (**Table 1**) with millions of transactions in each location representing sales across the year (**Table 2**). Applying the inclusion criterion to only include stores in the mainland United States for which store weights are available resulted in the exclusion of 2,008 stores: 133 convenience stores, 497 DoD commissaries, 574 dollar stores, 5 drug stores, 9 grocery stores, 789 liquor stores, and 1 mass merchandiser. Applying the inclusion criterion

to align with geographic boundaries resulted in the exclusion of six mass merchandisers in Hawaii. Applying the inclusion criterion to use consistent store types in the mainland United States and Hawaii, 26 DoD commissaries in Hawaii were excluded since store weights are not available for DoD commissaries.¹⁹ Additionally, 15,484 convenience stores were excluded from the mainland United States since no convenience stores were available in the Hawaii data. The final analytic sample of 97 stores in Hawaii included stores in Honolulu, Kauai, Maui, and Hawaii counties.

^j The 2023 report included extensive sensitivity analyses of the methodology, including analyses of the extent to which the application of weights (both in calculating average unit prices in the mainland United States and as an inclusion criterion) affected the results. The sensitivity analyses showed that the application of the store weights does not have a large impact on the resulting adjustment factors.

Table 1. Number of Stores Present in 2017 IRI InfoScan and Included in the Analysis by Store Type and Location

Store Type ^a	Mainland United States	Hawaii	Honolulu ^b
Number of Stores Present in 2017 Circana Data ^c			
Grocery	12,331	22	14
Mass Merchandiser	7,501	17	10
Drug	20,112	66	45
Club	860	2	2
Convenience	15,617	0	0
DoD Commissary	497	26	25
Dollar	574	0	0
Liquor	789	0	0
Total	58,281	133	96
Number of Stores Included in Analysis ^d			
Grocery	12,322	22	14
Mass Merchandiser	7,500	7	4
Drug	20,107	66	12
Club	860	2	2
Convenience	0	0	0
DoD Commissary	0	0	0
Dollar	0	0	0
Liquor	0	0	0
Total	40,789	97	32

Notes:

^a Store types based on retail channel definitions in Circana retail scanner data.

^b Provided for comparison to the previously published report that used retail scanner data from the County of Honolulu, exclusively. This report does not include additional analyses below the State-level. The difference between the number of stores in Hawaii and Honolulu reflects stores in the Neighbor Islands and stores in Honolulu that report sales at the State-level.

^c Includes all stores identified in the 2017 Circana data, including those without store weights and with sales that cannot be attributed to Hawaii because of reporting at the RMA level.

^d Includes stores in the 2017 Circana data that met the 3 inclusion criteria: Circana store weights, alignment with geographic definitions, and consistent store types.

The Circana retail scanner data is released to USDA as total sales value and units sold in weekly intervals for each UPC sold by participating retailers. Sales for each UPC and store (or RMA) are released to USDA not as individual transactions, but instead as weekly totals reported by each retailer. It is therefore not possible to identify how many individual transactions are represented in the data. For example, a retailer might report selling 100 units of a UPC over the course of a particular week at a particular store, but they do not report how many separate transactions contributed to those 100 sales (e.g., a single transaction for 100 units would be indistinguishable from

100 transactions for 1 unit each). To estimate the lower bound of the number of transactions, USDA calculated the number of total observations as number of UPCs sold in each week of sales data for each store (or RMA), by store type and location ("UPC-week-store" count), essentially assuming that each week's sales at each store (or RMA) were the result of just one transaction.^k The total UPC-week-store count underlying the index calculation was over 1.3 billion, including 6.2 million in Hawaii (Table 2). Because each observation may include several individual transactions, the number of individual transactions captured may be orders of magnitudes higher.

Table 2. Number of UPC-Week-Store Observations of Sales Included in the Analysis by Store Type and Location in Thousands

Store Type	Mainland United States	Hawaii	Honolulu ^a
Grocery	973,341	4,935	3,023
Mass Merchandiser	221,188	934	481
Drug	132,033	348	217
Club	2,535	29	29
Total^b	1,329,096	6,246	3,750

Notes:

^a Provided for comparison to the previously published report that used retail scanner data from Honolulu, exclusively. This report does not include additional analyses below the State-level. The difference between the number of observations in Hawaii and Honolulu reflects observations at stores in the Neighbor Islands and stores in Honolulu that report sales at the State-level.

^b Number of UPC-week-store observations by store type may not add up to total due to rounding.

^k Sales from some retailers that are provided to USDA at the RMA level are only counted as one observation even though the underlying sales occurred at multiple stores.

The USDA, ERS has previously reported the need for users of the retail scanner data to carefully evaluate whether its coverage of the number of stores and volume of sales is sufficiently representative of the universe for their particular research project.¹⁸ To assess the representativeness of the analytic sample, USDA calculated coverage rates of stores and sales in the State of Hawaii using the same approach as applied in the 2023 report, which was based on the methodology used by ERS in a 2018 Technical Bulletin that examined the geographical coverage of the retail scanner data. In this methodology, coverage is assessed at the same geographic level that corresponds to the relevant analysis.¹⁸ For this report, since a State-level price index is calculated, coverage rates are assessed for their representativeness at the State-level, as discussed below.

Consistent with the 2023 report, USDA compared the number of stores in the 2017 Circana retail scanner data that were included in the analysis in the mainland United States and in Hawaii to the number of stores in these locations in the 2017 County Business Patterns (CBP), an annual series published by the U.S. Census Bureau that provides subnational economic data by industry.²⁰ The CBP includes information on the number of stores by county organized by North American Industry Classification System (NAICS) codes. For these comparisons, USDA used information on the NAICS codes for supermarkets and other grocery (except convenience) stores (NAICS 445110), pharmacies and drug stores (NAICS 446110), and general merchandise stores (NAICS 452). Because NAICS codes do not align perfectly with the store type classification in the Circana data, coverage is assessed overall rather than broken down by store type.¹⁸ USDA found the stores in the Circana data covered 12 percent of the stores in Hawaii, compared to 10 percent of the stores in Honolulu. As published in the 2023 report, the data covered 25 percent of the stores in the mainland United States.

Consistent with the 2023 report, USDA also compared the value of food sales at the stores included in this analysis in the mainland United States and in Hawaii to the total value of all sales in the 2017 Economic Census, the official 5-year measure of American business published by the U.S. Census Bureau.²¹ The Economic Census includes information on the total value of all sales by county organized by NAICS codes. For these comparisons, USDA used information on the NAICS codes for supermarkets and other grocery (except convenience) stores (NAICS 445110), pharmacies and drug stores (NAICS 446110), and general merchandise stores (NAICS 452). As previously stated, because NAICS codes do not align perfectly with the store type classification in the Circana data, coverage is assessed overall rather than broken down by store type.¹⁸ Food sales at the stores included in this analysis covered 12 percent of total sales in Hawaii. As published in the 2023 report, food sales covered 9 percent of total sales in Honolulu and 27 percent of total sales in the mainland United States.

Both the share of stores and share of sales covered are higher in the Hawaii State sample than in the Honolulu County sample that was used to calculate the Honolulu-based index in the 2023 report. There is no standard benchmark for classifying subnational coverage rates as insufficient, and therefore, any consideration of the sufficiency of the sample size is necessarily subjective. Given that the coverage of stores and sales in the Hawaii sample is higher than in the Honolulu sample, and USDA deemed the Honolulu sample sufficient in the 2023 report, USDA also considers the Hawaii sample to be sufficient. USDA recognizes that even higher levels of coverage or similar levels of coverage drawn from a random sample of retailers could improve the accuracy of future analysis; however, such data are currently unavailable.

Calculating Average Unit Prices and Price-of-Food Adjustment

USDA used the same methodology described in the 2023 report to calculate average unit prices and the price-of-food adjustment. To account for potential regional differences in inflation since 2017, USDA adjusted average unit prices calculated for 2017 to reflect June 2022 price levels using region-specific major food-at-home category index values from the CPI for All Urban Consumers (CPI-U) (see [Appendix B, Table B.1](#)). Average unit prices in the mainland United States and Hawaii were adjusted using CPI-U for the national average and Urban Hawaii, respectively. June 2022 price levels were used as the basis

for this analysis because the Thrifty Food Plan for each fiscal year is based on the cost of the Thrifty Food Plan in the preceding June and for consistency and comparability with the 2023 report, which reported on June 2022 Thrifty Food Plan cost estimates. USDA's approach for calculating average unit prices while controlling for the relative importance of store types and incorporating Circana store weights is described in detail in the 2023 report. [Appendix B](#) includes technical information on the calculation of the average unit prices and the price index.

Results

The updated food price index for Hawaii is 1.5595 ([Table 3](#)). In other words, the prices of foods and beverages in the Thrifty Food Plan Market Basket for the reference family of four were, on average, 55.95 percent higher in the State of Hawaii than in the mainland United States in June 2022. Applying the price-of-food adjustment results in a June 2022 Thrifty Food Plan cost estimate of \$1,465.80 for the State of Hawaii.

The value of the price index varied by Thrifty Food Plan Market Basket Category ([Table 3](#)). The value of the index for Hawaii ranged from 1.225 (22.5 percent higher than in the mainland United States) for meats to 2.116 (111.6 percent higher than in the mainland United States) for other vegetables.

Table 3. Thrifty Food Plan Cost Shares and Hawaii State Price Index Values Relative to the Mainland United States for the Thrifty Food Plan Market Basket and by Market Basket Category

Thrifty Food Plan Market Basket Category	Thrifty Food Plan Cost Share ^a (%)	Hawaii State Price Index Value Relative to Mainland United States ^b	Honolulu Price Index Value Relative to Mainland United States ^c
Overall^d	100	1.5595	1.5240
Vegetables			
Dark-Green Vegetables	3.05	1.689	1.624
Red and Orange Vegetables	6.55	1.916	1.856
Beans, Peas, Lentils	2.81	1.605	1.614
Starchy Vegetables	6.59	1.581	1.571
Other Vegetables	4.91	2.116	2.087
Fruits			
Whole Fruit	10.10	1.795	1.766
100% Fruit Juice	3.85	1.418	1.413
Grains			
Whole-Grain Staple Grains	8.39	1.517	1.446
Whole-Grain Cereals	1.73	1.343	1.314
Refined-Grain Staple Grains	4.62	1.790	1.741
Refined-Grain Other	1.17	1.448	1.442
Dairy			
Low- and Non-Fat Milk, Yogurt, Soy Alternatives	7.75	1.556	1.514
Higher Fat Milk, Yogurt, Soy Alternatives	5.33	1.674	1.426
Cheese	1.41	1.292	1.267
Protein Foods			
Meats	4.65	1.225	1.236
Poultry	8.98	1.257	1.264
Eggs	1.73	1.791	1.777
Seafood	6.64	1.251	1.257
Nuts, Seeds, Soy Products	2.62	1.328	1.318
Miscellaneous			
Preprepared Entrees and Side Dishes	1.92	1.362	1.365
Coffee and Tea	1.15	1.354	1.352
Table Fats and Oils	2.13	1.368	1.378
Sauces, Condiments, Jams, Honey, Sugars, Spices	1.21	1.385	1.378
Other Foods and Beverages	0.72	1.243	1.234

^a Percentages may not add to 100 due to rounding.

^b Index values are rounded to 3 decimals.

^c Honolulu-based price indexes were published in the 2023 report and are provided here for comparison.

^d The price index for the Thrifty Food Plan Market Basket can be calculated from the category-level index values using equation 1 (see [Appendix B](#)). Data and code to calculate index results at lower levels of aggregation are available in the online supplement.

Comparisons to Official Thrifty Food Plan Cost, Legacy Thrifty Food Plan Cost, and Alternative Thrifty Food Plan Cost Estimates

USDA compared the June 2022 Thrifty Food Plan cost estimate for Hawaii that is based on prices from throughout the State calculated in this report to (1) the June 2022 Thrifty Food Plan cost estimate for Hawaii published in the 2023 report that is based on prices from Honolulu only, (2) the official June 2022 Thrifty Food Plan cost that includes the temporary 21.03-percent adjustment, (3) the legacy June 2022 Thrifty Food Plan cost that does not include the temporary 21.03-percent adjustment, (4) a Map the Meal Gap-based Thrifty Food Plan cost estimate for June 2022, and (5) a Thrifty Food Plan cost estimate based on a peer-reviewed publication from 2020 adjusted for inflation to June 2022 dollars (Table 4).

The Thrifty Food Plan cost estimate calculated based on prices from throughout the State of Hawaii is \$33.40 (2.3 percent) higher than the Thrifty Food Plan cost estimate based on prices from Honolulu published in the 2023 report. The Thrifty Food Plan cost estimate calculated based on prices from throughout the State of Hawaii is \$328.80 (18.3 percent) lower than the official June 2022 Thrifty Food Plan cost (i.e., the Thrifty Food Plan cost published in the Monthly Cost of Food report for June 2022¹ that included the temporary adjustment) and \$17 (1.1 percent) lower than the legacy June 2022 Thrifty Food Plan cost (i.e., the official Thrifty Food Plan cost for June 2022 excluding the temporary adjustment). A detailed discussion of the official and legacy Thrifty Food Plans costs is available in the 2023 report.

Feeding America's Map the Meal Gap produces annual estimates of average meal costs in the United States as well as estimates for each county and State.²² USDA calculated the ratio of Map the

Meal Gap's 2022 estimate of the average meal cost for Hawaii (\$5.01) to the national average meal cost (\$3.99), then applied that ratio as a price-of-food adjustment factor to the cost of the Thrifty Food Plan in the mainland United States. The Thrifty Food Plan cost estimate for Hawaii calculated in this report is \$285.60 (24.2 percent) higher than the Map the Meal Gap-based estimate for Hawaii. Although Map the Meal Gap is also based on the 2021 Thrifty Food Plan and a retail scanner data source, key differences exist between the USDA and Feeding America methodologies that could produce such a large difference. In particular, the Map the Meal Gap index is calculated without explicitly controlling for regional differences in the local food environment or food selections.

In 2014, Greenberg et al. collected food price data in four communities in Hawaii.²³ They estimated the cost of the Thrifty Food Plan in Hawaii using the ERS Community Food Security Toolkit,²⁴ which is based on the Thrifty Food Plan, 1999²⁵ and represents a substantially different set of foods than does the Thrifty Food Plan, 2021. The Thrifty Food Plan cost estimate for Hawaii is \$220.10 (17.7 percent) higher than the Greenberg et al. estimate for Hawaii after the Greenberg et al. estimate is adjusted for inflation to June 2022 dollars. The difference between the Thrifty Food Plan cost estimate for Hawaii calculated by USDA and the Thrifty Food Plan cost estimate published by Greenberg et al. could be the result of differences in the market baskets used (i.e., 1999 versus 2021 Thrifty Food Plan Market Baskets), differences in the mode of data collection (retail scanner data versus instore survey), or a combination of these and other factors.

¹ Available at: <https://www.fns.usda.gov/cnpp/usda-food-plans-cost-food-monthly-reports>.

Table 4. Comparison of Thrifty Food Plan Cost Estimates for Hawaii

Source	June 2022 Thrifty Food Plan Cost ^a
Circana-Based Estimates:	
Statewide Circana-Based Estimate ^b	\$1,465.80
Honolulu Circana-Based Estimate ^c	\$1,432.40
Official and Legacy Thrifty Food Plan Costs:	
Official Thrifty Food Plan Cost ^d	\$1,794.60
Legacy Thrifty Food Plan Cost ^e	\$1,482.80
Alternative Estimates:	
Map the Meal Gap-Based Estimates ^f	\$1,180.20
Greenberg et al. (2020)-Based Estimates ^g	\$1,245.70

Notes:

The reference family of four is defined by Federal statute (7 U.S.C. § 2012(u)) as consisting of a man and a woman twenty through fifty, a child six through eight, and a child nine through eleven years of age.

^a Values are rounded to the nearest \$0.10.

^b Thrifty Food Plan cost estimate for Hawaii for the reference family of four based on food price data from throughout the State of Hawaii.

^c Thrifty Food Plan cost estimate for Hawaii for the reference family of four published in 2023 based on food price data from Honolulu.

^d The official Thrifty Food Plan cost is the Thrifty Food Plan cost for the reference family of four published in the Monthly Cost of Food Report in June 2022. This Thrifty Food Plan Cost includes the temporary 21.03-percent adjustment.

^e The legacy Thrifty Food Plan cost is the official Thrifty Food Plan cost for June 2022 excluding the temporary 21.03-percent adjustment.

^f Map the Meal Gap-based estimates using the 2022 price index as a price-of-food adjustment applied to the June 2022 cost of the Thrifty Food Plan for the reference family of four in the mainland United States.

^g Greenberg et al. (2020) estimates are estimates of the weekly cost of the Thrifty Food Plan in Hawaii in 2014 using the ERS Community Food Security Toolkit. USDA converted the weekly estimates to monthly estimates by multiplying by 4.333 and adjusted for inflation to June 2022 dollars using the major food-at-home category CPI-U's for Urban Hawaii.

Sensitivity Analysis

USDA previously made several choices and assumptions in developing and establishing the price index methodology and assessed how plausible adjustments to these choices and assumptions affected Thrifty Food Plan cost estimates. Specifically, USDA previously conducted sensitivity analyses regarding nine general choices and assumptions it could have made:

- (1) using only June prices instead of prices for the whole year,
- (2) relaxing the assumption that retail chains within store types are comparable to each other,
- (3) not applying the IRI store weights that were developed to make the data more nationally representative,
- (4) excluding UPCs below a minimum sales value in each location,
- (5) excluding drug and club stores from the index calculation,
- (6) calculating the index using a geometric mean instead of an arithmetic mean,
- (7) changing the geographic definitions of Anchorage and Honolulu to the cities rather than the counties,
- (8) assuming that unit prices are uniform within RMAs, and
- (9) using location-specific sales shares to weight UPCs within ECs.

Extensive information on the sensitivity of this methodology to these decisions and assumptions was published in the 2023 report. For this analysis, USDA maintained the established methodology and applied it to a new geographic area; the array of methodological decisions and assumptions that were considered and evaluated when the methodology was developed were not revisited as part

of the scope of this report. As described in the Methodology section above, USDA made only one methodological decision for which a feasible alternative is available: the year of retail scanner data from which to calculate average unit prices. This section assesses how the Thrifty Food Plan cost estimate for Hawaii would have changed had 2018 data been used instead of 2017 data.

USDA examined both the 2017 and 2018 retail scanner data for their suitability as the basis of the price index. USDA determined that the 2017 data remained the best choice for this analysis for two reasons: (1) for consistency and comparability with the Thrifty Food Plan cost estimate for Hawaii published in 2023 (i.e., comparing the results of this analysis to the Honolulu-based results from the 2023 report would be directly reflective of the effect of the proposed rule and would not be confounded by a change in underlying data or methodology) and (2) because there are fewer matches when applying the 2015–16 PPC to the 2018 data, reducing the number of UPCs in the analysis from 12,298 to 11,056 (see [Food Price Data](#)) USDA conducted a sensitivity analysis examining the results if 2018 food price data had been used as the basis for the price index rather than 2017 food price data.

When using 2018 data, the price index is 1.5280 compared to 1.5595 when using 2017 data ([Table 5](#)). In other words, the cost of the Thrifty Food Plan in the State of Hawaii was 52.8 percent higher than in the mainland United States in June 2022 when calculated using 2018 food price data, which is 3.2 percentage points lower than the adjustment factor to the cost of the Thrifty Food Plan in the State of Hawaii in June 2022 when calculated using 2017 food price data.

Table 5. Results of the Sensitivity Analysis in Comparison to the Results of the Main Analysis

Variable	Hawaii State 2017 (Main Analysis)	Hawaii State 2018
Price Index ^a	1.5595	1.5280
Number of Stores in Hawaii	97	99
Number of Stores in the Mainland United States	40,789	39,824
Number of UPCs in Index ^b	12,298	11,056
Number of Foods and Beverages Represented ^c	968 (72.1%)	945 (70.4%)
Thrifty Food Plan Cost Represented by Foods and Beverages ^d	\$188.20 (97.6%)	\$184.50 (95.7%)

Notes: UPC = Universal Product Code.

^a All index values are rounded to the fourth decimal.

^b Number of UPCs that are available in both the location and the mainland United States.

^c Number of foods and beverages represented by combinations of Ensemble Codes (ECs) and form (e.g., raw, refrigerated, shelf-stable, etc.). The percentages in parentheses report the percent of the 1,342 EC-form combinations underlying the Thrifty Food Plan, 2021.

^d Total weekly cost of the Thrifty Food Plan, 2021 for the reference family of four represented by foods and beverages (EC-form combinations) in the index calculation rounded to the nearest \$0.10. The percentages in parentheses report the percent of the total weekly cost (\$192.84) represented by the EC-form combinations. To convert weekly Thrifty Food Plan costs to monthly costs, multiply the weekly cost by 4.333.

Discussion

This report provides a detailed accounting of how the previously peer-reviewed and published methodology to calculate price-of-food adjustment factors for Alaska and Hawaii was adapted to calculate a new Thrifty Food Plan cost estimate for Hawaii that is based on food prices from throughout the State. This new Thrifty Food Plan cost estimate aligns with the proposed rule that would change 7 CFR 273.10(e) (4). The sections below provide additional considerations around the use of retail scanner data and potential alternative data sources.



Limitations and Data Considerations

Considerations and limitations associated with the data and methodology have been described in the 2023 report in detail and generally apply to this analysis as well. Two specific limitations of the methodology are (1) USDA's use of UPCs as the unit of analysis, which may draw distinctions between products that have no meaningful differences in product attributes and (2) the statutory and regulatory framework, which precluded USDA from incorporating geographic differences in consumption patterns and food environments as well as consumers' substitution behaviors in response to differences in price levels. Additionally, while the Circana retail scanner data is the best data currently available to USDA, the nonrandom sample of primarily larger stores in the Circana retail scanner data released to USDA represents a limitation of their use for this purpose. Prices at smaller stores or regional retail chains might be systematically different than prices at larger stores affiliated with national retail chains. Since this is true for both Hawaii and the mainland United States, the extent to which this factor introduces bias into the index depends on whether the market shares of these smaller store types or the extent to which prices are associated with store type differ between Hawaii and the mainland United States. Because smaller stores and certain regional retail chains are unobserved in the retail scanner data, the extent of this potential bias cannot be assessed.

Price data is included from four counties^m in Hawaii (Honolulu, Kauai, Maui, and Hawaii) but the data may still mostly reflect retailers located in population centers of each county, potentially underestimating the price of food in particularly remote locations. The index based on Honolulu data and the index based on State-level data should not be used to draw direct comparisons between Honolulu and the other counties in Hawaii. For one, the State-level data includes additional stores located in Honolulu that

were not included in the Honolulu index because the stores reported at the State level. In addition, there are differences in the common set of UPCs between the two indexes that confound such comparisons.

A key assumption underlying the methodology used in this analysis is that individual stores within each store type are comparable to each other but that prices are systematically different across store types. For example, grocery stores are assumed to be comparable to all other grocery stores regardless of geographic location or corporate ownership; whereas grocery stores are not directly compared to club stores because they are assumed to be systematically different. One consideration is that club stores typically require shoppers to pay a membership fee, which might make these stores not accessible to: (1) households living in rural and remote areas since these stores are usually located in main population centers, (2) those with limited financial resources, and (3) those without consistent access to transportation. USDA included club stores in the price index for multiple reasons. For one, all store types, including club stores, were included in the calculation of the 2015–16 national average prices that underly the Thrifty Food Plan, 2021. Concerns about the accessibility of club stores therefore also apply to the mainland United States. Because the price index compares the relative difference of prices between two locations, the inclusion of club stores would only affect the results of the price index if the relative difference in the prices between club stores and other store types was substantially different in Hawaii and the mainland United States. In addition, the inclusion of club stores would only have a limited impact on the results since club stores represent only about 6 percent of sales of UPCs in the Thrifty Food Plan in the Circana scanner data, with the majority of sales being attributed to grocery stores and mass merchandisers.

^m The Circana retail scanner data does not include data for Kalawao County.

Consideration of Alternatives

USDA considered the feasibility of alternative data sources for estimating the cost of the Thrifty Food Plan in Hawaii using the previously established price index method and evaluated each alternative on the same five factors as were considered in the 2023 report: (1) sample size; (2) applicability to the Thrifty Food Plan, 2021; (3) data quality and documentation; (4) appropriateness as a price-of-food adjustment; and (5) the applicability to future updates and reevaluations. Two alternative data sources on food and beverage prices in the State of Hawaii are currently available to USDA:ⁿ (1) data collected under a cooperative agreement with the University of Hawai'i and (2) data collected by the Hawai'i Foodbank provided to USDA in response to the RFI. Both alternatives provide cross-sectional food price data collected via instore surveys and were collected using a similar method to the data underlying the Hawaii Thrifty Food Plan cost estimate published by Greenberg et al. (see [Comparisons to Official Thrifty Food Plan Cost, Legacy Thrifty Food Plan Cost, and Alternative Thrifty Food Plan Estimates](#)). This section provides details on USDA's evaluation of the alternative data sources and explains why neither set of store survey data was considered a feasible option for calculating a Thrifty Food Plan cost estimate for Hawaii.

A key benefit of these store surveys for food price data collection is that they can provide prices for retailers that tend to be underrepresented in other data sources (e.g., stores in rural and remote areas and stores without scanner systems at checkout). However, recording prices for each of the predetermined food items instore can take multiple hours per store, creating challenges when attempting to scale this approach up to include a large enough sample as to be representative of the entire State of Hawaii. As

a result, the available store surveys provide food prices from fewer stores than the available retail scanner data. A related disadvantage is that it is not feasible for a store survey to capture the same comprehensive breadth of products that are available in retail scanner data; the set of items included in the available store surveys is orders of magnitude smaller than available in retail scanner data. As a result, the available store surveys cover fewer of the items in the Thrifty Food Plan, 2021 Market Basket than the retail scanner data.

Whereas the retail scanner data is collected continuously, the available store surveys are cross-sectional and represent food prices at a single point in time. As a result, an index that is based on store survey data might face more risks related to biases arising from seasonality and intermittent sales and specials compared to data collected over a longer period in which short-term price fluctuations do not have as large an impact on the long-term average unit price. Additionally, a limitation of the store surveys is that they are administered using a predetermined set of food items that may not always be available instore, creating situations where alternate or substitute items are priced, potentially without sufficient documentation of the rationale for the substitution. This substitution also leads to the comparison of items with different product characteristics that impact their prices, such as comparing a larger package size to a smaller package size, or a private label to a branded product.

The critical limitation of the available store surveys in this context is that they cannot independently support the calculation of a price-of-food adjustment (i.e., a price index) because they do not include data from retailers throughout the mainland United States nor can they be reliably linked to existing data on food prices in the mainland United States

ⁿ Other food price data sources for Hawaii were either not currently available to USDA (i.e., NielsenIQ retail scanner data and Hawaii WIC EBT data) or only include food prices in Honolulu (e.g., Council for Community and Economic Research (C2ER) Cost of Living Index data) and were therefore excluded from evaluation for this application.

(e.g., neither store survey available to USDA recorded UPC information, which could have enabled reliable linkage to Circana retail scanner data in the mainland United States). While these data sources support the calculation of average unit prices in Hawaii, they do not independently enable the calculation of average unit price ratios (see [Appendix B, Equation 1](#)) between Hawaii and the mainland United States that are fundamental to the established price index methodology, which was designed to align with the statutory framework. USDA considered whether the availability of store survey data in Hawaii warranted the development of an entirely new methodology for calculating the cost of the Thrifty Food Plan in Hawaii for which these data would be appropriate but determined that such development was out of scope for this project (see [Objectives and Scope](#)). Another consideration is the availability of data to inform future updates. In this context, USDA prefers data sources that can be reasonably expected to provide updated data in the future over data sources with uncertain future availability because consistent data availability reduces the potential for TFP cost estimate volatility arising from changes in underlying data sources and/or methodologies. USDA has an ongoing multiyear contract to obtain the retail scanner data but no such agreements are currently in place for the available store surveys. As a result, there is uncertainty whether updated data using these store surveys would be available in the future to support updates to the cost of the Thrifty Food Plan in Hawaii.

Conclusion

This report describes the calculation of a new Thrifty Food Plan cost estimate for Hawaii to align with the proposed change to regulations at 7 CFR 273.10(e)(4). USDA applied the same bilateral, fixed-basket price index that was developed and peer-reviewed in a previous 2023 publication using food prices from 2017 Circana retail scanner data in the mainland United States and the State of Hawaii.

Although food price data collected via store surveys are currently available to USDA, these data were not feasible alternatives to the retail scanner data used in this report. The store survey data present advantages related to the inclusion of retailers that tend to be underrepresented in other data sources. However, this strength is outweighed by limitations related to sample size; applicability to the Thrifty Food Plan, 2021; data quality and documentation; appropriateness as a price-of-food adjustment; and the applicability to future updates and reevaluations.

The Thrifty Food Plan cost estimate calculated using the Map the Meal Gap (see [Comparisons to Official Thrifty Food Plan Cost, Legacy Thrifty Food Plan Cost, and Alternative Thrifty Food Plan Estimates](#)) data serves as a useful comparison, but it would not be a feasible basis for determining the cost of the Thrifty Food Plan in Hawaii. As described in the 2023 report, the Map the Meal Gap index is calculated without explicitly controlling for regional differences in the local food environment or food selections and, as a result, applying the results of this index as a price-of-food adjustment would implicitly create a new Thrifty Food Plan Market Basket in Hawaii, which would not align with the statutory and regulatory framework. In addition, USDA does not have access to the underlying data and methodology used to produce meal cost estimates and therefore would not be able to conduct rigorous evaluation and/or quality control.

The price index indicated that the foods and beverages that make up the Thrifty Food Plan Market Basket for the reference family of four cost, on average, 55.95 percent more in Hawaii than in the mainland United States when considering prices from throughout the State, resulting in a Thrifty Food Plan cost estimate of \$1,465.80, approximately 2.3 percent higher than the estimate based on food prices from Honolulu alone.

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Appendix A: Relevant Statutes and Current and Proposed Regulations

This report discusses the implications of existing statutory and regulatory language as it relates to the calculation of price-of-food adjustments to the Thrifty Food Plan. In support of these discussions, this appendix provides text from referenced portions of the U.S. Code and Code of Federal Regulations.

Current Statute

7 U.S.C. § 2012

(u) 'Thrifty food plan' means the diet required to feed a family of four persons consisting of a man and a woman twenty through fifty, a child six through eight, and a child nine through eleven years of age, determined in accordance with the Secretary's calculations. By 2022 and at 5-year intervals thereafter, the Secretary shall re-evaluate and publish the market baskets of the thrifty food plan based on current food prices, food composition data, consumption patterns, and dietary guidance. The cost of such diet shall be the basis for uniform allotments for all households regardless of their actual composition, except that the Secretary shall-

(1) make household-size adjustments (based on the unrounded cost of such diet) taking into account economies of scale;

(2) make cost adjustments in the thrifty food plan for Hawaii and the urban and rural parts of Alaska to reflect the cost of food in Hawaii and urban and rural Alaska;

(3) make cost adjustments in the separate thrifty food plans for Guam, and the Virgin Islands of the United States to reflect the cost of food in those States, but not to exceed the cost of food in the fifty States and the District of Columbia; and

(4) on October 1, 1996, and each October 1 thereafter, adjust the cost of the diet to reflect the cost of the diet in the preceding June, and round the result to the nearest lower dollar increment for each household size, except that on October 1, 1996, the Secretary may not reduce the cost of the diet in effect on September 30, 1996, and except that on October 1, 2003, in the case of households residing in Alaska and Hawaii the Secretary may not reduce the cost of such diet in effect on September 30, 2002.

Current Regulations

7 CFR 271.2 "Thrifty food plan"

Thrifty food plan means the diet required to feed a family of four persons consisting of a man and a woman 20 through 50, a child 6 through 8, and a child 9 through 11 years of age, determined in accordance with the Secretary's calculations. The cost of such diet shall be the basis for uniform

allotments for all households regardless of their actual composition. In order to develop maximum SNAP allotments, the Secretary shall make household size and other adjustments in the Thrifty Food Plan taking into account economies of scale and other adjustments as required by law.

7 CFR 273.10(e)(4)

(i) Maximum SNAP allotment level. Maximum SNAP allotments shall be based on the TFP as defined in § 271.2, and they shall be uniform by household size throughout the 48 contiguous States and the District of Columbia. The TFP for Hawaii shall be the TFP for the 48 States and DC adjusted for the price of food in Honolulu. The TFPs for urban, rural I, and rural II parts of Alaska shall be the TFP for the 48 States and DC adjusted by the price of food in Anchorage and further adjusted for urban, rural I, and rural II Alaska as defined in § 272.7(c). The TFPs for Guam and the Virgin Islands shall be adjusted for changes in the cost of food in the 48 States and DC, provided that the cost of these

TFPs may not exceed the cost of the highest TFP for the 50 States. The TFP amounts and maximum allotments in each area are adjusted annually and will be prescribed in a table posted on the FNS web site, at: www.fns.usda.gov/fsp.

(ii) Adjustment. Effective October 1, 1996, the maximum SNAP allotments must be based on 100% of the cost of the TFP as defined in § 271.2 of this chapter for the preceding June, rounded to the nearest lower dollar increment, except that on October 1, 1996, the allotments may not fall below those in effect on September 30, 1996.

Proposed Regulations

USDA included a proposed rule in its spring 2024 Regulatory Agenda that would change the price-of-food adjustment used to calculate the cost of the Thrifty Food Plan for Hawaii from an adjustment for the price of food in Honolulu to an adjustment for the price of food in the State of Hawaii, as provided below. The proposed rule was published in the Federal Register on December 3, 2024 and is available at: <https://www.fns.usda.gov/cnpp/fr-120324>.

7 CFR 273.10(e)(4)

(i) Maximum SNAP allotment level. Maximum SNAP allotments shall be based on the TFP as defined in § 271.2, and they shall be uniform by household

size throughout the 48 contiguous States and the District of Columbia. The TFP for Hawaii shall be the TFP for the 48 States and DC adjusted for the price of food in Hawaii. The TFPs for urban, rural I, and rural II parts of Alaska shall be the TFP for the 48 States and DC adjusted by the price of food in Anchorage and further adjusted for urban, rural I, and rural II Alaska as defined in § 272.7(c). The TFPs for Guam and the Virgin Islands shall be adjusted for changes in the cost of food in the 48 States and DC, provided that the cost of these TFPs may not exceed the cost of the highest TFP for the 50 States. The TFP amounts and maximum allotments in each area are adjusted annually and will be prescribed in a table posted on the FNS web site, at: www.fns.usda.gov/fsp.

Appendix B: Price Index Technical Notes

USDA used a price index to estimate the difference in food prices between the mainland United States compared to Hawaii (see [Equation 1](#)).

Equation 1. Price Index

$$P_i = \sum_{v \in V_{m,i}} \left(\frac{p_{v,i}}{p_{v,m}} \right) c_v$$

Where P_i is the value of the price index; i refers to Hawaii;^o m refers to the mainland United States; $p_{v,i}$ and $p_{v,m}$ are the inflation-adjusted average unit prices of UPC v in Hawaii and the mainland United States, respectively (see [Average Unit Prices](#)); $V_{m,i}$ is the common set of UPCs in the

Thrifty Food Plan Market Basket sold in both the mainland United States and location i in 2017; and c_v is the cost share of UPC v in the Thrifty Food Plan Market Basket given the common set $V_{m,i}$ (see [Cost Shares](#)).

The price index can be expressed in either of two forms: a quantity-based form or a cost share-based form. While the two forms are equivalent, USDA chose to use a cost share-based form for this analysis because of the ease of managing Thrifty Food Plan cost shares rather than quantities, since quantity measures in the data vary by UPC. Additional details on the calculation of average unit prices and cost shares are included below.

Average Unit Prices

USDA calculated average unit prices for each UPC in each location as the weighted average unit price by store type inflated to June 2022. Each step of this calculation is described in detail below.

First, USDA calculated region-specific adjustment factors to reflect inflation between 2017 and June 2022 using the overall food-at-home and major food-at-home category CPI-U's as shown in [Equations 2a, 2b, and 2c](#). Category-specific CPI-U adjustment factors were calculated and applied to UPCs based on the Thrifty Food Plan Market Basket Category associated with the UPC ([Table B.1](#)). National-level CPI-U's were used to inform inflation adjustments to average unit prices in the mainland United States and Urban Hawaii CPI-U's were used to inform inflation adjustments to average unit prices in Hawaii. Major food-at-home category CPI-U's in Urban Hawaii were not part of BLS published data until the 2018

geographic revision to the CPI-U,²⁶ and therefore, major food-at-home category CPI-U's for these regions are not available for 2017. To account for this, two separate inflation adjustment factors were calculated and then combined. The first adjustment factor ([Equation 2a](#)) addresses inflation from 2017 to 2018 using the overall food-at-home CPI-U's, which are available in Urban Hawaii prior to the 2018 geographic revision. The second adjustment factor ([Equation 2b](#)) addresses inflation from 2018 to June 2022 using the major food-at-home category CPI-U's. The final inflation adjustment factor is the combination of the two adjustment factors ([Equation 2c](#)). For consistency across regions, this same approach was used to calculate the inflation adjustments to unit prices in the mainland United States even though national-level major category CPI-U's were regularly published prior to 2018.

^o For consistency, these equations are the same as in the 2023 report where the set i included the Anchorage and Honolulu. In this report, the set i includes only the State of Hawaii.

Equation 2a. Inflation adjustment: 2017 to 2018

$$I_r^a = \frac{CPI_{FAH,r}^{2018}}{CPI_{FAH,r}^{2017}}$$

Where I_r^a is the 2017 to 2018 inflation adjustment for region r (Urban Hawaii or national); $CPI_{FAH,r}^{2017}$ is the 2017 average food-at-home CPI-U value for region r ; and $CPI_{FAH,r}^{2018}$ is the 2018 average food-at-home CPI-U value for region r .

Equation 2b. Inflation adjustment: 2018 to June 2022

$$I_{v,r}^b = \frac{CPI_{v,r}^{June\ 2022}}{CPI_{v,r}^{2018}}$$

Where $I_{v,r}^b$ is the 2018 to June 2022 inflation adjustment for UPC v in region r ; $CPI_{v,r}^{2018}$ is the 2018 average CPI-U value for the major food-at-home category associated with UPC v (Table B.1) in region r ; and $CPI_{v,r}^{June\ 2022}$ is the June 2022 CPI-U value for the major food-at-home category associated with product v in region r .

Equation 2c. Inflation adjustment: 2017 to June 2022

$$I_{v,r} = I_r^a I_{v,r}^b$$

The final inflation adjustments for each UPC from 2017 to June 2022 ($I_{v,r}$) were calculated by multiplying the 2017 to 2018 inflation adjustment (I_r^a , Equation 2a) and the 2018 to June 2022 inflation adjustment ($I_{v,r}^b$, Equation 2b).

USDA used the 2017 Circana data for sales in Hawaii and the mainland United States; the Circana store weights for the mainland United States; and the inflation adjustment factors

calculated in Equation 2c to calculate inflation-adjusted average unit prices for each UPC in each region by store type as shown in Equation 3 and Equation 4. The UPCs were linked to final inflation adjustments for each CPI-U major food category ($I_{v,r}$) via the PPC linked to Thrifty Food Plan Market Basket Categories.

Equation 3. Inflation-adjusted average UPC unit price by store type in Hawaii

$$p_{v,i,t}^{2022} = \frac{\sum_{o \in O_{i,t}} (S_{v,o})}{\sum_{o \in O_{i,t}} (U_{v,o})} I_{v,i}$$

Where $p_{v,i,t}^{2022}$ is the inflation-adjusted average unit price for UPC v in location i (Hawaii, but not the mainland United States) at store type t ; $o_i \in O_{i,t}$ indicates the set of retailers in location i belonging to store type t ; $S_{v,o}$ and $U_{v,o}$ are the total value of sales and total number of units sold, respectively, at retailer o , for UPC v , in location i . The inflation factor $I_{v,r}$ (Equation 2c) is used to adjust region-specific UPC-level average prices from 2017 to June 2022.

Equation 4. Inflation-adjusted average UPC unit price by store type in the mainland United States

$$p_{v,m,t}^{2022} = \frac{\sum_{o \in O_{m,t}} (S_{v,o} w_o)}{\sum_{o \in O_{m,t}} (U_{v,o} w_o)} I_{v,m}$$

The unit price for UPC v in the mainland United States, $p_{v,m,t}^{2022}$, is calculated in the same way as for Hawaii (Equation 3), but the total value of sales and total number of units sold are summed across outlets in the mainland United States ($o_m \in O_{m,t}$) and are weighted by the Circana store weights, w_o .

Table B.1. CPI-U Major Food-at-Home Category Associated With Each Thrifty Food Plan Market Basket Category

Thrifty Food Plan Market Basket Category	Major Food-at-Home Category CPI-U
Vegetables	
Dark-Green Vegetables	Fruits and Vegetables
Red and Orange Vegetables	Fruits and Vegetables
Beans, Peas, Lentils	Fruits and Vegetables
Starchy Vegetables	Fruits and Vegetables
Other Vegetables	Fruits and Vegetables
Fruits	
Whole Fruit	Fruits and Vegetables
100% Fruit Juice	Nonalcoholic Beverages and Beverage Materials
Grains	
Whole-Grain Staple Grains	Cereals and Bakery Products
Whole-Grain Cereals	Cereals and Bakery Products
Refined-Grain Staple Grains	Cereals and Bakery Products
Refined-Grain Other	Cereals and Bakery Products
Dairy	
Low- and Non-Fat Milk, Yogurt, Soy Alternatives	Dairy and Related Products
Higher Fat Milk, Yogurt, Soy Alternatives	Dairy and Related Products
Cheese	Dairy and Related Products
Protein Foods	
Meats	Meat, Poultry, Fish, and Eggs
Poultry	Meat, Poultry, Fish, and Eggs
Eggs	Meat, Poultry, Fish, and Eggs
Seafood	Meat, Poultry, Fish, and Eggs
Nuts, Seeds, Soy Products	Other Food at Home
Miscellaneous	
Preprepared Entrees and Side Dishes	Other Food at Home
Coffee and Tea	Nonalcoholic Beverages and Beverage Materials
Table Fats and Oils	Other Food at Home
Sauces, Condiments, Jams, Honey, Sugars, Spices	Other Food at Home
Other Foods and Beverages	Other Food at Home

USDA used data from all retailers and geographies in the 2015–16 Circana data to calculate sales shares by store type for each UPC, as shown in [Equation 5](#). The calculation of store type sales shares uses unweighted 2015–16 Circana data for consistency with the methodology used for the Thrifty Food Plan, 2021, which used these same data and was published prior to the release of Circana store weights.

Equation 5. Store type sales shares

$$\tau_{v,t} = \frac{S_{v,t}}{\sum_{t \in T} S_{v,t}}$$

Where $t_{v,t}$ is the store type sales share, $S_{v,t}$ is the total value of sales for UPC v at store type t in 2015–16, and T is the common set of store types in which sales of UPC v were observed in the compared locations. In cases where sales of UPC v at store type t in 2017 were observed in only one of the compared locations, the associated sales value was excluded from the analysis. For example, if a UPC is sold at grocery stores, club stores, and mass merchandisers in the mainland United States but only at grocery stores and mass merchandisers in Hawaii, sales of the UPC at club stores in the mainland United States would be excluded and the store type sales share would be calculated only with the common store types included.

USDA used the 2017 Circana data to calculate average UPC unit prices in Hawaii and the mainland United States by weighting the average UPC unit price by store type (e.g., grocery store, mass merchandiser, etc.) in the mainland United States ([Equation 4](#)) by the store type sales share ([Equation 5](#)) as shown in [Equation 6](#) and [Equation 7](#).

Equation 6. Average UPC unit price in Hawaii

$$p_{v,i} = \sum_{t \in T} (p_{v,i,t}^{2022} \tau_{v,t})$$

Equation 7. Average UPC unit price in the mainland United States

$$p_{v,m} = \sum_{t \in T} (p_{v,m,t}^{2022} \tau_{v,t})$$

As in [Equation 1](#), $p_{v,i}$ and $p_{v,m}$ are the inflation-adjusted average unit prices of UPC v in location i (Hawaii) and the mainland United States, respectively; $p_{v,i,t}^{2022}$ is the unit price for UPC v in location i at store type t ([Equation 3](#)); $p_{v,m,t}^{2022}$ is the unit price for UPC v in the mainland United States at store type t ([Equation 4](#)); $t_{v,t}$ is the store type sales share ([Equation 5](#)).

Cost Shares

As an interim step of the Thrifty Food Plan, 2021 reevaluation, USDA calculated the share of the Thrifty Food Plan Market Basket cost attributable to each EC and EC-form within each Thrifty Food Plan Market Basket Category. For this analysis, USDA further disaggregated the cost shares of each combination of EC and form into UPCs using the PPC. However, not every UPC in the Thrifty Food Plan Market Basket is sold in all locations and some of these UPCs were no longer present in the marketplace in 2017. Cost shares for UPCs in the Thrifty Food Plan Market Basket that were not in the common set ($V_{m,i}$) were proportionately reallocated to other UPCs following a hierarchical procedure as follows.

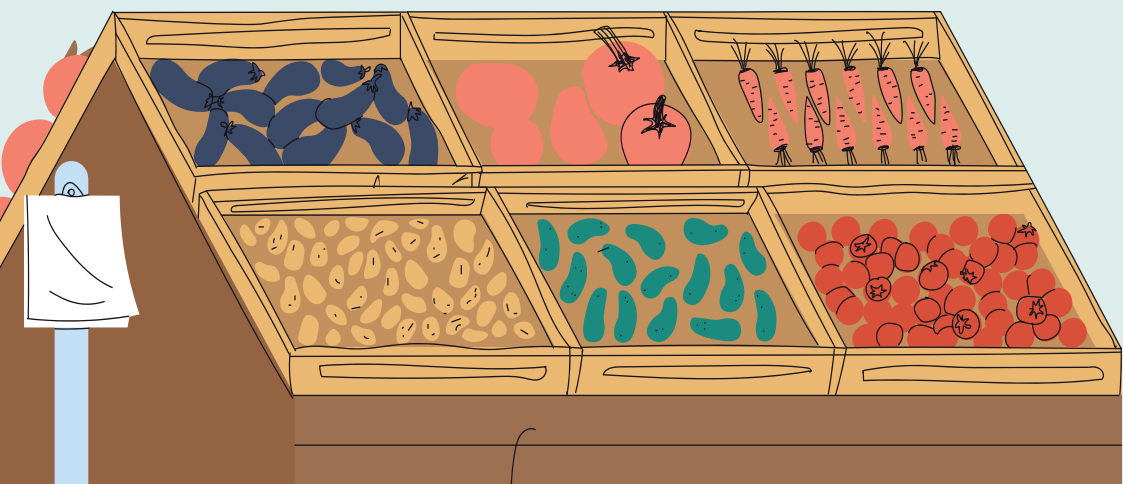
First, cost shares for UPCs in the Thrifty Food Plan Market Basket, but not in the common set, were proportionately reallocated to other UPCs associated with the same EC-form that were in the common set. For example, if a particular brand and package size of shelf-stable mozzarella sticks (identified by a unique UPC) was in the Thrifty Food Plan Market Basket but not in the common set, this UPC's cost share was reallocated to all shelf-stable mozzarella stick UPCs in the common set, maintaining the remaining UPCs' relative importance.

Second, cost shares for EC-forms that contained no UPCs in the common set were proportionately reallocated to the other foods and beverages associated with the same EC. For example, if mozzarella sticks were in the Thrifty Food Plan Market Basket in both shelf-stable and refrigerated forms, but only the refrigerated form of the EC was in the common set, the cost share originally allocated to the shelf-stable form was reallocated to the refrigerated form.

Third, cost shares for ECs that contained no UPCs in the common set were proportionately reallocated to the other ECs associated with the same Thrifty Food Plan Market Basket Category with UPCs that were present in the common set. For example, if mozzarella sticks were included in the Thrifty Food Plan Market Basket Category "Cheese" but no UPCs in this EC were available in the common set, the cost share for mozzarella sticks would be reallocated to other ECs in the "Cheese" category (e.g., American cheese, cheddar cheese, etc.), maintaining the remaining ECs' relative importance.

There were no cases in which an entire Thrifty Food Plan Market Basket Category contained no UPCs in the common set.





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