Estimating the Cost of Food Waste to American Consumers

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Disclaimer

This document has been reviewed in accordance with U.S. Environmental Protection Agency (U.S. EPA) policy and approved for publication.

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Abstract

In the United States, over one-third of food is never eaten, and more food reaches landfills than any other material in the municipal solid waste stream. Many state and local governments seek to reduce food waste through outreach and education campaigns, often citing estimates of financial savings available to American families by preventing food from going to waste. However, the most commonly cited financial statistic is based upon 2010 price data, and the prices of many food categories have increased by more than 50 percent since that time. The purpose of this analysis is to provide an updated estimate of the cost of food waste to consumers. This estimate can be used by federal, state, and local campaigns to educate consumers about the potential to save money by preventing food waste. This analysis estimates the current cost of food waste to consumers, including food purchased for consumption at home (e.g., from grocery stores) and away from home (e.g., at restaurants), using the most recent data available (as of October 2024) from the U.S. Department of Agriculture (USDA) Loss-Adjusted Food Availability data series (2019–2023) and the NielsenIQ Retail Measurement Service data (2023). This report estimates the cost of food waste to each U.S. consumer— defined as the price paid for food (edible parts only) that is not eaten—to be $728 per year, or $14 per week. For a household of four (scaling proportionally to the per capita estimate), the estimated annual cost of food waste is $2,913, with a weekly cost of $56. This represents approximately 11 percent of an American consumer's food expenditures (both within and outside of the home), based on the USDA's Food Expenditure Series.

1. Introduction

In the United States, over one-third of available food is never eaten, and more food reaches landfills than any other material in municipal solid waste (U.S. EPA, 2020, 2021a). Wasting food wastes the labor and other resources spent to produce, package, transport, and sell uneaten food. It also wastes the nutrients in uneaten food and the money spent by households on food they did not consume.

Many federal, state, and local activities aim to halve food waste, in support of the United States *2030 Food Loss and Waste Reduction Goal* (U.S. EPA, 2021b). Research shows financial awareness can be an effective motivator for food waste reduction (Graham-Rowe et al., 2014; Hebrok & Boks, 2017; Neff et al., 2015; Ribbers et al., 2023; Schanes et al., 2018; van der Werf et al., 2021), thus consumer education campaigns often cite the cost of food waste to consumers. For example, Oregon's "Don't Let Good Food Go Bad," Central Ohio's "Save More than Food," and South Carolina's "Don't Waste Food SC" campaigns note the cost of wasting food to consumers and share ways families can save money by reducing their food waste (Oregon Department of Environmental Quality, 2025; Solid Waste Authority of Central Ohio, 2025; South Carolina Department of Environmental Services, 2025).

However, the most commonly cited statistic—that food waste costs a family of four $1,500 per year—is based upon an analysis from the U.S. Department of Agriculture (USDA) of 2010 price data (Buzby et al., 2014), and the prices of many food categories have increased more than 50 percent since that time (Bureau of Labor Statistics, 2024). As a result, when consumers waste food today, they are wasting more money on that uneaten food than they were in 2010.

2. Methodology

The U.S. Environmental Protection Agency (U.S. EPA) defines "food waste" as "food that is produced for human consumption but not ultimately consumed by humans." This analysis uses the term "consumer food waste" to refer to food purchased by consumers for consumption at home (e.g., from grocery stores, farmers markets) and away from home (e.g., at restaurants, cafeterias, fast-food establishments) that is not eaten (U.S. EPA, 2025). Consumer food waste can include both groceries and prepared foods purchased at retail stores or food service establishments that are not ultimately consumed.

To determine the cost of food waste to consumers in the United States, this analysis uses the latest available data from the USDA's Loss-Adjusted Food Availability (LAFA) data series and the NielsenIQ (NIQ) Retail Measurement Services (RMS) syndicated price database (NielsenIQ, 2024). The LAFA data are used to calculate U.S. per capita consumer food waste (by weight and food commodity), and the NIQ data are used to identify prices of each food commodity wasted. Together, those datasets are used to generate estimates of the cost of food waste to individual consumers and to households of four. This analysis was performed under U.S. EPA Quality Assurance Project Plan N-EMD-CMB-C-264-27-QP-1-1.

2.1 Estimating the Amount of Consumer Food Waste, by Commodity and Weight

This analysis relies upon the USDA LAFA data series to estimate U.S. per capita consumer food waste by weight and food commodity. The LAFA data series is derived from USDA's Food Availability (Per Capita) Data System (FADS); USDA adjusts the food availability data by subtracting estimated food spoilage, plate waste, and other losses at different stages in the food supply and consumption chain. The USDA dataset uses the term "loss," and this paper uses the term "waste"; the two should be considered interchangeable in this discussion. LAFA further defines an "edible share" of food as the share that is or could be consumed, whereas a "nonedible share" refers to inedible parts of food, such as an eggshell or the rind of an orange. In the LAFA data series, losses (i.e., instances of food waste, by U.S. EPA's

definition) are reported at the primary level (e.g., post-harvest losses occurring when a commodity is transformed into a consumer-ready product), retail level (e.g., supermarkets, supercenters, convenience stores, mom-and-pop grocery stores, and other retail outlets), and consumer level. LAFA does not separate food loss at the household and food service levels. Therefore, this analysis uses the consumer-level data, which comprise both household food waste (i.e., waste from foods purchased for preparation and consumption at home) and food waste from food service establishments (e.g., restaurants).

The LAFA data cover more than 200 commodities; for the purposes of this report, these commodities were rolled up into 14 general categories. The 14 commodity categories originate from the main- and sub-commodity categories provided in the seven LAFA datasets available. Estimates for consumer food waste across the 14 categories are updated periodically; the updates used in this analysis were recorded between 2018 and 2024, although the estimate for one category was last updated in 2010 (this exception is detailed later in this section). The underlying LAFA food loss data and assumptions include consumer-level food loss conversion factors which were derived from previous studies and publications, restaurant surveys, and household surveys (Muth et al., 2011). USDA last updated the consumer-level loss conversion factors in 2012 (U.S. Department of Agriculture, 2025b).

The weight of consumer food available for human consumption (hereinafter "consumer weight") provided in the LAFA data series includes the edible portions for all commodities, plus inedible portions for commodities with inedible parts (e.g., eggshells, pits or rinds from fresh fruits and vegetables). The meat, fish and seafood, and poultry categories use boneless weights for the consumer weight value and therefore do not include inedible portions. For commodities that do not include inedible portions (e.g., processed fruit, processed vegetables, fluid milk, other dairy, meat, poultry, fish and seafood, tree nuts and peanuts, added sugar and sweeteners, and added fats and oils), the consumer weight equals the per capita edible food available weight. For other commodities (e.g., eggs, fresh fruit, and fresh vegetables), the LAFA data remove inedible portions of foods from the per capita availability adjusted for loss values. (For an additional discussion on what counts as "edible" food, see Nicholes et al. (2019).)

As a note, the LAFA data series is "not designed to identify where in the food production, marketing, and consumption chain the nonedible share was removed from food commodities" (U.S. Department of Agriculture, 2025b). This means that for some foods (refer to Kantor et al. (1997)), the inedible parts are removed at the consumer level, and that removal is part of the loss adjustment estimate that LAFA provides. For other foods (like meats), the inedible parts (in this case, bones) are removed prior to the consumer level, and thus the removal is not in the LAFA loss adjustment estimate. In general, the per capita consumer food waste estimate for each commodity is the per capita edible food weight minus the per capita availability adjusted for consumer-level loss (e.g., cooking loss and uneaten food) (Equation 1). As noted above, for some commodities, the consumer weight equals the per capita edible food weight, as there is not any loss to adjust because the commodity does not contain inedible parts.

Equation 1. Per capita consumer food waste

$$Per\ Capita\ Consumer\ Food\ Waste\ (lbs./year) =$$

$$Per\ Capita\ Edible\ Food\ Weight - Per\ Capita\ Availability\ Adjusted\ for\ Loss$$

Appendix A: LAFA Consumer Food Waste by Commodity breaks down food waste estimates for each individual commodity reported in LAFA. For meat, poultry, eggs, tree nuts and peanuts, and added fats and oils, the FADS data series included more recent data than what was available in the LAFA database. The per capita weight from the FADS data series and the loss factors from Muth et al. (2011) were used to calculate the parameters used in Equation 1. Tables 1 and A-1 provide commodity-specific calculation methods used to generate updated estimates for per capita food waste. Additionally, USDA has not updated rice in the LAFA data series since 2010 and the older estimates were not utilized in this report. However, it is important to note that this exclusion leads to an underestimation of the final per capita cost of consumer food waste.

Additional data sources are available in the literature for U.S. per capita food waste; however, most are estimates of household food waste or total food waste, rather than consumer-level food waste as needed for this analysis (e.g., MITRE and Gallup (2023) and U.S. EPA (2023)). This study selected LAFA as the

data source due to its wide use and its detailed breakdown of food waste by commodity—which is essential for accurate food pricing. During the preparation of this report, ReFED published a new estimate of consumer food waste that was not reliant on LAFA, which is presented in Section 3.4.

2.2 Estimating the Cost of Consumer Food Waste, by Commodity and Weight

For the price of commodity foods, this analysis relied on NIQ RMS syndicated price data. The NIQ RMS syndicated price data provide information on individual food prices based on the prices consumers pay at the register for food purchased to prepare and consume at home. NIQ collects global data for 50 million products from nearly 900,000 stores each month. This analysis[1] uses NIQ data for data year 2023, updated as of October 2024, for the frozen, grocery, and produce department categories for the 52-week period ending December 30, 2023, for the total U.S. market.

For this analysis, commodities in the LAFA data series were matched with items in the NIQ dataset. *Appendix B: LAFA and NIQ Commodity Matching* includes a list of commodity substitutions and matches between LAFA and NIQ for commodities that did not have a one-to-one relationship. The NIQ data offer a one-to-one match with most of the commodities listed in the LAFA data series. If a commodity in the LAFA data series was not clearly defined or was not in the NIQ dataset, a related commodity was substituted to serve as a match between datasets. For example, LAFA does not define "edible syrups"; therefore, the analysis used the average price data for all breakfast and dessert syrups. In some instances, food commodities were more aggregated in the LAFA data than in the NIQ data, or vice versa. For example, the NIQ data did not disaggregate between frozen sweet and frozen tart cherries, so the average price of frozen cherries was used for both sub-commodities.

The NIQ RMS syndicated dataset contains data on the national average price per pound of individual food commodities. To calculate the average price per pound of a commodity, NIQ divides the total dollar amount for a commodity by the total equivalized units (EQ units) sold for that commodity. An EQ unit is the equivalent sales volume of a product and is expressed in a common unit, in this case 1 pound. This approach makes it possible to compare products of different sizes. The LAFA data are used to calculate U.S. per capita consumer food waste (by weight and food commodity), and the NIQ data are used to identify prices of each food commodity wasted. Together, these datasets are used to generate a value per pound of consumer food waste.

The annual per capita cost of food waste to consumers was calculated by multiplying the pounds per capita of food waste by the average price per pound for each commodity (Equation 2).

Equation 2. Per capita cost of food waste to consumers

$$Per\ Capita\ Cost\ of\ Food\ Waste\ to\ Consumers\ (\$/year) =$$

$$\left(Pounds\ Per\ Capita\ of\ Consumer\ Food\ Waste\ (LAFA)\right)\ x\ (Average\ Price\ Per\ Pound\ (NIQ))$$

It is important to note that the NIQ price data only reflect the price paid by consumers at a store for food or groceries intended to be prepared and consumed at home. The NIQ price data do not reflect the price paid by consumers at food service establishments (e.g., restaurants, fast food). However, the consumer-level LAFA data include estimates of both food wasted at home using foods purchased for preparation and consumption at home and food wasted outside the home (i.e., in food service establishments). Therefore, there is some inherent underestimation introduced in calculating the annual cost of consumer food waste, as groceries are typically less expensive than prepared foods at restaurants and other food service establishments. This underestimation is also inherent to data regarding the cost of food waste

[1] NIQ is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein or in developing, reviewing, or confirming the research approaches used in connection with this report.

occurring within the home, since LAFA data does not account for the value added to processed foods such as pre-cooked meals.

In addition, only the edible weight of each food commodity was used to calculate the pounds per capita of consumer food waste (Equation 1), and subsequently the per capita cost of food waste (Equation 2). While some foods are fully edible as purchased in a grocery store (e.g., boneless chicken), other foods (e.g., eggs, oranges) have inedible portions. A consumer is paying for the entire ingredient, which inherently come with the inedible portions (not including products such as liquid eggs or pre-segmented oranges, which are outside the scope of this analysis). Therefore, this report assumes the monetary value lies wholly with the edible portion of each food commodity (as the inedible portions were never intended to be consumed), and that is why only the edible portions of each food commodity are used in these calculations.

Additional data sources are available in the literature for commodity prices, but most lack the specificity of NIQ data. More information about other sources available is provided in *Appendix C: Additional Estimates of U.S. Food Commodity Prices*.

2.3 Estimating the Cost of Consumer Food Waste to a Household of Four

The most commonly cited statistic regarding the cost of food waste to consumers is that food waste costs a family of four $1,500 per year. Examples of campaigns citing this statistic include the national "Save the Food" campaign and state and local campaigns in Vermont, Austin (Texas), Hennepin County (Minnesota), and Washington (District of Columbia) (Natural Resources Defense Council, 2025; Vermont Department of Environmental Conservation, 2025; Austin Resource Recovery, 2024; Minnesota Pollution Control Agency, 2025; Reuse DC, 2025). For comparison, and to allow users to most easily substitute updated statistics into their existing campaign materials, this analysis provides a similar estimate.

In this analysis, the per capita estimate of the cost to consumers of food waste is multiplied by four to estimate the cost of food waste to a household with four members (Equation 3).

Equation 3. Cost of food waste to a household of four

$$Cost\ of\ Food\ Waste\ to\ a\ Household\ =$$

$$(Per\ Capita\ Cost\ of\ Food\ Waste)\ x\ (Household\ Size)$$

Existing peer-reviewed literature provided the precedent for this approach. Buzby and Hyman (2012) developed a per capita estimate of the cost of food waste to consumers and multiplied it by a specific household size (2.4 members) to estimate the cost of food waste to a household of that size. Venkat (2012) multiplied their per capita cost of food waste by four to estimate cost to a "family of four." In addition, the $1,500 statistic noted above is based on an analysis by USDA of per capita cost of food waste to consumers (Buzby et al., 2014) that was then multiplied by four to reflect a household of four.

This methodology assumes that the food wasted by a household of four people is equal to the food wasted by four average people (i.e., the per capita value). While there is evidence that the amount of food waste generated per capita generally decreases as household size increases (Parizeau et al., 2015; Schanes et al., 2018; Shu et al., 2021; Stancu et al., 2016; Visschers et al., 2016), many household characteristics transcend this trend. For example, households with children (Hebrok & Boks, 2017; MITRE and Gallup, 2023; Neff et al., 2015; Principato et al., 2021; Schanes et al., 2018; Visschers et al., 2016), households with higher levels of education, and households with higher income tend to waste more food (MITRE and Gallup, 2023). Therefore, it is difficult to produce greater precision than can be achieved by assuming that members of the household are "average" with regard to the amount of food waste they generate. An analysis of the characteristics and behaviors of lower- and higher-wasting households is beyond the scope of this paper.

3. Results and Discussion

This section summarizes the results of the analysis to estimate the cost of consumer food waste per capita and per household of four. It also provides relevant context from the literature.

3.1 The Amount of Consumer Food Waste, by Commodity and Weight

Table 1 shows the LAFA data used in this analysis, including the per capita weight of food available for human consumption, edible food available for human consumption, and edible food available for human consumption adjusted for loss—all at the consumer level. Table 1 displays these data for each category of commodity, while *Appendix A: LAFA Consumer Food Waste by Commodity* provides greater detail, including estimates for each individual commodity reported in LAFA.

Per capita food waste for each individual commodity was calculated (using Equation 1 and Equation 2), then all the commodities within a category (e.g., added sugar and sweeteners) were summed up to get that category's total per capita consumer food waste. Table 1 is organized from highest per capita consumer food waste value to lowest (the blue-shaded column). From these data, per capita food waste was calculated, estimating that 256 lbs. of food purchased by consumers (both from grocery stores and food service establishments) is wasted annually per capita, or 1,025 lbs. for a household of four (scaling proportionally from the per capita estimate).

Table 1. Annual per capita consumer-level food availability and waste by commodity category.

Commodity category	Per capita consumer food available (lbs./year)[a]	Per capita edible food available (lbs./year)[a]	Per capita availability adjusted for loss (lbs./year)[a]	Per capita consumer food waste (lbs./year)[b]	Data years[c]	Year updated
Added sugar and sweeteners	109.9	109.9	72.9	37.0	2023	2024
Fresh vegetables	141.3	115.4	84.4	31.0	2021 and 2022	2024
Grain products (excludes rice[d] and barley)	152.8	152.8	121.8	31.0	2022	2024
Fluid milk	118.2	118.2	91.7	26.6	2021	2022
Meat[e]	106.0	106.0	80.4	25.6	2021*	2022*
Fresh fruit	110.8	80.4	57.7	22.6	2021 and 2022	2023
Other dairy	75.4	75.4	57.6	17.8	2021	2022

Commodity category	Per capita consumer food available (lbs./year)[a]	Per capita edible food available (lbs./year)[a]	Per capita availability adjusted for loss (lbs./year)[a]	Per capita consumer food waste (lbs./year)[b]	Data years[c]	Year updated
Processed vegetables[f]	89.7	89.7	73.7	16.0	2019 and 2022	2024
Added fats and oil[g]	67.0	67.0	52.2	14.8	2010 and 2017	2019
Poultry[e]	77.0	77.0	63.2	13.9	2019*	2021*
Eggs[h]	33.5	29.5	22.7	6.8	2021*	2023*
Processed fruit	57.5	57.5	50.8	6.7	2021	2023
Fish and seafood	14.8	14.8	9.7	5.1	2018	2021
Tree nuts and peanuts[i]	12.9	12.9	11.6	1.3	2020*	2023*
Total	**1,166.8**	**1,106.5**	**850.4**	**256.2**		

[a] *USDA LAFA data* (2025a).

[b] *Calculated value using USDA LAFA data (total per capita edible food available minus per capita availability adjusted for loss).*

[c] *For commodities with multiple years listed in the "Data years" column, the sub-commodities within these commodities have varying latest years of data available (e.g., the latest data year for fresh apples is 2021, while for fresh oranges it is 2022). The update frequency depends on data availability by commodity. For example, "vegetables" was last updated in 2024 to include data for years 2019 and 2020.*

[d] *Data for these commodities is no longer updated due to lack of availability beyond 2010. If the LAFA rice value from 2010 was used in this report's estimation, the total category cost would be approximately $15 higher, which would be a significant increase.*

[e] *The boneless per capita availability from the FADS data series to calculate the per capita consumer food available using the loss percentages from retail/institutional level to the consumer level, then followed the same calculation methods as detailed in the LAFA methodology (Kantor et al., 1997; Muth et al., 2011) and within this report (section 2.1).*

[f] *USDA discontinued estimates for canned vegetables in 2011 and frozen vegetables in 2015.*

[g] *Within the added fats and oils category, only butter had been updated since 2010, with the most recent data year being from 2017. To generate a more updated estimate: Total Added Fats and Oils consumer weight (2010) – Butter consumer weight (2010) + Butter consumer weight (2017) = Total Added Fats and Oils consumer weight = Per capita consumer food available, then followed the same calculation methods as detailed in the LAFA methodology (Kantor et al., 1997; Muth et al., 2011) and within this report (section 2.1).*

[h] *Used the per capita farm weight from the FADS data series as the primary weight, then followed the same calculation methods as detailed in the LAFA methodology (Kantor et al., 1997; Muth et al., 2011) and within this report (section 2.1).*

[i] *For tree nuts and peanuts, used the per capita weight from the FADS data series as the primary weight, then followed the same calculation methods as detailed in the LAFA methodology (Kantor et al., 1997; Muth et al., 2011) and within this report (section 2.1).*

* *Indicates the update year of Food Availability Data series used to generate more recent per capita food waste estimates.*

3.2 The Cost of Consumer Food Waste, by Commodity and Weight

After reviewing the LAFA data for each individual commodity, each LAFA commodity was then matched with corresponding NIQ commodity price data. Table 2 details the estimated annual per capita consumer food waste in pounds and by commodity group, as well as the associated cost of this food waste. Table 2 is organized from highest per capita cost of consumer food waste to lowest (the blue-shaded column). See *Appendix A: LAFA Consumer Food Waste by Commodity* for a complete list of products included in each commodity category and *Appendix B: LAFA and NIQ Commodity Matching* for commodities that did not have a one-to-one relationship across the LAFA and NIQ datasets.

Table 2. Annual per capita consumer-level food waste and cost of food waste by commodity category in 2023.

Commodity category	Per capita consumer food waste (lbs./year)	Per capita cost of consumer food waste ($/year)
Meat	25.6	$133.48
Other dairy	17.8	$74.32
Processed fruit	6.7	$65.86
Fish and seafood	5.1	$61.33
Fresh vegetables	31.0	$59.49
Added sugar and sweeteners	37.0	$57.66
Poultry	13.9	$55.81
Fresh fruit	22.6	$44.58
Grain products (excludes rice[a] and barley)	31.0	$42.41
Processed vegetables	16.0	$39.35
Added fats and oils	14.8	$37.75
Fluid milk	26.6	$25.68
Eggs	6.8	$20.07
Tree nuts and peanuts	1.3	$10.34
Total per capita	**256.2**	**$728.14**
Total for a household of four	**1,024.9**	**$2,912.56**

[a] Data for rice are no longer updated due to a lack of availability beyond 2010. If the LAFA rice value from 2010 was used in this report's estimation, the total category cost would be approximately $15 higher, a 30% increase. See Footnote 2 in Appendix A: LAFA Consumer Food Waste by Commodity for more information.

Note that foods wasted in the greatest amounts do not necessarily represent the greatest opportunity for financial savings. Figure 1 shows annual per capita food waste by commodity group, by pounds and by dollars. Added sugars and sweeteners are the most wasted commodity by weight, but wasted meat represents the greatest annual cost to consumers. Meat and other dairy are the commodity categories that represent the biggest opportunities for cost savings by consumers through the prevention of food waste. An additional figure in *Appendix B: LAFA and NIQ Commodity Matching* (Figure B-1) compares the per capita consumer cost of food waste to the percent per capita of food waste, as compared to absolute waste shown in Figure 1.

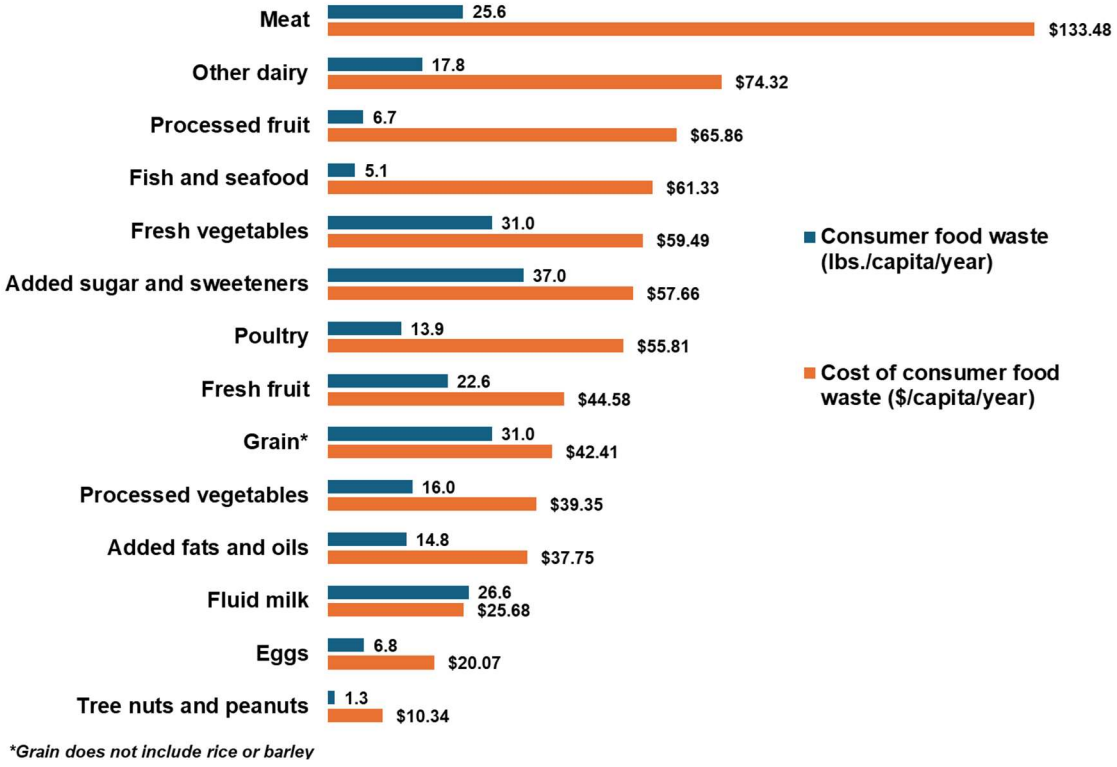

Figure 1. Annual per capita consumer-level food waste and associated annual costs, by commodity group.

3.3 The Cost of Consumer Food Waste to a Household of Four

As calculated by this report, each year the average U.S. consumer wastes $728 on uneaten food at home and in food service establishments. Dividing this per capita cost of food waste by 52 weeks equates to $14 a week in uneaten edible food. Extrapolating this per capita estimate to a household of four, the total annual cost of consumer food waste is $2,913 (Equation 3) and the total weekly cost of food waste is $56.

For context, the USDA's Food Expenditure Series reports total household food expenditure data[2] for both food-at-home and food-away-from-home spending. A one-person household[3] spends approximately $6,869 on total annual food expenditures and a four-person household spends around $27,477 (U.S. Department of Agriculture, 2024). Comparing the estimated cost of food waste from this report to the average annual food expenditure, food waste represents approximately 11 percent of total annual food expenditures (within and outside of the home). It is important to note that this percentage is likely an

[2] The USDA's Food Expenditure Series reports food expenditure data per capita for "all purchasers" as well as for "household final users." Within the "household final users" data, the USDA calculates overall household food expenditures using the total number of households from the U.S. Census Bureau (Okrent et al., 2018).

[3] Using USDA's total household food expenditure data for 2023 divided by the average number of individuals in a house in 2023 as reported by the U.S. Census Bureau (2.51 persons; (U.S. Census Bureau, 2024)).

underestimate. Although the LAFA data reports food waste values for food purchased for at-home consumption as well as outside of the home, the NIQ reflects only grocery store (i.e., at-home) prices, thus leading to an underestimate of the per capita cost of food waste.

3.4 Other Estimates from the Literature

In 2014, USDA economists performed a similar analysis to this report using 2010 LAFA data and 2010 food price data from Nielsen Homescan[4] to calculate the annual cost of food waste to consumers (Buzby et al., 2014). According to that analysis, consumer food waste totaled $371 per capita per year. As expected, this report's estimate ($728 per capita) is higher, as food prices have risen more than 50 percent since 2010 (Bureau of Labor Statistics, 2024). This report sought to apply a similar methodology to the 2014 USDA report. However, a different Nielsen dataset was selected, and both the LAFA and Nielsen data had minor differences in the food commodities and prices covered over time, so the two results may not be directly comparable.

A literature search (see *Appendix D: Literature Review Methodology*) identified four additional estimates of the cost of food waste to consumers, including food purchased for at-home and away-from-home consumption. All estimates focused on avoidable (i.e., edible share) food waste like this study. Table 3 provides a summary of these estimates, normalized to 2023 dollars and population for easy comparison to this report's estimate.

Table 3. Summary of annual per capita consumer-level food waste values in existing literature.

Data source	lbs./year	$/lb. (data year used in source)	$/lb. (normalized to 2023 prices)[a]	$/year (data year used in source)	$/year (normalized to 2023 prices)[a]
This report	256.2	$2.84	$2.84	$728.14	$728.14
Buzby et al. (2014)	290	$1.28 (2010 dollars)	$1.71	$371.20 (2010 dollars)	$495.73
Conrad (2020)	—	—	—	$1,321.30 (2016 dollars)	$1,640.15
ReFED (2025)	208	$3.75 (2023 dollars)	$3.75	$780.00 (2023 dollars)	$780.00
Venkat (2012)	242[b]	$1.67 (2011 dollars)	$2.17	$404.14[c] (2011 dollars)	$525.85
Yu and Jaenicke (2020)	—	—	—	$723.81[d] (2020 dollars)	$856.52

[a] *Data are normalized to 2023 dollars and population using U.S. Bureau of Labor Statistics* (2025) *and U.S. Census Bureau* (2016, 2021, 2024) *data, respectively.*

[b] *Calculated by taking total avoidable consumer waste (33.73 million metric tons/year) and then dividing by annual population from the 2009 U.S. Census and converting to lbs./year.*

[c] *Calculated by dividing the consumer food waste value from the report ($124,100,000,000) by annual population from the 2009 U.S. Census.*

[d] *Calculated by dividing the consumer food waste value from the report ($240,000,000,000) by annual population from 2020 U.S. Census.*

The other available studies used a variety of data sources for consumer food waste and for food prices. Once normalized to 2023 dollars and population, estimates ranged from $496 to $1,640 per year. This report's estimate ($728/year) is lower than the three most recently published estimates and thus could be considered conservative. However, it is generally in the range of the sources compared, suggesting

[4] Homescan data are collected from a panel of consumers, while the RMS data used in this report are collected from retailers.

convergent validity of this report's methodology. More details on each study's methodology are provided below.

Like this study, Venkat (2012) estimates consumer food waste based on USDA LAFA data. The estimate uses 2009 consumer food waste data from USDA LAFA, 2009 population data from the U.S. Census Bureau, and 2011 retail prices primarily from the USDA Agricultural Marketing Service Market News. Where food prices were not listed in the 2011 Market News, the authors rely on advertised online retail prices at Safeway. Venkat (2012) estimates the total cost of consumer food waste to be $124.1 billion, or $404 per capita, per year.

The three other studies used sources other than USDA LAFA to estimate the amount of consumer food waste. Conrad (2020) begins his analysis with dietary intake data (rather than food availability data, like LAFA) from the National Health and Nutrition Examination Survey (NHANES) and utilizes commodity information from the Food Commodity Intake Database and LAFA, as well as price information from USDA's Center for Nutrition Policy and Promotion Food Prices Database. The authors adjust prices for away-from-home purchases by a factor derived from the National Household Food Acquisition and Purchase Survey (FoodAPS). All data are adjusted to 2016 dollars to reflect the most recent year of NHANES data used. Conrad (2020) estimates that the cost of food waste to consumers between 2001 and 2016 was $1,321 per capita per year in 2016 dollars.

ReFED (2025) generates an estimate of the amount of consumer food waste and its cost using a variety of sources, including NHANES data, residential surveys conducted by The Ohio State University through a collaboration with the Ohio State Food Waste Collaborative and the Multiscale RECIPES Sustainable Regional Systems Research Network (Li et al., 2023), and Nielsen Point-of-Sale data (ReFED, 2025). ReFED (2025) estimates that in 2023, food waste cost consumers $780 per capita.

Yu and Jaenicke (2020) uses a productivity analysis (specifically, a stochastic production frontier model) of household production to identify food waste as an input inefficiency. The analysis utilizes FoodAPS and NHANES data, finding that the cost of consumer food waste is approximately $724 per capita in 2020.

3.5 Data Limitations

This analysis did not account for price differences between foods purchased for at-home versus away-from-home consumption, thus underestimating the cost of food waste to consumers. Assuming that the prices of food purchased for away-from-home consumption (e.g., from restaurants) are higher than the prices of similar foods purchased for at-home consumption (e.g., from grocery stores), the per capita commodity costs presented in Table 2 are underestimations. The LAFA and NIQ RMS datasets were selected due to the specificity of the commodities listed, but this choice did not allow for foods purchased for consumption away from home to be identified separately from food purchased for at-home consumption and priced accordingly. The LAFA data does not differentiate between household and food service waste, and the NIQ RMS syndicated price data do not include food purchased for consumption away from home. Like this analysis, two previous reports that estimate the cost of consumer food waste—Venkat (2012) and Buzby, Wells, and Hyman (2014)—also could not account for such price differences (Conrad, 2020).

This analysis was also unable to account for the value inherent to processed foods due to the added labor required. The LAFA data are only for basic commodities, which are often combined into other products such as pre-cooked meals or pastries which are normally purchased in a form that is ready for consumption. This limitation further suggests that this analysis underestimates the cost of food waste by being unable to account for this added value in cost estimates.

To improve accuracy of future analyses, additional research is needed to create and maintain up-to-date national data on consumer food waste, by weight and food commodity. Elements of the LAFA data series used in this analysis were updated in different years from one another, some have been discontinued, and some rely upon data sources that are outdated or have been discontinued. Additionally, the most recent loss conversion factors date back to 2012 (Muth et al., 2011 which were updated into the LAFA data series in 2012). Meaningful updates to LAFA itself, including potential use of residential survey data

or enhancement of other data sources, would lead to more accurate estimates of the cost of food waste to consumers.

4. Conclusions

The estimated cost of food waste to each U.S. consumer—defined as the price paid for food that is not eaten (edible parts only)—is $728 per year, or $14 per week in 2023. For a household of four (scaling proportionally from the per capita estimate), the annual cost is $2,913, and the weekly cost is $56. This represents more than 11 percent of a American household-of-four's weekly household food spending (within and outside of the home), based on data from the USDA's Food Expenditure Series (U.S. Department of Agriculture, 2024).

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