



COVID-19 Working Paper:

Consumer Food Spending Changes During the COVID-19 Pandemic

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Abstract

The Coronavirus (COVID-19) pandemic affected the way U.S. consumers purchased food. The evidence is mixed on how these changes translated into dietary and nutritional outcomes. This report uses the Consumer Expenditure Diary Survey to examine food purchasing behaviors before (2016–19) and during the early onset of the COVID-19 pandemic (2020). As U.S. households shifted away from meals from full-service restaurants, they purchased more food and beverages at grocery stores and other food-at-home (FAH) establishments. Increased FAH spending was driven by higher spending on protein foods, fruits, vegetables, and other FAH (e.g., desserts, prepared meals and salads). However, these increases were uneven across food categories and subpopulations. The largest increases in the FAH share between 2016–19 and 2020 were among single households without children, non-Hispanic Asian households, and in the Northeast. The largest decreases in the food-away-from-home (FAFH) share were among non-Hispanic Asian households and in the Northeast.

Keywords: Consumer Expenditure (CE) Diary Survey, food at home, food away from home, fruits, vegetables, COVID-19 pandemic

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Summary

What Is the Issue?

The Coronavirus (COVID-19) pandemic affected the way U.S. consumers purchased food. Stay-at-home orders at the onset of the pandemic meant the closure of restaurants, a significant source of food for U.S. consumers. It also meant more time spent at home as many employees transitioned into remote work or experienced temporary unemployment. As the economic situation worsened, the Federal Government issued a series of payments and bolstered social safety net programs to help lower- and middle-income families. Changes in where and how food is purchased and how much income and time is available to spend on food preparation can affect what is consumed, which impacts dietary outcomes. Evidence on the impact of the pandemic on food consumption and the overall healthfulness of purchases has mostly been based on nonprobability samples or specific geographic areas, and it is not clear whether results from these studies can be generalizable to the U.S. population. This report examines food-at-home (FAH) and food-away-from-home (FAFH) purchasing behaviors before and during the first 9 months of the COVID-19 pandemic among disaggregated food products and across subpopulations of interest using a large probability sample.

What Did the Study Find?

During the first 9 months of the pandemic, U.S. households shifted away from purchasing foods at restaurants and other food service venues to grocery stores and other retail establishments. Although spending at all types of restaurants declined, household spending on full-service restaurants experienced the steepest declines, and households with at least one person older than 65 years old reduced the share of their food and alcohol budget at full-service restaurants the most, from 16.6 percent in 2016–19 to 10 percent in 2020. In contrast, the budget share on limited-service establishments only declined from 19.6 percent to 18.3 percent. This decrease was insignificant across most subpopulations.

Steep declines in FAFH spending were mostly offset by gains in FAH spending, but these increases were unevenly distributed across food categories and subpopulations. The budget share on FAH increased from 58.6 percent in 2016–19 to 66.4 percent in 2020 with the largest contributions to this change from protein foods and other FAH foods (e.g., desserts, prepared meals and salads, and chips and savory snacks).

- The household food and alcohol budget share on other FAH foods increased from 17.2 percent in 2016–19 to 19.8 percent in 2020. During this period, Non-Hispanic Asians shifted more of their budget into prepared meals and salads (1.6 percentage points) compared with other racial and ethnic groups (less than 1 percentage point), whereas non-Hispanic Blacks shifted more into desserts (1.4 percentage points) compared with other households (less than 1 percentage point).
- Protein foods grew from 11.9 percent to 13.4 percent of the total food and alcohol budget, led primarily by spending on nonprocessed meats. However, households that were non-Hispanic Asian, married with children, and of higher income shifted toward purchasing more processed red meats.

Although other FAH and protein foods had the largest percentage point gains among all food and alcohol categories, the budget shares for fruits and vegetables grew the fastest.

- The share of the household food and alcohol budget on fruits increased from 4.7 percent in 2016–19 to 5.6 percent in 2020, or 19 percent during this period, with the largest gain among households with lower incomes and the smallest gain among those households with higher incomes.
- Compared with fruits, the budget share on vegetables increased from 5.3 percent in 2016–19 to 6.5 percent in 2020, or 23 percent, but growth was more evenly distributed across incomes and regions.

How Was the Study Conducted?

This report uses the Consumer Expenditure (CE) Diary Survey to examine FAH and FAFH purchasing behaviors before (2016–19) and during the early onset of the COVID-19 pandemic (2020). Food expenditures at grocery stores and other FAH establishments are constructed to closely align with components of the 2020–25 Dietary Guidelines for Americans and therefore grouped into eight categories: grains, protein foods, dairy, fruits, vegetables (including beans and peas), fats and oils, beverages, and other FAH. Expenditures at foodservice venues are classified into limited-service FAFH, full-service FAFH, and other FAFH (e.g., meals and snacks at employers or schools, vending machines, mobile food vendors). Household expenditures and shares of total food and alcohol spending for the categories are compared between 2016–19 and 2020 and across subpopulations of interest, including income quartiles; above/below 200 percent of the poverty threshold; composition of household in terms of race and ethnicity, household size, and household structure; U.S. Department of Commerce’s Bureau of the Census regions; urban/rural designations; and age.

Some of the sociodemographic differences and trends highlighted in this preliminary analysis should be interpreted with caution because of limitations of the CE Diary Survey data and the statistical approach. First, nonresponse rates in the CE Diary Survey during the pandemic may have systematically declined faster for some subpopulations compared with others, which implies caution should be taken when analyzing these subgroups. Second, income is typically correlated with race and ethnicity, and noted differences in food purchasing across racial and ethnic groups may be driven by income rather than race and ethnicity.

Introduction

The Coronavirus (COVID-19) pandemic affected the way U.S. consumers purchased food. Stay-at-home orders at the onset of the pandemic meant the closure of restaurants, a significant source of food for U.S. consumers (Sedov, 2022; Okrent et al., 2018). It also meant more time spent at home for many employees who transitioned into remote work or experienced temporary unemployment (Restrepo and Zeballos 2022). Because of the uncertainty at the onset of the pandemic, the stockpiling of foods, including storable food-stuffs, were commonplace, making some products difficult to find (Chenarides et al., 2021; Ellison et al., 2021). It also meant changes in how people shopped for food, with increased use of online shopping and delivery services to avoid in-store shopping (Chenarides et al., 2021; Ellison et al., 2021; Cosgrove and Wharton, 2021). As the economic situation worsened, the Federal Government issued a series of payments that most U.S. adults indicated they would use for food (Lai et al., 2020). Changes in the food supply and household resources, as well as physical and mental health challenges associated with the pandemic, translated into what, where, and how households purchased and consumed foods, which affect diet quality.

Much of the literature on eating and shopping behaviors during the pandemic consistently finds decreased spending at restaurants and other food-away-from-home (FAFH) venues somewhat offset by increased spending on grocery stores, supermarkets, and other food-at-home (FAH) establishments. Macroeconomic data, including the USDA, Economic Research Service (ERS) Food Expenditure Series and The NPD Group's Consumer Reports on Eating Share Trends (CREST), showed double-digit declines in sales, spending, and foot traffic at restaurants and other food service venues (Zeballos and Sinclair, 2021; Marchesi and McLaughlin 2022). However, spending declines across foodservice establishments were uneven, with full-service restaurants bearing the brunt of the decline, while spending at limited- or quick-service restaurants declined at the onset of the pandemic but quickly rebounded to pre-pandemic levels later in 2020 (Marchesi and McLaughlin, 2022). Analysis based on surveys of U.S. households or adults also confirms decreased spending and food intake when eating out (Ellison et al., 2021; Restrepo et al., 2021). In particular, some found that this decrease applied specifically to fast foods (Chenarides et al., 2021; Cosgrove and Wharton, 2021; Chen et al., 2021; Bhutani et al., 2021; Lai et al., 2020).

There is less of a consensus in the literature regarding food consumption patterns for other types of foods and their overall effect on diet quality. One set of studies examines changes in consumption of select foods within the first 3 to 4 months of the pandemic for very specific U.S. subpopulations. In the study's longitudinal analysis of 112 randomly selected desk workers in Pennsylvania with elevated and untreated blood pressure, Barone Gibbs et al. (2021) found no statistical difference in the number of fruits and vegetables, added sugars, sugars from sugar-sweetened beverages, dairy, whole grains, and processed meat before and during the pandemic except for a reduction in red meat consumption. Similarly, Chenarides et al. (2021) found little evidence that food intake changed among a nonprobability sample of adults in Detroit and Phoenix for 10 major food groups—fresh produce, dairy, meat, grains, snacks, fast food, frozen food, canned food, prepped food, and bottled water. However, they found that consumption varied across household composition, Supplemental Nutrition Assistance Program (SNAP) participation, residency, and race and ethnicity.

In comparison, Sadler et al. (2021), Bhutani et al. (2021), and Cummings et al. (2021) found pandemic-induced changes in food consumption in three nonprobability samples but with notable differences in overall healthfulness of consumption. Sadler et al. (2021) found that more U.S. adults reported increased intake of sweets, desserts, chips, and savory snacks compared with those adults who reported less or no change in intake. However, they also found the intake of fruits and vegetables was relatively unchanged during the pandemic. These patterns did not vary with body mass index or socioeconomic status but did vary with the degree of pandemic-related stress, emotional overeating, and cognitive flexibility (i.e., ability to deal with stress). Similarly, Cummings et al. (2021) examined “added sugar (i.e., from soda, fruit drinks, cookies/cake/

pie, doughnuts, ice cream, sugar/honey in coffee/tea, candy, and cereal)” and alcohol intake and found both increased during the pandemic, but those people with pandemic-related stress or who were younger were affected the most. Bhutani et al. (2021) also found an increased intake of unhealthy foods (caloric sugar-sweetened beverages, processed foods, ultra-processed foods) and snacks (chocolate, chips/salty snacks, and dessert) but also increased intake of healthy foods (vegetables, fruits, and cheese/yogurt), and snacks (fruits and vegetables as snacks). Increased consumption of unhealthy foods and snacks was more prevalent among women, but no differences were found between normal weight and overweight or obese adults.

Similar mixed results are also reported among studies that assess changes in perceived diet quality during the early onset of the pandemic. Using a probability sample of adults residing in Los Angeles County, Miller et al. (2021) found that among those who reported pandemic-induced changes in eating, more adults reported “eating healthier food than before [the pandemic] (e.g., more fruits and vegetables, and/or less sugary and fried food)” compared with those eating less healthy foods. Non-Hispanic Blacks, Hispanics, Asians, or those who recently received unemployment insurance were significantly more likely to report healthy dietary changes, whereas those who were younger, of mixed race, had children, had transportation barriers, or were obese reported unhealthy dietary changes. In their nonprobability sample, Cosgrove and Wharton (2021) also found that most U.S. shoppers who reported shifts in diets during the pandemic perceived their eating habits became “much more healthier” or “somewhat healthier” during the pandemic. Similarly, Acton et al. (2022) found a slight improvement in overall diet quality in their nonprobability sample, although not consistently across all indicators of diet quality. In contrast to these self-assessments, Park et al. (2022) found most adults in their probability sample reported consuming “more unhealthy snacks and desserts, including chips, cookies, and ice cream,” and about a third of adults reported drinking “more sugary drinks like regular soda, fruits drinks, sports or energy drinks, sweetened coffee/teas drinks” during the pandemic. Younger adults and non-Hispanic Blacks were at higher odds of increased unhealthy food snacking and sugar-sweetened beverage consumption, whereas women, Hispanics, and individuals of non-Hispanic other races were at increased odds of sugar-sweetened beverage consumption only.

The COVID-19 pandemic appears to have had mixed effects on food consumption (purchasing or eating) and healthfulness of consumption. All studies point to a decrease in FAFH consumption, which can indicate a shift to healthier diets as foods obtained from FAFH establishments tend to be higher in calories, sodium, and saturated fats than foods obtained from FAH establishments (Guthrie et al., 2018). In addition, home cooking, which is a substitute for FAFH consumption, has been positively associated with the nutritional quality of foods and negatively associated with obesity (Wolfson and Bleich, 2015; Zeballos and Restrepo, 2018). As a result of this shift, FAH expenditures increased, but it is unclear whether consumers purchased more healthful foods at grocery stores and other retail venues. Some studies found more purchases and consumption of fresh produce, indicating a healthful shift in eating, whereas others found increased eating of processed foods like chips and savory snacks and desserts, indicating an unhealthful shift in eating. Lastly, self-assessments of diet quality changes are mixed and vary considerably across sociodemographic groups.

There are several reasons for the differences in findings. First, the majority of these studies are based on small nonprobability samples, and it is not clear that results from these samples can be generalizable to the U.S. population or to subpopulations of interest. In addition, these studies give us little information on changes in food consumption patterns during the pandemic across disaggregated food products and across subpopulations because many of the sample sizes are too small to make statistical inferences. Lastly, self-assessments of healthier versus unhealthier eating patterns are somewhat subjective, and studies that ask questions about only a select number of foods provide an incomplete picture of the overall effect the pandemic had on food consumption.

This analysis, based on the Consumer Expenditure (CE) Diary Survey, extends the current literature in several ways. First, it allows an examination of changes in food expenditures for a complete set of foods—both those purchased at retail establishments and those purchased at foodservice venues—to paint a more

complete picture of how the pandemic changed U.S. household food shopping behaviors. Second, the detailed expenditure information collected in the CE Diary Survey allows foods to be grouped close to the 2020–25 Dietary Guidelines for Americans (DGA), making it easier to infer how food purchasing changes translate into dietary outcomes. Lastly, the CE Diary Survey is a large probabilistic sample of households, allowing the findings to be generalized—from the sample to subpopulations in the United States of interest, such as income class, poverty status, race and ethnicity, household composition, and employment.

Data Description and Methods

The 2016–20 Diary Survey portion of the Consumer Expenditure (CE) Surveys public-use microdata is the primary source for the analysis. Approximately 5,000 U.S. addresses are contacted each quarter, producing approximately 3,000 useable diaries. Households are in the sample for 2 consecutive weeks, but the information collected each week is treated as statistically independent. Each household is assigned a weight to be representative of the noninstitutionalized civilian U.S. population. These weights correct for certain non-sampling errors like household nonresponse. The households report detailed expenditures for minor or frequently purchased items, annual income, employment in the past 12 months, and demographic characteristics (BLS, 2018).

The detailed expenditure information allows household food and alcohol expenditures to be aggregated into food categories that closely align with components of the 2020–25 DGA (USDA and HHS, 2020).¹ The DGA is designed for policymakers and nutrition and health professionals to help all individuals and their families consume healthy, nutritionally adequate diets. An underlying premise of the DGA is that nutritional needs should be met primarily from foods and beverages—specifically, nutrient-dense foods and beverages. A healthy dietary pattern consists of nutrient-dense forms of foods and beverages across all food groups, in recommended amounts, and within calorie limits. The DGA focuses on six groups that make up a healthy dietary pattern:

- Grains, at least half of which are whole grain.
- Protein foods, including lean meats, poultry, and eggs; seafood; beans, peas, and lentils; and nuts, seeds, and soy products.
- Dairy, including fat-free or low-fat milk, yogurt, and cheese, and/or lactose-free versions and fortified soy beverages and yogurt as alternatives.
- Fruits, especially whole fruit.
- Vegetables of all types—dark green; red and orange; beans, peas, and lentils; starchy; and other vegetables.
- Oils, including vegetable oils and oils in food, such as seafood and nuts.

The DGA also recommends limiting foods higher in added sugars, saturated fats, sodium, and alcoholic beverages.

Household food expenditures at grocery stores and other food stores—referred to as food at home (FAH)—are classified into nine sub-groups that closely align with the DGA, including grains, protein foods, dairy,

¹ Reported expenditures in the detailed expenditure files (EXPDI) that are not published in the U.S. Bureau of Labor Statistics Consumer Expenditure Surveys' integrated tables (i.e., pub flag is equal to one) are excluded from the analysis. These excluded expenditures represent a small number of outlier expenditures on foods purchased for catered events or at restaurants.

fruits, vegetables (including beans and peas), oils, beverages, and other FAH. Because protein foods and other FAH are heterogeneous in terms of saturated fats, added sugars, and sodium, protein foods are divided into processed red meats, non-processed red meats, and poultry, fish and seafood, and eggs.² Similarly, other FAH is subdivided into desserts, prepared meals and salads, and other, not elsewhere classified (NEC) (table A.1).

Households also purchase foods from food service establishments, known as food away from home (FAFH). Because the information on FAFH in the CE Diary Survey is not granular enough to allow FAFH to be characterized by food groups in the DGA, FAFH is characterized by establishment type: limited-service, full-service, and other. Limited-service FAFH includes food purchases at fast food or take-out restaurants, concession stands, buffets, and cafeterias (other than the employer and school cafeterias). Full-service FAFH includes food purchases at sit-down restaurants. Other FAFH includes food purchases at school and employer cafeterias, vending machines, and mobile vendors. Although FAFH cannot be classified according to the DGA, on average, FAFH is found to be of lower diet quality and more caloric than FAH, containing more saturated fats and sodium, and less calcium, iron, and fiber (Guthrie et al., 2018).

Alcoholic purchases by U.S. households are also examined as the DGA recommends limiting its consumption. Alcohol purchases from grocery stores and other retail outlets, as well as food service establishments, are included. Non-alcoholic beer is also in this category.

The preliminary research noted above shows that the pandemic may have affected food purchasing behaviors differently across sociodemographic groups and geographic areas. As such, food spending patterns for eight subgroups constructed at the household level were analyzed. First, the race and ethnic composition of households were examined because pandemic-induced unemployment, hospitalizations, and deaths affected Black or African American and Hispanic or Latino populations disproportionately more than White and Asian populations (Couch et al., 2020; Smith et al., 2021; Magesh et al., 2021; Chalise and Gutkowski, 2021). These changes could exacerbate already existing disparities in diet quality among races and ethnicities (Dong and Stewart, 2022). The race and ethnicity of the household are based on the reference person and the spouse, if the spouse is present.

Unemployment and pandemic-related morbidity and mortality also differentially impacted communities across geographies (USDA, ERS, 2022; Chalise and Gutkowski, 2021). For example, households in rural areas experienced less employment loss than their urban counterparts, but unlike urban areas, employment in rural areas had yet to fully recover from the 2008–09 Great Recession. As such, food purchasing patterns of households are examined using urban/rural designation and the U.S. Department of Commerce’s Bureau of the Census region.³

Evidence also suggests that income is a major determinant of food purchasing patterns (Rahkovsky et al., 2018; Okrent and Kumcu, 2016; Okrent and Alston, 2012). As a result of worsening economic conditions due to the pandemic, stimulus payments, easing of eligibility requirements, and additional benefits for food assistance programs helped to increase income for vulnerable populations during the pandemic.⁴ Although

² Processed red meats have been found to be more harmful to health than non-processed red meats (Micha et al., 2012). Hence, processed red meats were separated from non-processed red meats in this analysis (see table A.1 for a complete description of foods within these groups).

³ A household lives in an urban area if it resides in a statistical metropolitan area.

⁴ The U.S. Federal Government sent out three rounds of direct relief payments during the pandemic. Starting in March 2020, the Coronavirus Aid, Relief, and Economic Security (CARES) Act provided payments of up to \$1,200 per adult for eligible individuals and \$500 per qualifying child under age 17, where eligibility was based on adjusted gross income. The COVID-related Tax Relief Act of 2020, enacted in late December 2020, authorized additional payments of up to \$600 per adult for eligible individuals and up to \$600 for each qualifying child under age 17, with eligibility thresholds identical to the CARES Act. The American Rescue Plan Act of 2021 (American Rescue Plan), enacted in early March 2021, provided payments of up to \$1,400 for eligible individuals or \$2,800 for married couples filing jointly, plus \$1,400 for each qualifying dependent, including adult dependents (U.S. Department of Treasury, 2022).

median pre-tax household income declined 2.9 percent between 2019 and 2020, real post-tax income, which accounts for pandemic stimulus, increased 4 percent (Shrider et al., 2021). As a result, the Supplemental Poverty Measure, which adds in the value of in-kind benefits (i.e., stimulus, SNAP, school meals, housing assistance), fell 2.6 percentage points lower than that in 2019 (Fox and Burns, 2021). To analyze the association between income and food purchasing, three household-level income variables were constructed. First, the mean of imputed income before taxes was used to construct income quartiles for households.⁵ Similarly, the mean of imputed income before taxes—relative to the 2016–20 U.S. poverty thresholds for each household size—was used to categorize households as above or below 200 percent of the poverty threshold (Census Bureau, 2021). Lastly, households that are on SNAP, an income-based food assistance program, were categorized based on whether they received SNAP in the previous year.

The last set of variables were constructed using the CE Diary Survey to describe the composition of the household in terms of structure, as the household composition can affect how much, what, and where foods are purchased. For example, married households without children may demand more FAFH because it is easier to go out to eat without kids (Elitzak and Okrent, 2018). Household structure was defined as married without children, married with children, single without children, single with children, and other household types.

Household structure was characterized by whether the reference person and spouse (if present) are older than 65. Previous studies found food purchasing varies by age and generation (Cho and Todd, 2018; Elitzak and Okrent, 2018). In addition, within the context of the pandemic, households with older individuals were at higher risk of contracting COVID-19, which also may have affected how these households obtained food and what they purchased. Lastly, older Americans retired from the workforce at greater rates than pre-pandemic (Fry, 2021), which affects household income and time constraints and hence, indirectly affects food purchasing decisions (Hurst, 2008).

Using these subpopulations, nominal household expenditures and shares of the total household alcohol and food budget were compared for FAFH products by establishment type and FAH products by DGA category before and at the onset of the pandemic. Since the shares of the budget on food and alcohol for disaggregated products were stable between 2016 and 2019, these years were grouped into the pre-pandemic period (2016–19).⁶

All estimates of expenditures and budget shares based on the sample were weighted to be nationally representative using CE final weights. To control for household size, nominal household expenditures were normalized by household size and estimates are on a per capita basis, which are presented in tables and discussed in the text. Average expenditures per capita and shares of total household food and alcohol budget in the various categories were calculated as the mean across the different subpopulations. All budget share estimates were constructed with total household spending on food and alcohol as the denominator. Standard errors on level and share estimates were calculated using the balanced repeated replication method to account for the stratification of the sampling design. A t-test was used to determine if the percentage change between the means before and during the COVID-19 pandemic (i.e., 2016–19 versus 2020) were statistically different from zero. All percentage changes between estimates discussed in the text are statistically different at the 90-percent level ($p < 0.10$). In all the tables, a “*” denotes that the mean estimates between the two periods are statistically different at the 90-percent significance level, “**” denotes statistically significant differences at the 95-percent level, and “***” denotes statistically significant differences at the 99-percent level.

⁵ Income in the Consumer Expenditure Surveys (CE) is imputed using multiple imputations. The U.S. Bureau of Labor Statistics suggests using the mean across the five imputed income variables developed for multiple imputations to classify households as this is the best guess of income for the household (Paulin et al., 2018). Table 1 presents the average income for each quartile in 2016–19 and 2020.

⁶ The share of the food and alcohol budget on fluid milk is the only food product that showed a statistically significant decline between 2016 and 2019.

Table 1 provides summary statistics for U.S. households, broken down by whether the diary was recorded in 2016–19 or 2020 and subgroups. Between the two time periods, the characteristics of the weighted population of households do not change with some notable exceptions. The share of households with at least one person older than 65 increased by 2.2 percentage points between 2016–19 and 2020. In addition, average nominal and real income increased for households in all income quartiles, with the largest percentage increase among households in the first quartile, consistent with income changes noted during the pandemic.⁷ Given these results, the main analysis in this report focuses on budget shares so that food spending changes during COVID-19 due to changes in the income of individuals in the sample could be mitigated.

Table 1

Descriptive statistics of subpopulations in Consumer Expenditure (CE) Diary Survey, 2016–19 and 2020

	Unit	2016–19		2020		Diff
		Mean	S.E.	Mean	S.E.	
Age	Years	50.7	0.09	51.8	0.14	1.1 ***
Older than 65 years old	Percent	24.0	0.1	26.2	0.4	2.2 ***
Family size	Number	2.5	0.00	2.5	0.00	0.0 ***
Ethnicity and race						
Hispanic	Percent	12.6	0.48	13.0	0.40	0.4
Non-Hispanic White	Percent	64.9	0.60	64.8	0.71	-0.1
Non-Hispanic Black	Percent	12.2	0.19	12.0	0.40	-0.2
Non-Hispanic Asian	Percent	4.5	0.19	4.9	0.36	0.4
Non-Hispanic Other	Percent	5.9	0.22	5.2	0.49	-0.7
Household composition						
Married without children	Percent	22.7	0.31	22.1	0.63	-0.6
Married with children	Percent	22.8	0.32	22.1	0.66	-0.7
Single without children	Percent	29.0	0.28	29.8	0.69	0.8
Single with children	Percent	5.4	0.21	5.3	0.43	-0.1
Other household types	Percent	20.2	0.39	20.7	0.82	0.5
Income						
First income quartile	Dollars	15,495	136	18,199	325	2,704 ***
Second income quartile	Dollars	41,284	114	47,563	303	6,279 ***
Third income quartile	Dollars	76,779	166	89,842	580	13,063 ***
Fourth income quartile	Dollars	182,118	1,095	204,608	2,215	22,490 ***
Below 200% of poverty line	Percent	32.0	0.40	28.8	1.00	-3.2 ***
Received SNAP	Percent	9.4	0.29	9.8	0.59	0.4
Region						
Northeast	Percent	18.3	0.43	17.7	0.42	-0.6
Midwest	Percent	20.1	1.05	20.8	0.94	0.7
West	Percent	39.3	0.91	39.8	0.91	0.5
South	Percent	22.3	1.21	21.8	1.05	-0.5
Urban	Percent	93.5	0.75	93.9	0.86	0.4
Number of observations		44,971		10,615		

S.E. = standard error; Diff = difference; SNAP = Supplemental Nutrition Assistance Program.

Notes: CE Diary Survey weights were used to compute nationally representative coefficient estimates and appropriate standard errors. *** p < 0.01.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 CE Diary Survey public-use microdata.

⁷ Average nominal (real) income grew between 17.5 percent (12.5 percent using the U.S. Bureau of Labor Statistics' all items Consumer Price Index) for the first quartile and 12.3 percent (7.6 percent) for the fourth quartile.

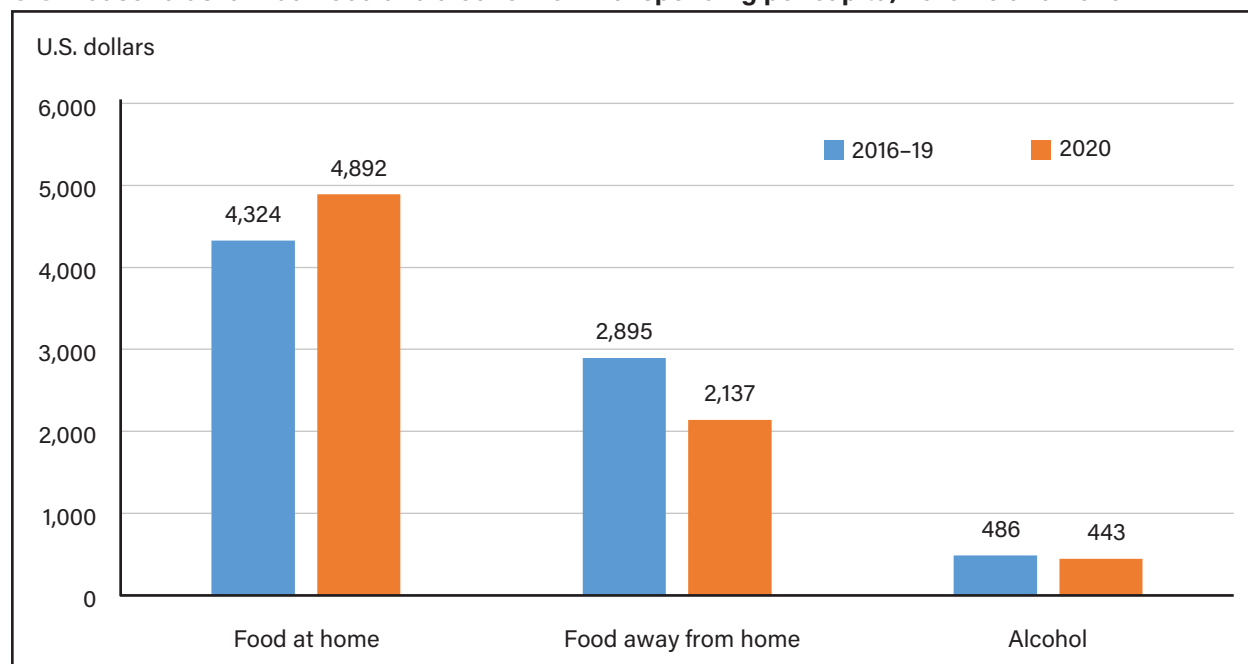
Shifts in Household Spending from FAFH and Alcohol to FAH

Annual food and alcohol spending per capita in 2020 (\$7,472) was 3 percent lower than the average food and alcohol spending in 2016–19 (\$7,704) (table A.2). This overall reduction was due to a 26-percent decline in spending on FAFH per capita (from \$2,895 in 2016–19 to \$2,137 in 2020) and a 9-percent decline in spending on alcohol per capita (from \$486 to \$443) despite a 13-percent increase in spending on FAH per capita (from \$4,324 to \$4,892 in 2020) (figure 1).

As a result, the importance of FAFH and alcohol in the average U.S. household food and alcohol budget diminished during the pandemic. Bucking long-term trends in FAFH spending, the share of the household food and alcohol budget on FAFH declined on average from 36.5 percent in 2016–19 to 29.3 percent in 2020 (figure 2) (Zeballos et al., 2021; Okrent et al., 2018). Unlike FAFH, the share of food and alcohol spending on alcohol has been mostly flat over the past several decades (Okrent et al., 2018); during the early onset of the pandemic, it declined from 4.8 percent of the household food and alcohol budget to 4.3 percent. This decline may reflect substitution from higher cost alcohol purchased at restaurants into lower cost alcohol purchased at grocery stores rather than decreased quantities of alcohol.

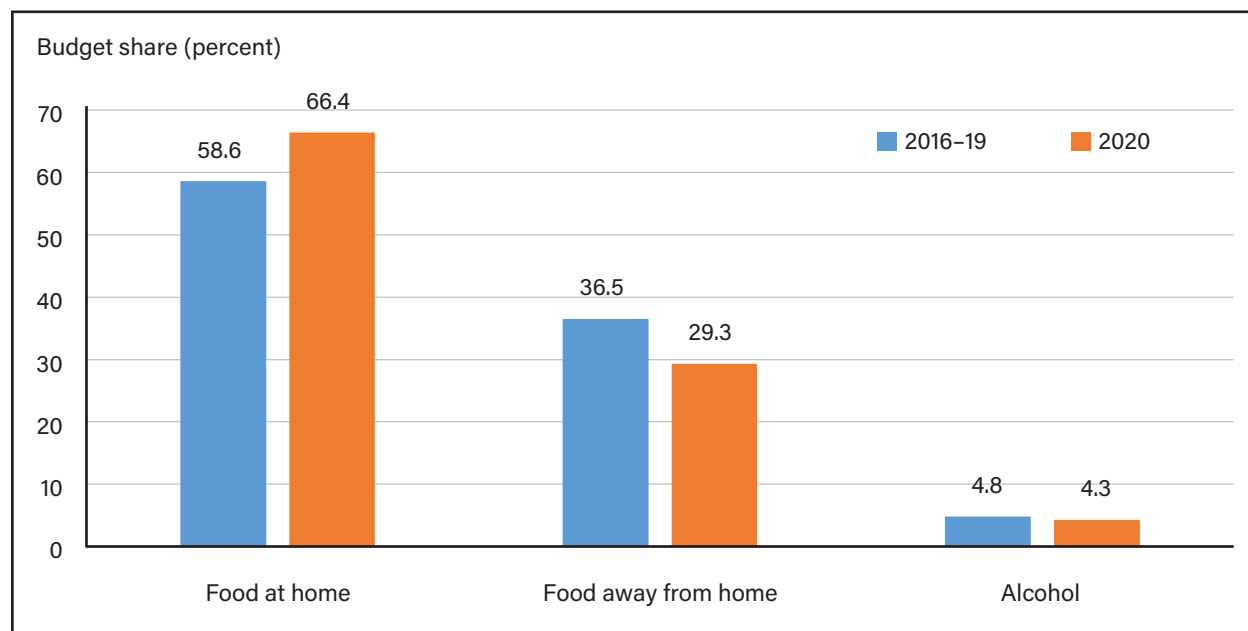
Figure 1

U.S. households' annual food and alcohol nominal spending per capita, 2016–19 and 2020



Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 Consumer Expenditure Diary Survey public-use microdata.

Figure 2

U.S. household food and alcohol budget shares for FAH, FAFH, and alcohol, 2016–19 and 2020

FAH = food at home; FAFH = food away from home.

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 Consumer Expenditure Diary Survey public-use microdata.

The magnitude of changes in average household per capita spending differed across subpopulations, indicating which groups were most affected by the pandemic. Results show a significant increase in household spending per capita on FAH in 2020 relative to 2016–19 for most subpopulations, with the largest percentage increases among non-Hispanic Black households (32 percent) and non-Hispanic other households (30 percent) (table A.2). FAFH spending declined the most, with a 35-percent decrease, among households with at least one person older than 65, and households in rural areas saw a 32-percent decrease (table A.2). Although households that were Hispanic or non-Hispanic Asian or lived in the West or rural areas did not experience statistically significant increases in expenditures on FAH, these households had statistically significant decreases in household spending per capita on FAFH (between 25 percent and 35 percent). Unlike FAH and FAFH, the decline in household spending on alcohol per capita is significant for only a few subpopulations, with the magnitude of the declines varying widely among them. The largest decrease in alcohol spending per capita between 2016–19 and 2020 (48 percent) was among single households with children.

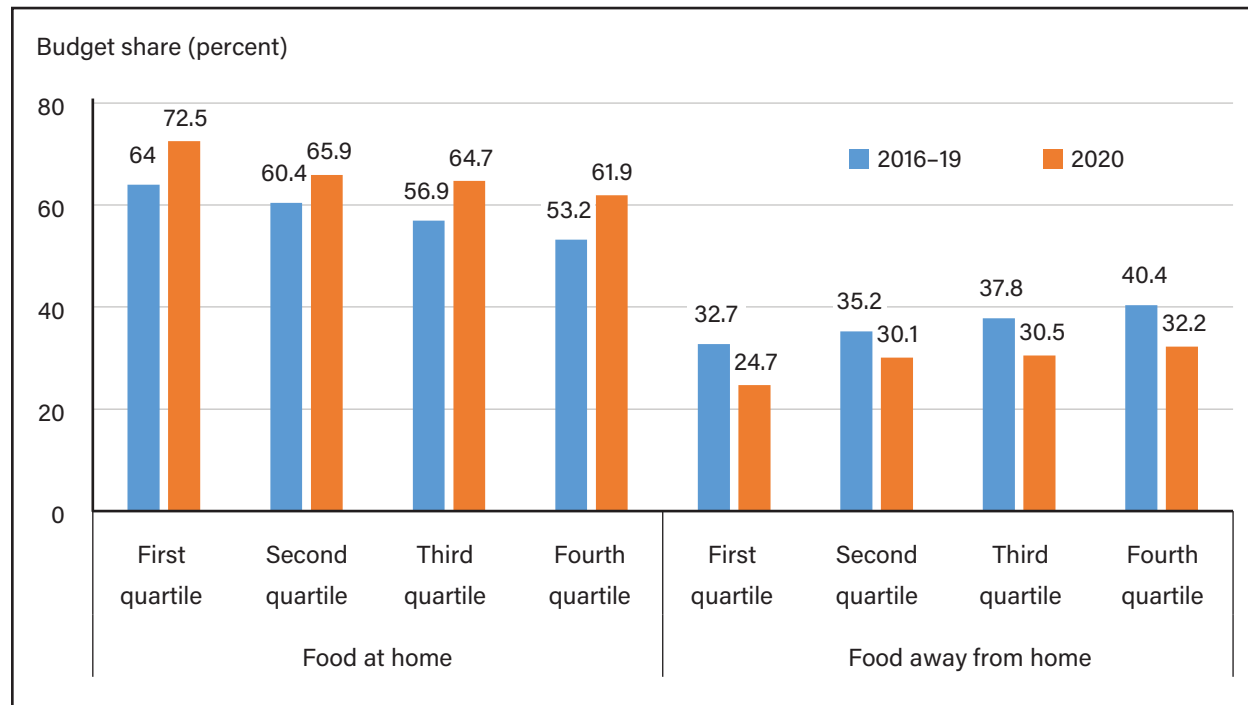
Changes in food spending for households receiving SNAP and their non-SNAP counterparts did not differ across these groups. Households receiving SNAP in the past 12 months increased their FAH spending by 15 percent from \$3,603 per capita in 2016–19 to \$4,149 per capita in 2020 (table A.2). In comparison, those households not receiving SNAP increased FAH spending by 13 percent, from \$4,399 per capita to \$4,973 per capita. As a result, both subpopulations increased the share of the household food and alcohol budget spent on FAH: from 69.1 percent to 75.7 percent for SNAP households and 57.6 percent to 65.4 percent for non-SNAP households (table A.3). A similar trend emerges regarding poverty status.

Using a more granular measure of income, like income quartiles, provides a nuanced characterization of the relationship between income and FAH. Average household per capita spending on FAH by the lowest income households (first income quartile) increased from \$2,740 in 2016–19 to \$3,199 in 2020, or 17 percent. Similarly, the highest income households (third and fourth income quartiles) increased FAH spending by 15–18 percent between 2016–19 and 2020. In comparison, the second income quartile increased spending by 6 percent during

this period from \$3,749 to \$3,990. As a result, the household budget on FAH for those in the second quartile grew 5.5 percentage points but was considerably more for the other income groups—7.8 to 8.7 percentage points (figure 3). The larger increase in the share of food and alcohol budget on FAH for households in the first income quartile compared with the second income quartile during the pandemic may reflect increased SNAP benefits and other assistance targeted to the lowest income households (Toossi et al., 2021).

Figure 3

U.S. household food and alcohol budget shares for FAH and FAFH, by income quartiles, 2016–19 and 2020



FAH = food at home; FAFH = food away from home.

Note: Households in the first income quartile are those with the lowest income, while households in the fourth income quartile are those with the highest income.

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 Consumer Expenditure Diary Survey public-use microdata.

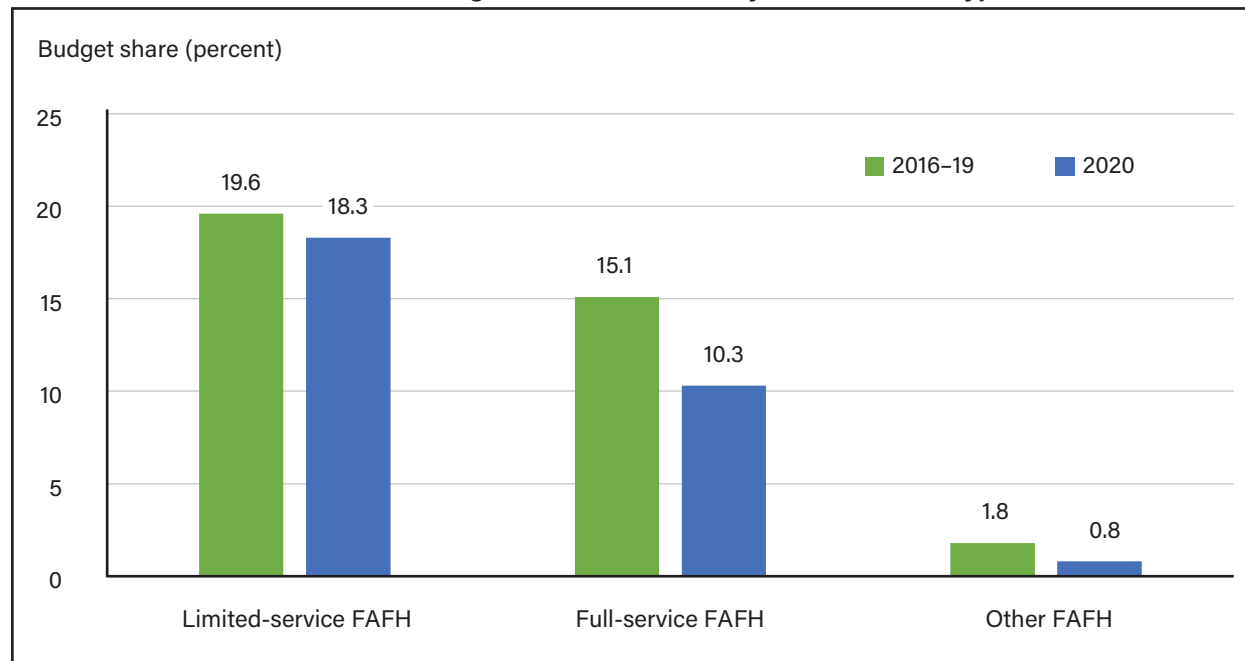
Shifts in Household Spending Among Establishment Types in FAFH

The increased spending on FAH was almost entirely offset by decreased spending on full-service FAFH. Full-service FAFH drove most of the 20-percent decline in spending on FAFH, declining from 15.1 percent of the total household food and alcohol budget in 2016–19 to 10.3 percent in 2020 (figure 4). Several studies have found that the declining spending in FAFH during the 2008–09 Great Recession was led by declines in full-service FAFH (Cho and Todd, 2018; Okrent et al., 2018), which suggests economic constraints like deteriorating consumer expectations of income and unemployment may be a major determinant of changes in full-service FAFH spending. However, the magnitude of the decline in the budget share on full-service FAFH during the Great Recession was considerably less than that of the pandemic; Cho and Todd (2018) reported a 1.7-percentage point decrease in the share of household food budget on full-service FAFH. Hence,

barriers related to accessing full-service FAFH during the pandemic, like stay-at-home orders and restaurant closures, may have exacerbated declines related to economic constraints (Zeballos and Dong, 2021).

The decrease in the total household food and alcohol budget on full-service FAFH was significant for most subpopulations (table A.7). The largest decrease in the share of full-service FAFH is among households with at least one person older than 65 (-6.6 percentage points). In comparison, Cho and Todd (2018) found little change in the share of the budget on full-service FAFH by people 64 years of age or older during the 2008–09 recession, indicating physical constraints related to the pandemic rather than economic constraints were a barrier to accessing full-service FAFH for this subpopulation.

Figure 4
U.S. household food and alcohol budget shares for FAFH, by establishment type, 2016–19 and 2020



FAFH = food away from home.

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 Consumer Expenditure Diary Survey public-use microdata.

Consistent with findings from the Great Recession (Cho and Todd, 2018), the share of the total household food and alcohol budget on full-service FAFH declined faster for lower income households before and during the pandemic compared with higher income households (table A.7). For example, the share of the alcohol and food budget spent on full-service FAFH by households in the first income quartile declined from 10.9 percent in 2016–19 to 7.2 percent in 2020, a 34-percent decrease. In comparison, the budget share on full-service FAFH by the highest income households declined from 19.8 percent to 13.7 percent, a 31-percent decrease. A similar pattern emerges using the SNAP participation and poverty status measures.

In contrast to full-service FAFH, the share of household food and alcohol budget on limited-service FAFH was less affected by the pandemic, which is consistent with the overall resiliency of limited-service FAFH during the 2008–09 Great Recession (Cho and Todd, 2018; Okrent et al., 2018). The household budget share on limited-service FAFH declined from 19.6 percent in 2016–19 to 18.3 percent in 2020. This decrease is not significant for many of the subpopulations studied. However, there appears to be a positive relationship between income and change in the budget share on limited-service FAFH. For example, households below the 200-percent poverty threshold decreased the share of total household food and alcohol budget on limited-

service FAFH from 20 percent in 2016–19 to 16.6 percent in 2020, whereas those above the 200-percent poverty threshold had no significant change. A similar relationship is seen among households that received SNAP compared with those households that did not receive SNAP, as well as those households in the first income quartile versus those in the other income quartiles (table A.7).

The share of the household food and alcohol budget on other FAFH, which includes food from vending machines, school meals, and employer establishments, dropped from 1.8 percent in 2016–19 to 0.8 percent in 2020. Although this 1-percentage point decline is smaller in magnitude compared with that of full- (versus 4.8 percentage points) and limited-service FAFH (versus 1.3 percentage points), the share of the household food and alcohol budget on other FAFH declined 55 percent, whereas full- and limited-service FAFH declined 32 percent and 6 percent, respectively. This decrease is significant for most of the subpopulations studied, with the highest decrease among single households with children (-1.9 percentage points) and households in the highest income quartile (-1.5 percentage points) (table A.7).

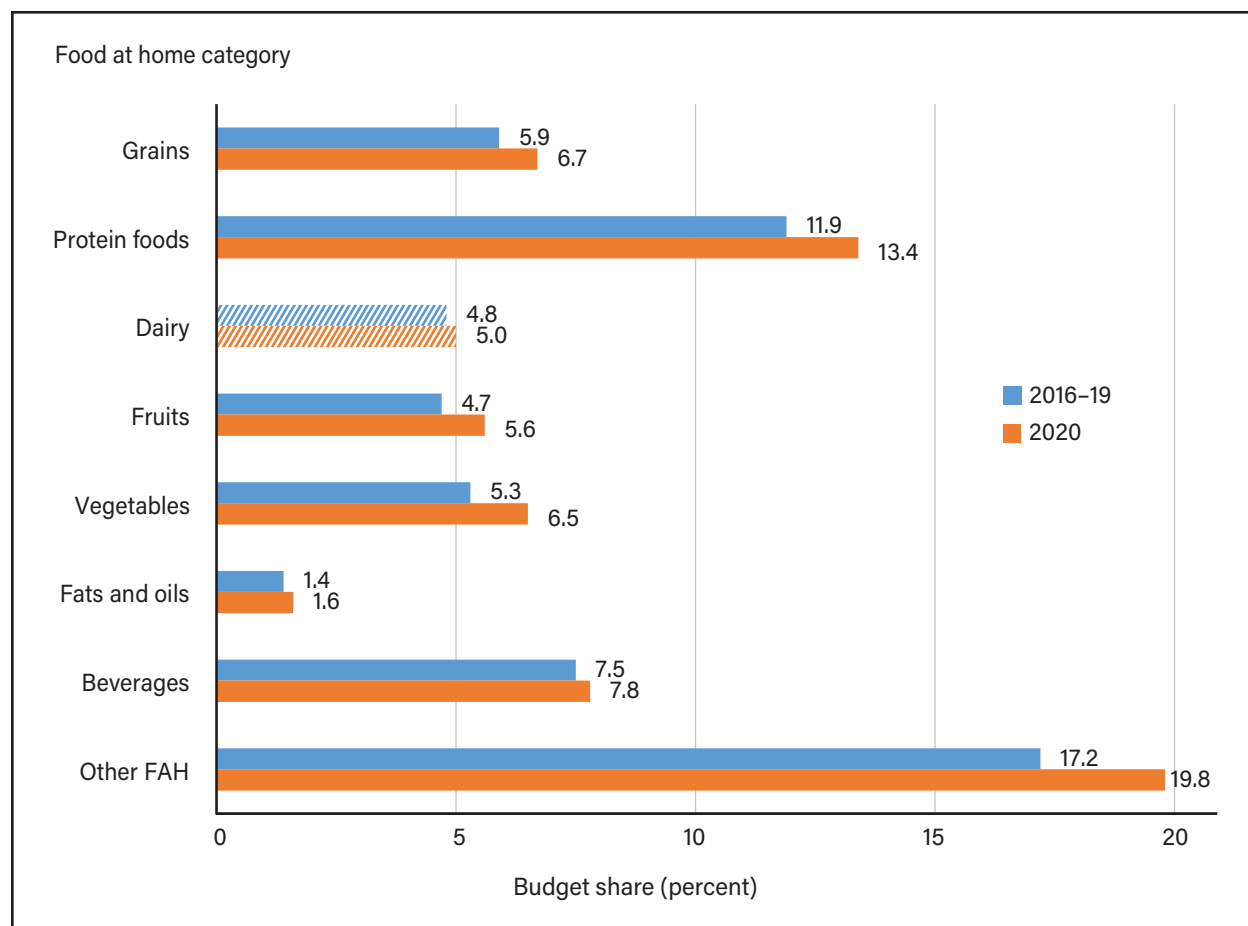
Shifts in Household Spending Among DGA Categories in FAH

With the exception of dairy, the shares of the household food and alcohol budget on DGA categories in FAH (i.e., grains, protein foods, fruits, vegetables, fats and oils, beverages, and other FAH) increased during the onset of the pandemic compared with the pre-pandemic (2016–19) level. Overall, the share of the household food and alcohol budget increased 7.8 percentage points between 2016–19 and 2020. This increase was driven by other FAH (2.6 percentage points), protein foods (1.5 percentage points), vegetables (1.2 percentage points), fruits (0.9 percentage points), and grains (0.8 percentage points). Nonalcoholic beverages (0.3 percentage points) and fats and oils (0.2 percentage points) also contributed to the FAH percentage point gain, but their contributions were relatively small compared with the other food categories (figure 5).

Although other FAH and protein foods contributed more to the percentage point increase in the FAH budget share, the fruit and vegetable shares of the household food and alcohol budget grew the fastest between 2016–19 and 2020. Other FAH (17.2 percent in 2016–19) and protein foods (11.9 percent) are the largest FAH subgroups, and both shares of the household food and alcohol budget grew 15 percent and 13 percent, respectively. Comparatively less than these food groups, the budget shares on grains (5.9 percent in 2016–19) and oils and fats (1.4 percent) also grew at a similar rate. The budget shares on beverages (7.5 percent in 2016–19) grew the least at 4 percent. In contrast, the budget share on vegetables and fruits, which constitute a smaller share of FAH compared with most of these other foods (5.3 and 4.7 percent in 2016–19, respectively), grew 23 percent and 19 percent, respectively. The faster growth of the fruit and vegetable shares in the food and alcohol budget compared with other foods indicates a slight shifting of diets to more produce during the pandemic.

Figure 5

U.S. household food and alcohol budget shares for FAH, by DGA categories, 2016–19 and 2020



FAH = food at home; DGA = Dietary Guidelines for Americans.

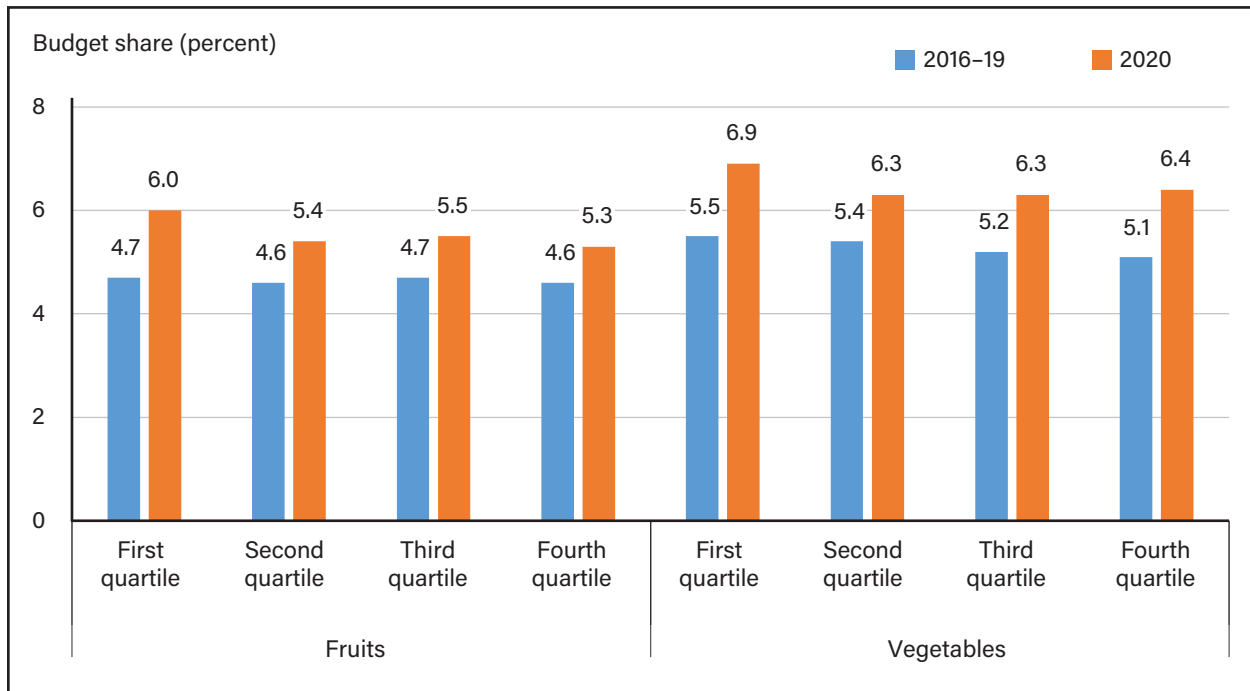
Note: Shaded bars indicate the difference is not statistically significantly different from zero ($p < 0.10$).

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–2020 Consumer Expenditure Diary Survey public-use microdata.

Overall, fruits increased from 4.7 percent of the household food and alcohol budget in 2016–19 to 5.6 percent in 2020. This increase is positive and significant for most of the subpopulations studied. Households with less income spent more of their budget on fruits compared with their higher-income counterparts. The percentage-point increase in the share of the budget on fruit ranged from a high of 1.3 percentage points for the first income quartile to a low of 0.7 percentage points for the fourth income quartile (figure 6). Similarly, the increase in the share of the budget on fruit was 1.3 percentage points for households 200 percent below the poverty threshold compared with 0.8 percentage points for those above it (table A.5). Lastly, households receiving SNAP in the past 12 months increased the share of their budget on fruit by 1.5 percentage points between 2016–19 and 2020 compared with 0.8 percentage points for households not receiving SNAP.

Figure 6

U.S. household food and alcohol budget shares for FAH fruits and vegetables, by income quartiles, 2016–19 and 2020



FAH = food at home.

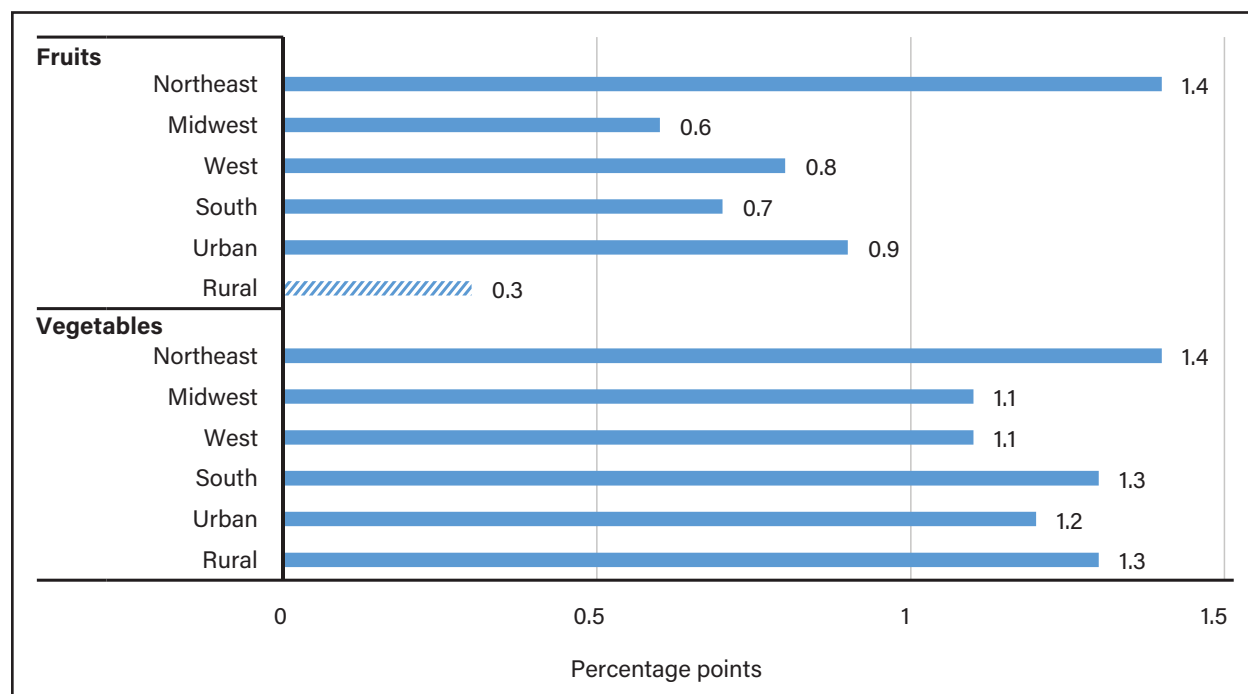
Note: Fruits and vegetables exclude juices.

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 Consumer Expenditure Diary Survey public-use microdata

Regional differences in fruit purchasing behaviors are also apparent over this period. Households in the Northeast increased the share of their budget on fruit by 1.4 percentage points, whereas households in the Midwest increased their share by 0.6 percentage points. Urban households increased their share of the budget on fruits by 0.9 percentage points, but rural households presented a statistically insignificant increase (figure 7). Similar discrepancies are seen across the household composition.

Figure 7

Differences in budget shares of U.S. household food and alcohol for FAH fruits and vegetables, by geography and urban/rural designation, 2016–19 and 2020



FAH = food at home.

Notes: Shaded bars indicate the difference is not statistically significantly different from zero ($p < 0.10$). Fruits and vegetables exclude juices.

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 Consumer Expenditure Diary Survey public-use microdata.

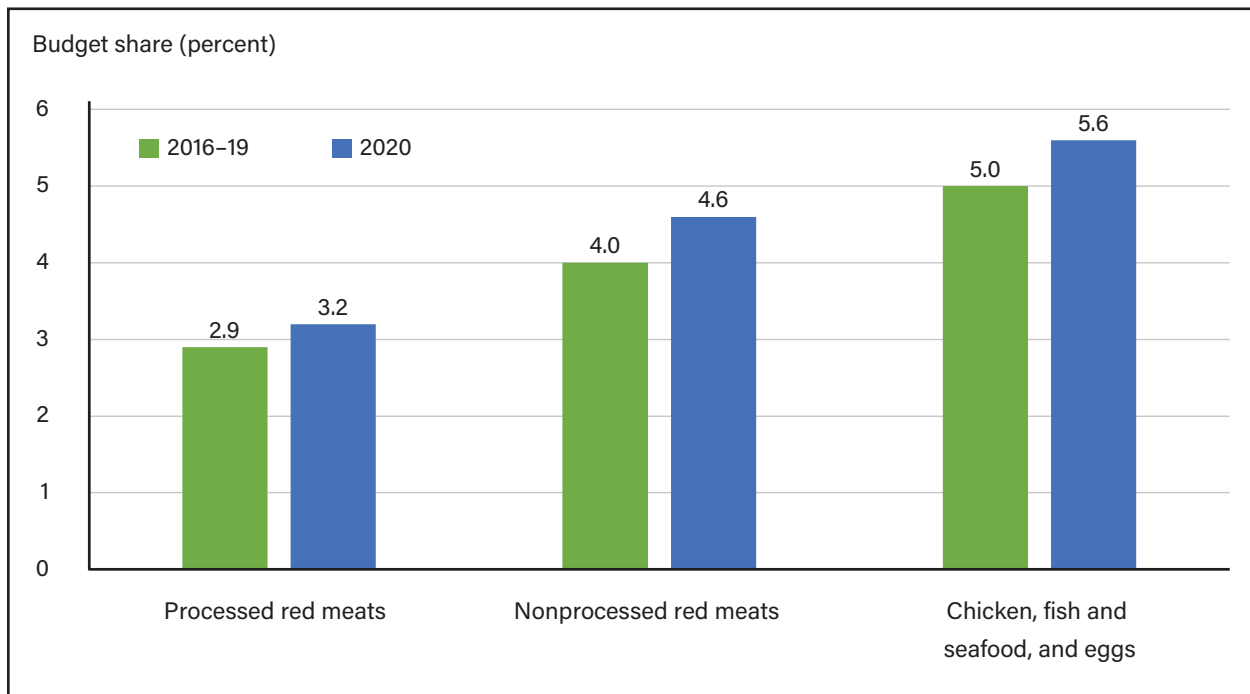
While the share of household food and alcohol spending on vegetables also grew at a similar rate as fruits, from 5.3 percent in 2016–19 to 6.5 percent in 2020, purchasing patterns before and during the pandemic on vegetables differed from fruits across sociodemographic characteristics of households. Similar to fruits, the budget share on vegetables increased by roughly 1.2 percentage points, or 23 percent, with positive and significant increases for most of the subpopulations studied (table A.5). However, unlike the inverse relationship between the income variables and the change in fruit share, the relationship between income and the change in the vegetable share is nonlinear. Households in the first income quartile increased their share of the budget the most on vegetables (1.4 percentage points), followed by households in the fourth income quartile (1.3 percentage points), while households in the second and third income quartiles increased their share by less (0.9–1.1 percentage points). Also, while there was no significant change in the share of the budget on vegetables for households that received SNAP, households that did not receive SNAP increased their vegetable share by 1.2 percentage points. In contrast to fruits, the change in the share of the budget on vegetables was roughly the same across regions and urban/rural designations.

The 1.5-percentage point increase in the share of the household food and alcohol budget on protein foods is also positive and significant for most of the subpopulations. This increase ranged from a high of 2.2 percentage points for single-parent households with children to a low of 1.0 percentage points for households in the second income quartile (table A.4). Non-Hispanic Asian and other racial and ethnic households as well as households in rural areas did not experience statistically significant increases in the protein foods share.

Further examination of the protein foods category shows most of the growth in the protein foods as a share of the household food and alcohol budget was led by nonprocessed red meats and poultry, fish and seafood, and eggs (figure 8). The share of nonprocessed red meats grew the most (15 percent), from 4.0 percent pre-pandemic to 4.6 percent during the pandemic. This increase is led by single households with children (1.9 percentage points) and Hispanic households (1.1 percentage points) (table A.8). Similarly, the share of chicken, fish and seafood, and eggs also experienced relatively high growth (12 percent), from 5.0 percentage points to 5.6 percentage points. This increase is highest among non-Hispanic Blacks (1.0 percentage points) and households with at least one person older than 65 (1.0 percentage points). The share of the budget on processed red meats grew at a slower rate (10 percent), from 2.9 percentage points to 3.2 percentage points. Along with non-Hispanic Asian households, households in the two highest income quartiles and married households with children experienced the largest changes in the share of the budget on processed red meats. Although most of the growth in the protein foods category was driven by healthier protein foods, some households—namely, those that were non-Hispanic Asians, married with children, and of higher income—shifted toward less healthy protein foods options (i.e., processed red meats).

Figure 8

U.S. household food and alcohol budget shares for FAH protein foods, 2016–19 and 2020.



Note: FAH = food at home.

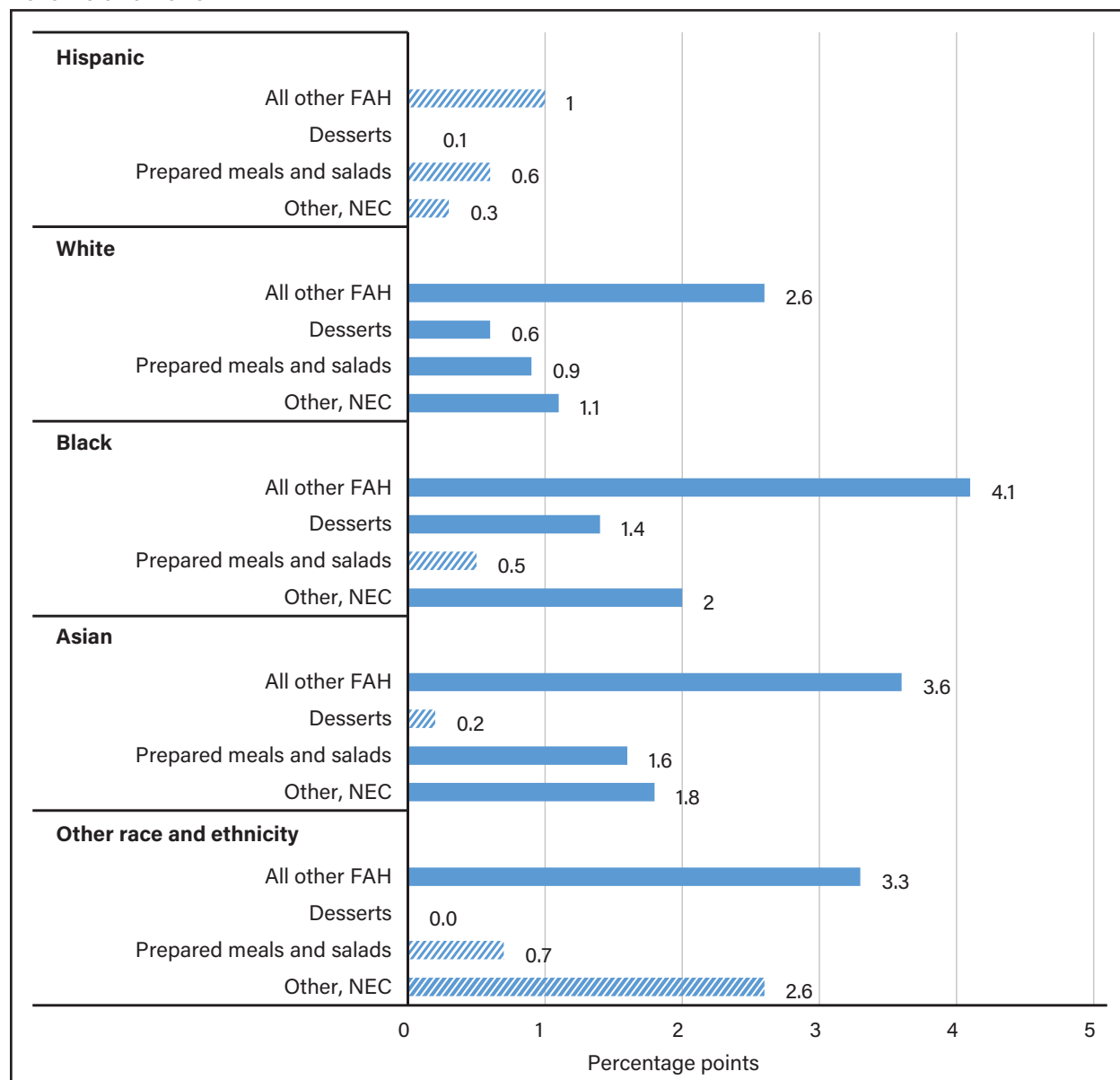
Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–2020 Consumer Expenditure Diary Survey public-use microdata.

Other FAH was by far the largest FAH category and increased from 17.2 percent of the household food and alcohol budget in 2016–19 to 19.8 percent in 2020, a roughly 15-percent increase. This increase is positive and significant for most of the subpopulations studied but varied considerably across the racial and ethnic composition of the household. On the upper end, non-Hispanic Blacks and Asians increased their share of the budget on other FAH by 4.1 percentage points and 3.6 percentage points, respectively (figure 9). The relatively large increase by non-Hispanic Asians on other FAH was driven by a 1.6-percentage point increase in prepared meals and salads and a 1.8-percentage point increase in other, not elsewhere classified (NEC). In contrast, non-Hispanic Blacks had a relatively large increase in both other, NEC (2.0 percentage points) and desserts (1.4 percentage points). Finally, non-Hispanic Whites increased spending across all foods within

other FAH, mostly driven by a 1.1-percentage point increase in other, NEC, followed by a 0.9-percentage point increase in prepared meals and salads and a 0.6-percentage point increase in desserts.

Figure 9

Percentage point differences in budget shares of U.S. household food and alcohol for all other FAH, 2016-19 and 2020



FAH = food at home; NEC = not elsewhere classified.

Notes: Hispanic may be any race; race categories exclude those of Hispanic origin. Shaded bars indicate the difference is not statistically significantly different from zero ($p < 0.10$). Desserts, prepared meals and salads, and other, NEC are subgroups within all other FAH.

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-2020 Consumer Expenditure Diary Survey public-use microdata.

Similar to other FAH and protein foods, the shares of the household food and alcohol budget on fats and oils and grains also both grew 14 percent. However, the increase in the fats and oils budget share led to only a 0.2-percentage point increase in the FAH share that was largely insignificant among the subpopulations.

In contrast, the increase in the grain budget share led to a 0.8-percentage point increase in FAH share that was positive and statistically significant among most of the subpopulations. SNAP participants increased the share of the household food and alcohol budget on grains the most (1.6 percentage points); however, this difference is measured with considerable error and is not statistically different from any of the other subpopulations (table A.4).

The share of the household budget on dairy products and beverages grew considerably less than the other FAH categories. In particular, the budget share on beverages increased from 7.5 percent of the total food and alcohol budget in 2016–19 to 7.8 percent in 2020. However, most of the changes across subpopulations were statistically insignificant. There was no statistically significant change in the budget share on dairy, and similar to beverages, most of the changes across subpopulations were statistically insignificant (table A.4).

Discussion and Conclusion

The COVID-19 pandemic had a large effect on what, where, and how foods were acquired by U.S. consumers, which has implications for the overall healthfulness of diets. Although many of the restrictions that impacted food acquisitions have been lifted, the changes in purchasing and eating behaviors can have long-term consequences on overall weight management and health (Barone Gibbs et al., 2021; Bhutani et al., 2021; Miller et al., 2021). In addition, dramatic shifts in purchasing and eating patterns, similar to that experienced during the Great Recession, could be sustained well after the pandemic (Cho and Todd, 2018).

Consistent with the literature on pandemic eating, this report shows expenditures and the share of the food and alcohol budget on FAFH and alcohol declined. Although this decline is consistent with the USDA's ERS Food Expenditure Series (FES), a dataset based primarily on sales data reported by establishments, the magnitude of the decline based on the CE Diary Survey is smaller in comparison. In particular, the FES showed a 6-percent decline in nominal food and alcohol sales between 2019 and 2020, whereas the CE Diary Survey estimate analyzed in this report showed a 3-percent decline overall. This difference may result from the coverage of the two datasets. The CE Diary Survey estimates reflect only household spending, whereas the FES reflects spending by households; businesses; and local, state, and federal governments. Travel restrictions and remote working could have resulted in steeper declines in food and alcohol sales, particularly FAFH, for businesses relative to households or the government. Hence, the FES estimates, which provide a more comprehensive estimate of how the pandemic affected food services and retail establishments, show a steeper decline than the present estimates, which reflect only household spending.

The shift out of FAFH and alcohol and into FAH may be due to restricted or limited access to FAFH establishments, namely restaurant closures, and stay-at-home orders during the onset of the pandemic. For example, approximately 15 percent of restaurants in the United States closed during the pandemic (Sedov, 2022). Also, almost all states enacted stay-at-home orders during April 2020, which continued through May 2020 in many states for individuals with increased risk (Moreland et al., 2020). Similar to the Great Recession, other factors, such as decreasing consumer expectations and employment and increasing time spent at home, could also explain the shift out of FAFH and into FAH (Aguilar et al., 2013; Cho and Todd, 2018). However, preliminary evidence suggests that factors specific to the pandemic, like restricted access to FAFH, affected purchasing patterns more than recessionary factors such as unemployment (Zebellos and Dong, 2021). This appears to be the case for explaining the relatively large decline in full-service FAFH spending for elderly households during the pandemic compared with such spending during the Great Recession.

Unlike full-service FAFH, expenditures and budget shares on limited-service FAFH (sometimes referred to as fast foods or quick-service restaurants) declined very little during the pandemic, and these declines are driven

by only a few sociodemographic subgroups (namely lower income households). Although much of the past literature found larger declines in limited-service FAFH consumption than this study, the difference likely reflects dissimilarities in coverage. This study encompasses all of 2020 when purchases at limited-service FAFH establishments decreased sharply during the onset of the pandemic but recovered thereafter in the months following the initial stay-at-home orders (Marchesi and McLaughlin, 2022). Conversely, most of the other studies analyzed data for April, May, or June 2020 when stay-at-home orders were in place. Regardless of these differences, declining purchases of FAFH could indicate a healthful shift in food purchasing during the pandemic because FAFH, especially fast food, is generally more caloric, higher in saturated fats, and associated with obesity (Barnes et al., 2016; Guthrie et al., 2018).

Alcohol spending in total and as a share of the household food and alcohol budget declined during the early onset of the pandemic. Although this decline could reflect economic and physical barriers related to the pandemic, it could also imply substitution from alcoholic beverages purchased at restaurants to alcoholic beverages purchased at retail establishments. Alcohol purchased at grocery stores is typically less expensive than alcohol purchased at restaurants (Kumcu and Okrent, 2014). In a systematic review, Sohi et al. (2022) concluded that the frequency of alcohol consumption regardless of where it was purchased increased in the United States. Hence, this decline in alcohol spending probably reflects changes in prices rather than quantities of alcohol purchased.

Pandemic-related declines in FAFH spending were somewhat offset by increases in FAH spending, led mostly by the other FAH category—desserts, prepared meals and salads, and other, NEC (e.g., salty snacks, fats, sweeteners). The magnitude of the changes in the share of the household food and alcohol budget on other FAH varied considerably across sociodemographic groups and foods within other FAH. At the high end, non-Hispanic Blacks and Asians increased their share of the budget on other FAH by around 4 percentage points, whereas Hispanics had no significant change. Non-Hispanic Asians purchased more prepared meals and salads, whereas Non-Hispanic Blacks purchased more desserts. Overall, these foods tend to be more processed than other DGA categories, and some would argue that the greater degree of processing indicates an unhealthy shift in purchasing patterns (Bhutani et al., 2021; Gonzalaz-Monroy et al., 2021). This category also contains many foods that can be considered snack foods like cookies, chips, ice cream, and candy. Increased purchasing of these foods is consistent with the literature that found an increased incidence of snacking, especially snacking on unhealthy foods, during the pandemic (Bhutani et al., 2021; Sadler et al., 2021; Chenarides et al., 2021; Park et al., 2022).

Protein foods was the second largest contributor to the increased budget share on FAH, and much of this increase was led primarily by spending on nonprocessed red meats, poultry, fish and seafood, and eggs. However, some households, including non-Hispanic Asians, married with children and of higher income shifted toward purchasing more processed red meats. In contrast, Barone Gibbs et al. (2021) found no change in processed meat consumption during the pandemic but a reduction in red meat consumption across their sample of workers. Differences between this study and Barone Gibbs et al. (2021) may reflect differences in the sample. Barone Gibbs et al. (2021) used the Reducing Sedentary Behavior on Blood Pressure (RESET BP) trial of 112 randomly sampled desk workers in Pennsylvania with more than 20 hours of paid work per week with elevated blood pressure and who exhibited sedentary behavior. This population was 69 percent female, 97 percent non-Hispanic, and 79 percent college educated, which looks quite different from the sex, ethnicity, and educational makeup of the U.S. population.

Similar to some findings in the literature (Bhutani et al., 2021; Miller et al., 2021), substantial increases in the budget share on fruits and vegetables were also found. Although other FAH and protein foods contributed the most to the percentage point increase in the FAH budget share, the budget shares for fruits and vegetables grew the fastest. The budget share on fruits increased across most sociodemographics, with the largest

gains among households with lower incomes and the smallest gains among those with higher incomes. The budget share on vegetables grew faster than fruits but was more evenly distributed across incomes. The shift into fruits and vegetables is consistent with studies that have found more time spent cooking by households during the pandemic (Restrepo and Zeballos, 2022) and that fruit and vegetable consumption was positively related to food-related time use (Monsivais et al., 2014; Laska et al., 2012).

Lastly, little evidence that beverage or dairy consumption changed during the pandemic was found, including no statistically significant changes in dairy purchases. Milk, which is a large component of the dairy category, has steadily declined in the United States, so no change in this category is expected (Stewart et al., 2021). Although there was a statistically significant increase in beverage purchases, the magnitude of the change was considerably less (0.3 percentage points) than most of the other DGA categories. Many studies in the literature about pandemic eating found increased consumption of sugar-sweetened beverages (Park et al., 2022; Bhutani et al., 2021). The beverage category in this analysis consists of not only sugar-sweetened beverages but also diet beverages, coffee, tea, and juice. However, statistically significant increases were found only in the share of the budget on coffee and tea, whereas the share on carbonated beverages, fruit drinks, and fruit juices remained unchanged.

There are several limitations to this study. First, the detailed foods within the CE Diary Survey are too coarse to examine some categories of food by nutritional characteristics. Second, the CE Diary Survey, the primary data source for this analysis, has suffered declining response rates over time, and the pandemic exacerbated this for 2020. Preliminary U.S. Bureau of Labor Statistics (BLS) analysis shows that nonresponse was more systemic for some subpopulations compared with others (McBride et al., 2021). This implies that some of the analysis that compares across groups should be taken with caution. Lastly, the bivariate analysis in this study obscures the correlation between multiple variables. For example, income is usually correlated with racial and ethnic composition, and differences in food purchasing by race and ethnicity highlighted in this analysis may be driven by income rather than race and ethnicity. A more rigorous modeling approach would be needed to disentangle the correlation between multiple variables. The differences highlighted in this study between income, race and ethnicity, age, and household composition may warrant further investigation for disentangling the effect of the pandemic on food purchasing and overall diet quality.

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Appendix

Table A.1

Food group formation

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Table A.1

Food group formation

Food at home						
Main food groups	Detailed food groups	CE Diary Survey universal classification code	Main food groups	CE Diary Survey universal classification code		
Grains	Cereals	10110	Flour	Dairy	90110	Fresh milk, all types
		10120	Prepared flour mixes		100510	Miscellaneous dairy products
		10210	RTE and cooked cereals		100210	Cheese
		10310	Rice	110110	Apples	
		10320	Pasta and other cereal products	110210	Bananas	
	Bread products	20110	White bread	110310	Oranges	
		20210	Bread, other than white	110410	Other fresh fruits	
		20310	Biscuits and rolls	110510	Citrus fruits, excluding oranges	
		20610	Crackers	130121	Frozen fruits	
		20620	Bread and cracker products	130310	Canned fruits	
20810		Frozen bakery products	130320	Dried fruit		
Protein foods		Processed red meat	40110	Bacon	Vegetables	120110
	40310		Ham, not canned	120210		Lettuce
	40510		Sausage	120310		Tomatoes
	40610		Canned ham	120410		Other fresh vegetables
	50110		Frankfurters	140110		Frozen vegetables
	50210	Bologna, liverwurst, salami	140220	Canned corn		
	50310	Other lunchmeats	140230	Canned misc vegetables		
	Nonprocessed red meat	30110	Ground beef	140310		Dried processed vegetables
		30210	Chuck roast	140340		Dried misc vegetables
		30310	Round roast	140210		Canned beans
30410		Other roast	140320	Dried peas		
30510		Round steak	140330	Dried beans		
Poultry, fish and seafood, and eggs	Nonprocessed red meat	30610	Sirloin steak	Oils and fats	160211	Fats and oils
		30710	Other steak		160320	Peanut butter
		30810	Other beef		180320	Nuts
		40210	Pork chops	Beverages	130110	Frozen orange juice
		40410	Other pork		130122	Frozen fruit juices
	50410	Lamb and organ meats	130211		Fresh fruit juice	
	50900	Mutton, goat, and game	130212		Canned and bottled fruit juice	
	60110	Fresh and frozen whole chicken	140410		Frozen vegetable juices	
	60210	Fresh and frozen chicken parts	140420		Fresh and canned vegetable juices	
	60310	Other poultry	170110		Cola	
70110	Canned fish and seafood	170210	Other carbonated drinks			
70230	Fresh fish and shellfish	170310	Roasted coffee			
70240	Frozen fish and shellfish	170410	Instant and freeze dried coffee			
80110	Eggs	170520	Tea			
			170510	Noncarbonated fruit flavored drinks		
			170531	Other noncarbonated beverages and ice		
			170532	Bottled water		
			170533	Sports drinks		

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Table A.1

Food group formation

Food at home			Food away from home		
Main food groups	Detailed food groups	CE Diary Survey universal classification code	Main food groups	CE Diary Survey universal classification code	
		20410 Cakes and cupcakes		190111	Lunch fast food
		20510 Cookies	Limited-service FAFH	190211	Dinner fast food
		20710 Sweetrolls, coffee cakes, doughnuts		190311	Snacks and nonalcoholic beverages fast food
Desserts		20820 Pies, tarts, turnovers		190321	Breakfast and brunch fast food
		100410 Ice cream and related products			190112
		150110 Candy and chewing gum	Full-service FAFH	190212	Dinner full-service restaurants
		180612 Prepared desserts		190312	Snacks and nonalcoholic beverages full-service restaurants
		180110 Canned and packaged soups		190322	Breakfast and brunch full-service restaurants
Prepared meals and salads		180210 Frozen meals		190113	Lunch vending machines and mobile vendors
		180220 Other frozen prepared foods		190114	Lunch employer and school cafeterias
		180611 Prepared salads		190213	Dinner vending machines and mobile vendors
		180710 Misc prepared foods		190214	Dinner employer and school cafeterias
Other FAH		180310 Potato chips and other snacks	Other FAFH	190313	Snacks and nonalcoholic beverages vending machines and mobile vendors
		180410 Salt, spices, other seasonings		190314	Snacks and nonalcoholic beverages employer and school cafeterias
		180420 Olives, pickles, relishes		190323	Breakfast and brunch vending machines and mobile vendors
		180510 Sauces and gravies		190324	Breakfast and brunch employer and school cafeterias
Other, NEC		180520 Baking needs and misc products		Alcohol	
		180620 Baby food		200111	Beer and ale
		180720 Vitamin supplements		200112	Nonalcoholic beer
		90210 Cream		200210	Whiskey
		100110 Butter		200310	Wine
		160110 Margarine		200410	Other alcoholic beverages
		160212 Salad dressings		200511	Beer and ale fast food
		160310 Nondairy cream and imitation milk		200512	Beer and ale full-service restaurants
		150211 Sugar		200513	Beer and ale vending machines and mobile vendors
		150212 Artificial sweeteners		200514	Beer employer
		150310 Jams, preserves, other sweets		200521	Wine fast food
			200522	Wine full-service restaurants	
			200523	Wine vending machines and mobile vendors	
			200531	Other alcoholic beverages fast food	
			200532	Other alcoholic beverages full-service restaurants	
			200534	Other alcohol employer	

CE = Consumer Expenditure Diary Survey; FAH = food at home; FAFH = food away from home; RTE = ready-to-eat; NEC = not elsewhere classified; Misc = miscellaneous.

Source: USDA, Economic Resource Service classification using information from the U.S. Bureau of Labor Statistics' 2016–20 CE Diary Survey public-use microdata.

Table A-2
Annual U.S. household food and alcohol nominal spending per capita (USD), by subpopulations, 2016-19 and 2020

	Total food and alcohol			Food at home			Food away from home			Alcohol		
	2016-19	2020	% Diff	2016-19	2020	% Diff	2016-19	2020	% Diff	2016-19	2020	% Diff
All	7704 (59,32)	7472 (127,63)	-3% *	4,324 (36,19)	4,892 (99,73)	13% ***	2,895 (36,79)	2,137 (59,29)	-26% ***	486 (8,96)	443 (20,44)	-9% **
Hispanic	7213 (183,52)	6,739 (288,26)	-7%	4,237 (113,77)	4,491 (230,08)	6%	2,701 (94,63)	2,033 (164,02)	-25% ***	275 (18,74)	216 (31,92)	-21%
Non-Hispanic White	8,004 (73,47)	7,628 (146,34)	-5% **	4,438 (49,02)	4,907 (96,91)	11% ***	2,983 (37,10)	2,187 (72,00)	-27% ***	584 (13,42)	534 (26,29)	-9% *
Non-Hispanic Black	5,296 (149,51)	5,886 (438,49)	11%	3,121 (93,63)	4,127 (376,92)	32% ***	1,982 (93,81)	1,561 (124,41)	-21% **	193 (16,85)	199 (53,57)	3%
Non-Hispanic Asian	8,736 (197,71)	8,237 (417,43)	-6%	4,931 (119,88)	5,517 (329,55)	12%	3,496 (145,16)	2,449 (285,81)	-30% ***	309 (26,45)	270 (53,32)	-13%
Non-Hispanic Other	9,649 (283,56)	10,277 (559,66)	7%	5,277 (150,23)	6,867 (463,10)	30% ***	3,773 (168,14)	2,805 (234,89)	-26% ***	599 (53,24)	605 (129,33)	1%
Household composition												
Married without children	8,744 (93,26)	8,161 (257,52)	-7% **	4,797 (63,01)	5,125 (148,86)	7% **	3,234 (50,79)	2,343 (142,98)	-28% ***	714 (26,44)	692 (53,91)	-3%
Married with children	11,060 (142,07)	11,044 (249,27)	0%	6,365 (79,16)	7,356 (176,43)	16% ***	4,172 (88,97)	3,127 (120,88)	-25% ***	523 (20,21)	561 (43,58)	7%
Single without children	4,438 (55,10)	4,425 (151,90)	0%	2,321 (34,65)	2,807 (143,40)	21% ***	1,767 (40,43)	1,308 (65,89)	-26% ***	351 (13,49)	309 (29,75)	-12%
Single with children	6,376 (223,73)	6,292 (484,37)	-1%	3,821 (163,58)	4,242 (312,38)	11%	2,317 (91,12)	1,925 (290,87)	-17%	238 (38,14)	125 (38,83)	-48% **
Other household types	7,801 (121,31)	7,613 (304,71)	-2%	4,504 (66,44)	5,181 (221,92)	15% ***	2,849 (68,27)	2,108 (126,01)	-26% ***	449 (20,27)	324 (37,61)	-28% ***
Income												
First income quartile	4,302 (83,52)	4,391 (233,24)	2%	2,740 (60,81)	3,199 (194,12)	17% **	1,387 (32,40)	1,033 (75,39)	-26% ***	175 (12,62)	159 (21,34)	-9%
Second income quartile	6,259 (83,93)	5,961 (182,08)	-5%	3,749 (58,48)	3,990 (127,65)	6% *	2,195 (47,53)	1,678 (86,46)	-24% ***	315 (12,27)	293 (32,86)	-7%
Third income quartile	8,143 (105,40)	8,028 (244,52)	-1%	4,568 (63,18)	5,247 (191,21)	15% ***	3,076 (59,69)	2,345 (108,47)	-24% ***	499 (18,53)	436 (34,52)	-13%
Fourth income quartile	12,448 (127,05)	12,229 (282,80)	-2%	6,387 (77,69)	7,536 (217,48)	18% ***	5,074 (83,91)	3,740 (145,56)	-26% ***	987 (22,97)	953 (62,94)	-3%

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Table A.2
Annual U.S. household food and alcohol nominal spending per capita (USD), by subpopulations, 2016-19 and 2020

	Total food and alcohol		Food at home		Food away from home		Alcohol			
	2016-19	2020	2016-19	2020	2016-19	2020	2016-19	2020		
200% below poverty line	5,011	4,973	-1%	3,244	3,631	1,595	1,187	172	155	-10%
	(84.00)	(247.25)		(57.28)	(201.83)	(40.18)	(83.09)	(11.60)	(19.72)	
200% above poverty line	8,974	8,485	-5% ***	4,833	5,403	3,508	2,522	634	560	-12% ***
	(78.97)	(151.22)		(49.19)	(102.49)	(44.52)	(79.47)	(11.64)	(26.41)	
Received SNAP	5,156	5,321	3%	3,603	4,149	1,407	1,054	146	117	-20%
	(131.40)	(349.00)		(72.70)	(300.57)	(79.94)	(146.36)	(15.03)	(31.44)	
Did not receive SNAP	7,969	7,706	-3% **	4,399	4,973	3,049	2,255	521	478	-8% *
	(61.98)	(136.13)		(37.88)	(100.29)	(38.37)	(63.76)	(9.69)	(22.11)	
65 years old or younger	8,096	8,026	-1%	4,459	5,145	3,125	2,400	513	482	-6%
	(77.36)	(142.80)		(39.21)	(92.74)	(48.54)	(72.07)	(11.35)	(25.90)	
Older than 65 years old	6,461	5,911	-9% **	3,895	4,180	2,166	1,398	400	334	-16% *
	(98.35)	(194.16)		(62.47)	(193.49)	(50.42)	(82.17)	(17.38)	(28.61)	
				Age						
Northeast	8,092	8,529	5%	4,654	5,744	2,904	2,240	534	546	2%
	(169.83)	(307.39)		(107.22)	(171.53)	(86.46)	(203.88)	(19.75)	(68.74)	
Midwest	7,429	7,183	-3%	4,177	4,667	2,757	2,023	495	493	0%
	(135.30)	(207.13)		(87.66)	(146.90)	(88.65)	(75.09)	(19.27)	(50.29)	
West	7,208	6,593	-9% ***	4,032	4,284	2,757	1,955	419	343	-18% ***
	(115.75)	(238.32)		(68.56)	(189.87)	(63.29)	(107.06)	(14.24)	(23.54)	
South	8,716	8,680	0%	4,742	5,632	3,388	2,533	586	515	-12%
	(148.82)	(467.29)		(90.33)	(304.92)	(99.89)	(163.89)	(23.48)	(42.96)	
				Urban/rural						
Urban	7,818	7,586	-3% *	4,354	4,942	2,961	2,190	504	455	-10% **
	(68.73)	(137.03)		(41.24)	(106.65)	(40.53)	(62.40)	(9.61)	(22.38)	
Rural	6,079	5,712	-6%	3,899	4,127	1,955	1,325	225	260	15%
	(173.27)	(385.72)		(131.26)	(233.07)	(109.28)	(179.85)	(29.85)	(72.11)	

USD = U.S. dollars; SNAP = Supplemental Nutrition Assistance Program; % Diff = percent difference.

Notes: Consumer Expenditure Surveys' (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis; *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Research Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-20 CE Diary Survey public-use microdata.

Table A.3
U.S. household budget shares (percent) for food at home, food away from home, and alcohol, by subpopulation, 2016-19 and 2020

	Food at home			Food away from home			Alcohol			
	2016-19	2020	Diff	2016-19	2020	Diff	2016-19	2020	Diff	
All	58.6 (0.31)	66.4 (0.64)	7.8 ***	36.5 (0.29)	29.3 (0.56)	-7.2 ***	4.8 (0.10)	4.3 (0.17)	-0.5 ***	
Ethnicity and race										
Hispanic	61.6 (0.83)	67.5 (1.83)	5.9 ***	35.4 (0.80)	29.7 (1.79)	-5.7 ***	3.0 (0.14)	2.8 (0.39)	-0.2	
Non-Hispanic White	58.0 (0.34)	65.8 (0.66)	7.8 ***	36.4 (0.33)	29.2 (0.59)	-7.2 ***	5.7 (0.14)	5.0 (0.23)	-0.7 ***	
Non-Hispanic Black	59.7 (0.90)	68.4 (1.76)	8.7 ***	37.3 (0.80)	28.9 (1.60)	-8.4 ***	3.1 (0.26)	2.7 (0.69)	-0.4	
Non-Hispanic Asian	59.6 (1.08)	69.1 (2.23)	9.5 ***	37.7 (1.07)	28.1 (2.31)	-9.6 ***	2.6 (0.19)	2.8 (0.55)	0.2	
Non-Hispanic Other	56.9 (0.91)	63.2 (1.82)	6.3 ***	38.6 (0.84)	31.9 (1.72)	-6.7 ***	4.5 (0.29)	4.9 (0.97)	0.4	
Household composition										
Married without children	58.7 (0.44)	65.6 (1.07)	6.9 ***	35.3 (0.45)	28.8 (1.10)	-6.5 ***	5.9 (0.14)	5.6 (0.34)	-0.3	
Married with children	59.7 (0.40)	66.8 (0.98)	7.1 ***	36.6 (0.39)	29.2 (0.89)	-7.4 ***	3.7 (0.13)	4.0 (0.32)	0.3	
Single without children	56.1 (0.65)	65.3 (1.08)	9.2 ***	38.4 (0.61)	29.9 (0.94)	-8.5 ***	5.5 (0.19)	4.8 (0.44)	-0.7	
Single with children	59.9 (0.97)	67.7 (3.29)	7.8 **	37.1 (1.00)	31.0 (3.18)	-6.1 *	3.0 (0.31)	1.2 (0.40)	-1.8 ***	
Other household types	60.5 (0.59)	67.9 (1.27)	7.4 ***	35.1 (0.55)	28.8 (1.15)	-6.3 ***	4.4 (0.18)	3.3 (0.33)	-1.1 ***	
Income										
First income quartile	64.0 (0.53)	72.5 (1.03)	8.5 ***	32.7 (0.52)	24.7 (1.00)	-8.0 ***	3.2 (0.14)	2.9 (0.32)	-0.3	
Second income quartile	60.4 (0.55)	65.9 (1.16)	5.5 ***	35.2 (0.52)	30.1 (1.02)	-5.1 ***	4.4 (0.17)	3.9 (0.37)	-0.5	
Third income quartile	56.9 (0.45)	64.7 (1.11)	7.8 ***	37.8 (0.46)	30.5 (1.08)	-7.3 ***	5.3 (0.17)	4.7 (0.39)	-0.6	
Fourth income quartile	53.2 (0.40)	61.9 (1.17)	8.7 ***	40.4 (0.41)	32.2 (1.10)	-8.2 ***	6.4 (0.14)	5.9 (0.31)	-0.5	

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Table A.3

U.S. household budget shares (percent) for food at home, food away from home, and alcohol, by subpopulation, 2016-19 and 2020

	Food at home			Food away from home			Alcohol		
	2016-19	2020	Diff	2016-19	2020	Diff	2016-19	2020	Diff
200% below poverty line	65.0 (0.47)	72.6 (1.13)	7.6 ***	32.1 (0.45)	24.7 (1.06)	-7.4 ***	2.9 (0.13)	2.7 (0.29)	-0.2
200% above poverty line	55.8 (0.31)	64.0 (0.74)	8.2 ***	38.5 (0.29)	31.1 (0.65)	-7.4 ***	5.7 (0.12)	4.9 (0.20)	-0.8 ***
Received SNAP	69.1 (0.76)	75.7 (1.93)	6.6 ***	28.4 (0.68)	21.7 (1.82)	-6.7 ***	2.5 (0.18)	2.5 (0.60)	0.0
Did not receive SNAP	57.6 (0.33)	65.4 (0.67)	7.8 ***	37.4 (0.31)	30.1 (0.59)	-7.3 ***	5.1 (0.11)	4.5 (0.18)	-0.6 ***
65 years old or younger	56.7 (0.36)	64.0 (0.70)	7.3 ***	38.4 (0.34)	31.5 (0.62)	-6.9 ***	5.0 (0.11)	4.5 (0.22)	-0.5 **
Older than 65 years old	65.0 (0.46)	73.1 (1.14)	8.1 ***	30.7 (0.45)	23.2 (1.05)	-7.5 ***	4.3 (0.17)	3.7 (0.25)	-0.6 *
Northeast	61.0 (0.55)	70.0 (1.89)	9.0 ***	34.2 (0.54)	25.0 (1.53)	-9.2 ***	4.8 (0.23)	5.0 (0.48)	0.2
Midwest	58.1 (0.61)	65.7 (0.89)	7.6 ***	36.5 (0.64)	29.4 (0.78)	-7.1 ***	5.3 (0.23)	4.8 (0.57)	-0.5
West	58.0 (0.44)	65.4 (1.12)	7.4 ***	37.6 (0.47)	30.8 (1.03)	-6.8 ***	4.3 (0.15)	3.7 (0.23)	-0.6 **
South	57.5 (1.00)	65.4 (1.43)	7.9 ***	37.2 (0.90)	30.3 (1.16)	-6.9 ***	5.3 (0.25)	4.3 (0.36)	-1.0 ***
Urban	58.2 (0.32)	65.9 (0.63)	7.7 ***	36.9 (0.31)	29.7 (0.56)	-7.2 ***	4.9 (0.10)	4.4 (0.19)	-0.5 ***
Rural	65.2 (1.28)	73.2 (2.22)	8.0 ***	31.4 (1.17)	23.1 (2.01)	-8.3 ***	3.4 (0.46)	3.6 (0.84)	0.2

Diff = difference; SNAP = Supplemental Nutrition Assistance Program.

Notes: Consumer Expenditure Surveys' (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-20 CE Diary Survey public-use microdata.

Table A.4
U.S. household budget shares (percent) for grains, protein foods, and dairy, by subpopulation, 2016-19 and 2020

	Grains			Protein foods			Dairy			
	2016-19	2020	Diff	2016-19	2020	Diff	2016-19	2020	Diff	
All	5.9 (0.05)	6.7 (0.14)	0.8 ***	11.9 (0.10)	13.4 (0.20)	1.5 ***	4.8 (0.06)	5.0 (0.12)	0.2	
Ethnicity and race										
Hispanic	5.9 (0.12)	6.2 (0.48)	0.3	14.2 (0.23)	16.1 (0.89)	1.9 *	5.2 (0.14)	5.2 (0.33)	0.0	
Non-Hispanic White	5.9 (0.06)	6.8 (0.17)	0.9 ***	10.9 (0.13)	12.3 (0.25)	1.4 ***	5.0 (0.08)	5.3 (0.12)	0.3 **	
Non-Hispanic Black	6.0 (0.18)	7.0 (0.40)	1.0 **	14.4 (0.30)	16.1 (0.72)	1.7 **	3.7 (0.16)	3.7 (0.32)	0.0	
Non-Hispanic Asian	6.3 (0.26)	7.5 (0.44)	1.2 **	13.1 (0.46)	14.6 (1.01)	1.5	3.9 (0.18)	4.4 (0.39)	0.5	
Non-Hispanic Other	5.4 (0.15)	5.9 (0.34)	0.5 *	12.3 (0.35)	14.1 (1.09)	1.8	4.7 (0.25)	4.5 (0.34)	-0.2	
Household composition										
Married without children	5.7 (0.08)	6.9 (0.25)	1.2 ***	12.0 (0.18)	13.7 (0.55)	1.7 ***	4.6 (0.08)	4.9 (0.22)	0.3	
Married with children	6.2 (0.08)	7.1 (0.30)	0.9 ***	12.3 (0.17)	13.8 (0.47)	1.5 ***	5.2 (0.10)	5.2 (0.21)	0.0	
Single without children	5.6 (0.10)	6.4 (0.22)	0.8 ***	10.4 (0.20)	11.8 (0.28)	1.4 ***	4.7 (0.12)	5.2 (0.21)	0.5 *	
Single with children	6.1 (0.19)	6.5 (0.46)	0.4	12.6 (0.35)	14.8 (1.29)	2.2 *	5.2 (0.28)	5.1 (0.72)	-0.1	
Other household types	6.1 (0.11)	6.7 (0.30)	0.6 **	13.5 (0.28)	14.8 (0.57)	1.3 **	4.6 (0.09)	4.7 (0.24)	0.1	
Income										
First income quartile	6.6 (0.10)	7.7 (0.27)	1.1 ***	12.8 (0.19)	14.3 (0.48)	1.5 **	5.5 (0.13)	5.7 (0.24)	0.2	
Second income quartile	6.0 (0.10)	6.3 (0.21)	0.3	12.7 (0.18)	13.7 (0.46)	1.0 **	4.8 (0.10)	4.9 (0.24)	0.1	
Third income quartile	5.6 (0.08)	6.6 (0.20)	1.0 ***	11.4 (0.15)	12.9 (0.45)	1.5 ***	4.6 (0.07)	4.9 (0.20)	0.3	
Fourth income quartile	5.2 (0.07)	6.3 (0.22)	1.1 ***	10.8 (0.15)	12.7 (0.39)	1.9 ***	4.4 (0.08)	4.4 (0.18)	0.0	

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Table A.4
U.S. household budget shares (percent) for grains, protein foods, and dairy, by subpopulation, 2016–19 and 2020

	Grains		Diff	Protein foods		Diff	Dairy		Diff
	2016–19	2020		2016–19	2020		2016–19	2020	
200% below poverty line	6.8 (0.08)	7.7 (0.25)	0.9 ***	13.5 (0.18)	14.6 (0.48)	1.1 **	5.6 (0.11)	5.7 (0.27)	0.1
200% above poverty line	5.5 (0.05)	6.4 (0.14)	0.9 ***	11.2 (0.10)	13.0 (0.24)	1.8 ***	4.5 (0.05)	4.7 (0.12)	0.2 **
Received SNAP	6.9 (0.19)	8.5 (0.66)	1.6 **	15.5 (0.37)	17.2 (0.94)	1.7 *	6.3 (0.20)	6.0 (0.55)	-0.3
Did not receive SNAP	5.8 (0.05)	6.6 (0.13)	0.8 ***	11.6 (0.09)	13.0 (0.20)	1.4 ***	4.7 (0.06)	4.9 (0.11)	0.2 **
65 years old or younger	5.6 (0.05)	6.3 (0.16)	0.7 ***	11.7 (0.11)	13.1 (0.25)	1.4 ***	4.7 (0.06)	4.7 (0.15)	0.0
Older than 65 years old	6.7 (0.11)	7.9 (0.25)	1.2 ***	12.6 (0.18)	14.5 (0.51)	1.9 ***	5.3 (0.09)	5.7 (0.21)	0.4 **
Age									
65 years old or younger	5.6 (0.05)	6.3 (0.16)	0.7 ***	11.7 (0.11)	13.1 (0.25)	1.4 ***	4.7 (0.06)	4.7 (0.15)	0.0
Older than 65 years old	6.7 (0.11)	7.9 (0.25)	1.2 ***	12.6 (0.18)	14.5 (0.51)	1.9 ***	5.3 (0.09)	5.7 (0.21)	0.4 **
Region									
Northeast	6.4 (0.11)	7.3 (0.19)	0.9 ***	12.8 (0.14)	14.6 (0.56)	1.8 ***	5.2 (0.13)	5.6 (0.28)	0.4
Midwest	5.9 (0.10)	7.0 (0.50)	1.1 **	11.2 (0.18)	12.3 (0.35)	1.1 ***	4.9 (0.12)	4.7 (0.15)	-0.2
West	5.7 (0.08)	6.4 (0.19)	0.7 ***	12.3 (0.18)	13.7 (0.41)	1.4 ***	4.4 (0.08)	4.7 (0.19)	0.3 **
South	5.7 (0.14)	6.5 (0.27)	0.8 ***	11.3 (0.31)	13.1 (0.36)	1.8 ***	5.0 (0.17)	5.0 (0.38)	0.0
Urban/rural									
Urban	5.8 (0.05)	6.7 (0.14)	0.9 ***	11.9 (0.10)	13.5 (0.22)	1.6 ***	4.8 (0.06)	4.9 (0.12)	0.1
Rural	6.9 (0.22)	8.0 (0.59)	1.1 *	12.6 (0.42)	12.1 (0.66)	-0.5	5.7 (0.32)	6.1 (0.76)	0.4

Diff = difference; SNAP = Supplemental Nutrition Assistance Program.

Notes: Consumer Expenditure Surveys' (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016–20 CE Diary Survey public-use microdata.

Table A.5

U.S. household budget shares (percent) for fruits, vegetables, and fats and oils, by subpopulation, 2016-19 and 2020

	Fruits		Diff	Vegetables		Diff	Fats and oils		Diff
	2016-19	2020		2016-19	2020		2016-19	2020	
All	4.7 (0.05)	5.6 (0.14)	0.9 ***	5.3 (0.06)	6.5 (0.13)	1.2 ***	1.4 (0.03)	1.6 (0.07)	0.2 ***
Ethnicity and race									
Hispanic	5.6 (0.16)	6.4 (0.49)	0.8	6.1 (0.17)	7.0 (0.39)	0.9 **	1.2 (0.06)	1.6 (0.26)	0.4
Non-Hispanic White	4.4 (0.06)	5.3 (0.18)	0.9 ***	5.0 (0.07)	6.3 (0.13)	1.3 ***	1.4 (0.03)	1.6 (0.06)	0.2 ***
Non-Hispanic Black	4.3 (0.15)	5.4 (0.44)	1.1 **	5.0 (0.18)	6.1 (0.37)	1.1 ***	1.4 (0.08)	1.7 (0.17)	0.3
Non-Hispanic Asian	6.7 (0.26)	7.7 (0.61)	1.0	7.9 (0.28)	9.4 (0.65)	1.5 *	1.8 (0.08)	1.6 (0.22)	-0.2
Non-Hispanic Other	4.5 (0.16)	5.2 (0.48)	0.7	5.2 (0.13)	5.9 (0.48)	0.7	1.5 (0.10)	1.3 (0.15)	-0.2
Household composition									
Married without children	5.1 (0.09)	5.2 (0.19)	0.1	5.9 (0.11)	6.9 (0.23)	1.0 ***	1.6 (0.05)	1.7 (0.11)	0.1
Married with children	5.0 (0.11)	5.8 (0.28)	0.8 ***	5.4 (0.08)	6.2 (0.20)	0.8 ***	1.3 (0.03)	1.5 (0.12)	0.2
Single without children	4.4 (0.09)	6.1 (0.41)	1.7 ***	4.8 (0.13)	6.2 (0.27)	1.4 ***	1.3 (0.05)	1.6 (0.12)	0.3 *
Single with children	4.2 (0.17)	4.6 (0.44)	0.4	4.8 (0.19)	5.4 (0.45)	0.6	1.2 (0.11)	1.1 (0.17)	-0.1
Other household types	4.3 (0.10)	5.2 (0.28)	0.9 ***	5.3 (0.11)	6.9 (0.27)	1.6 ***	1.3 (0.05)	1.6 (0.15)	0.3 **
Income									
First income quartile	4.7 (0.10)	6.0 (0.31)	1.3 ***	5.5 (0.12)	6.9 (0.29)	1.4 ***	1.4 (0.05)	1.7 (0.16)	0.3 *
Second income quartile	4.6 (0.09)	5.4 (0.25)	0.8 ***	5.4 (0.10)	6.3 (0.29)	0.9 ***	1.3 (0.04)	1.7 (0.13)	0.4 **
Third income quartile	4.7 (0.09)	5.5 (0.40)	0.8 *	5.2 (0.08)	6.3 (0.26)	1.1 ***	1.3 (0.04)	1.4 (0.10)	0.1
Fourth income quartile	4.6 (0.10)	5.3 (0.17)	0.7 ***	5.1 (0.08)	6.4 (0.20)	1.3 ***	1.4 (0.03)	1.5 (0.10)	0.1

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Table A.5
U.S. household budget shares (percent) for fruits, vegetables, and fats and oils, by subpopulation, 2016-19 and 2020

	Fruits		Diff	Vegetables		Diff	Fats and oils		Diff
	2016-19	2020		2016-19	2020		2016-19	2020	
200% below poverty line	4.8 (0.09)	6.1 (0.27)	1.3 ***	5.6 (0.10)	7.0 (0.28)	1.4 ***	1.4 (0.04)	1.7 (0.16)	0.3 **
200% above poverty line	4.6 (0.06)	5.4 (0.17)	0.8 ***	5.2 (0.06)	6.3 (0.13)	1.1 ***	1.4 (0.03)	1.5 (0.06)	0.1 **
Received SNAP	4.3 (0.16)	5.8 (0.50)	1.5 **	5.6 (0.17)	6.1 (0.41)	0.5	1.4 (0.08)	1.5 (0.16)	0.1
Did not receive SNAP	4.7 (0.05)	5.5 (0.17)	0.8 ***	5.3 (0.07)	6.5 (0.14)	1.2 ***	1.4 (0.03)	1.6 (0.07)	0.2 ***
65 years old or younger	4.3 (0.05)	5.3 (0.17)	1.0 ***	5.1 (0.06)	6.1 (0.12)	1.0 ***	1.3 (0.03)	1.5 (0.07)	0.2 **
Older than 65 years old	5.7 (0.10)	6.4 (0.28)	0.7 **	6.0 (0.12)	7.6 (0.29)	1.6 ***	1.6 (0.06)	1.9 (0.11)	0.3 **
Northeast	5.1 (0.12)	6.5 (0.42)	1.4 ***	5.9 (0.14)	7.3 (0.42)	1.4 ***	1.5 (0.09)	1.6 (0.08)	0.1
Midwest	4.6 (0.14)	5.2 (0.26)	0.6 *	5.1 (0.07)	6.2 (0.25)	1.1 ***	1.4 (0.04)	1.4 (0.13)	0.0
West	4.3 (0.08)	5.1 (0.21)	0.8 ***	5.1 (0.08)	6.2 (0.25)	1.1 ***	1.3 (0.04)	1.6 (0.14)	0.3 *
South	5.2 (0.12)	5.9 (0.30)	0.7 **	5.4 (0.21)	6.7 (0.17)	1.3 ***	1.4 (0.04)	1.6 (0.10)	0.2 *
Urban	4.7 (0.06)	5.6 (0.15)	0.9 ***	5.3 (0.07)	6.5 (0.14)	1.2 ***	1.4 (0.03)	1.6 (0.07)	0.2 ***
Rural	4.2 (0.20)	4.5 (0.45)	0.3	5.4 (0.20)	6.7 (0.57)	1.3 **	1.4 (0.08)	1.5 (0.23)	0.1

Diff = difference; SNAP = Supplemental Nutrition Assistance Program.

Notes: Consumer Expenditure Surveys' (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-20 CE Diary Survey public-use microdata.

Table A.6
U.S. household budget shares (percent) for beverages and other food at home (FAH), by subpopulation, 2016-19 and 2020

	Beverages		Diff	Other FAH		Diff
	2016-19	2020		2016-19	2016-19	
All	7.5 (0.09)	7.8 (0.16)	0.3 *	17.2 (0.14)	19.8 (0.32)	2.6 ***
Ethnicity and race						
Hispanic	7.9 (0.22)	8.7 (0.54)	0.8	15.4 (0.32)	16.4 (0.76)	1.0
Non-Hispanic White	7.4 (0.09)	7.8 (0.19)	0.4 **	17.9 (0.14)	20.5 (0.30)	2.6 ***
Non-Hispanic Black	8.7 (0.30)	8.1 (0.57)	-0.6	16.2 (0.36)	20.3 (1.49)	4.1 ***
Non-Hispanic Asian	5.7 (0.25)	6.1 (0.57)	0.4	14.3 (0.48)	17.9 (0.75)	3.6 ***
Non-Hispanic Other	6.8 (0.21)	6.5 (0.37)	-0.3	16.5 (0.44)	19.8 (1.32)	3.3 **
Household composition						
Married without children	7.0 (0.12)	7.1 (0.27)	0.1	16.9 (0.20)	19.2 (0.44)	2.3 ***
Married with children	7.1 (0.13)	7.5 (0.25)	0.4	17.2 (0.23)	19.8 (0.60)	2.6 ***
Single without children	7.7 (0.14)	8.4 (0.37)	0.7 *	17.2 (0.27)	19.7 (0.43)	2.5 ***
Single with children	8.2 (0.34)	8.1 (0.69)	-0.1	17.7 (0.40)	22.1 (1.79)	4.4 **
Other household types	8.2 (0.19)	8.1 (0.37)	-0.1	17.2 (0.29)	19.9 (0.79)	2.7 ***
Income						
First income quartile	8.8 (0.18)	9.0 (0.40)	0.2	18.7 (0.25)	21.1 (0.71)	2.4 ***
Second income quartile	8.0 (0.16)	7.8 (0.30)	-0.2	17.5 (0.22)	19.8 (0.54)	2.3 ***
Third income quartile	7.2 (0.13)	7.6 (0.31)	0.4	16.8 (0.18)	19.5 (0.65)	2.7 ***
Fourth income quartile	6.1 (0.11)	6.7 (0.24)	0.6 **	15.5 (0.18)	18.6 (0.56)	3.1 ***

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Table A.6
U.S. household budget shares (percent) for beverages and other food at home (FAH), by subpopulation, 2016-19 and 2020

	Beverages		Diff	Other FAH		Diff
	2016-19	2020		2016-19	2020	
200% below poverty line	8.9 (0.14)	8.6 (0.35)	-0.3	18.6 (0.22)	21.1 (0.69)	2.5 ***
200% above poverty line	6.9 (0.08)	7.5 (0.16)	0.6 ***	16.5 (0.15)	19.3 (0.34)	2.8 ***
Received SNAP	10.3 (0.25)	9.4 (0.59)	-0.9	18.9 (0.33)	21.1 (1.06)	2.2 **
Did not receive SNAP	7.2 (0.08)	7.6 (0.16)	0.4 ***	17.0 (0.14)	19.6 (0.34)	2.6 ***
Age						
65 years old or younger	7.4 (0.11)	7.7 (0.20)	0.3	16.5 (0.15)	19.3 (0.37)	2.8 ***
Older than 65 years old	7.9 (0.13)	8.1 (0.28)	0.2	19.2 (0.24)	21.0 (0.50)	1.8 ***
Region						
Northeast	7.5 (0.14)	7.7 (0.46)	0.2	16.7 (0.23)	19.3 (0.56)	2.6 ***
Midwest	7.2 (0.16)	7.7 (0.36)	0.5	17.8 (0.23)	21.1 (0.67)	3.3 ***
West	8.0 (0.15)	8.1 (0.33)	0.1	16.8 (0.21)	19.6 (0.65)	2.8 ***
South	6.7 (0.24)	7.5 (0.33)	0.8 **	16.9 (0.26)	19.2 (0.54)	2.3 ***
Urban/rural						
Urban	7.4 (0.09)	7.8 (0.16)	0.4 **	17.0 (0.15)	19.4 (0.33)	2.4 ***
Rural	9.3 (0.47)	8.7 (1.01)	-0.6	19.7 (0.55)	25.6 (1.90)	5.9 ***

Diff = difference; SNAP = Supplemental Nutrition Assistance Program.

Notes: Consumer Expenditure Surveys' (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-20 CE Diary Survey public-use microdata.

Table A.7

U.S. household budget shares (percent) for food away from home (FAFH), by subpopulation, 2016-19 and 2020

	Limited-service FAFH			Full-service FAFH			Other FAFH			
	2016-19	2020	Diff	2016-19	2020	Diff	2016-19	2020	Diff	
All	19.6 (0.20)	18.3 (0.48)	-1.3 **	15.1 (0.20)	10.3 (0.33)	-4.8 ***	1.8 (0.06)	0.8 (0.09)	-1.0 ***	
Ethnicity and race										
Hispanic	21.1 (0.52)	19.6 (1.35)	-1.5	12.6 (0.45)	9.1 (0.83)	-3.5 ***	1.6 (0.16)	1.0 (0.21)	-0.6 **	
Non-Hispanic White	18.4 (0.21)	17.4 (0.54)	-1.0 *	16.1 (0.23)	11.1 (0.40)	-5.0 ***	1.8 (0.07)	0.6 (0.08)	-1.2 ***	
Non-Hispanic Black	24.2 (0.65)	21.1 (1.44)	-3.1 *	11.1 (0.53)	6.8 (0.90)	-4.3 ***	2.0 (0.20)	0.9 (0.37)	-1.1 **	
Non-Hispanic Asian	18.8 (0.79)	15.2 (1.63)	-3.6 *	16.7 (0.72)	11.8 (1.08)	-4.9 ***	2.3 (0.26)	1.2 (0.48)	-1.1 *	
Non-Hispanic Other	20.9 (0.58)	21.4 (1.55)	0.5	15.6 (0.64)	9.6 (1.50)	-6.0 ***	2.0 (0.16)	0.9 (0.56)	-1.1 *	
Household composition										
Married without children	15.1 (0.33)	15.5 (0.80)	0.4	19.2 (0.30)	12.9 (0.63)	-6.3 ***	1.0 (0.07)	0.4 (0.08)	-0.6 ***	
Married with children	20.1 (0.29)	17.7 (0.79)	-2.4 ***	14.5 (0.31)	10.8 (0.58)	-3.7 ***	2.0 (0.09)	0.7 (0.20)	-1.3 ***	
Single without children	21.1 (0.43)	19.5 (0.81)	-1.6	15.2 (0.36)	9.6 (0.53)	-5.6 ***	2.1 (0.15)	0.8 (0.17)	-1.3 ***	
Single with children	23.8 (0.86)	21.4 (2.60)	-2.4	10.2 (0.49)	8.3 (1.57)	-1.9	3.1 (0.27)	1.2 (0.49)	-1.9 ***	
Other household types	21.0 (0.44)	19.4 (1.14)	-1.6	12.4 (0.35)	8.5 (0.62)	-3.9 ***	1.7 (0.10)	0.9 (0.22)	-0.8 ***	
Income										
First income quartile	20.0 (0.41)	16.6 (0.75)	-3.4 ***	10.9 (0.34)	7.2 (0.57)	-3.7 ***	1.8 (0.16)	0.9 (0.20)	-0.9 ***	
Second income quartile	19.9 (0.39)	19.9 (0.90)	0.0	13.7 (0.36)	9.3 (0.56)	-4.4 ***	1.6 (0.09)	0.9 (0.19)	-0.7 ***	
Third income quartile	20.0 (0.35)	18.5 (0.94)	-1.5	16.0 (0.28)	11.4 (0.70)	-4.6 ***	1.9 (0.09)	0.7 (0.12)	-1.2 ***	
Fourth income quartile	18.6 (0.23)	18.0 (0.90)	-0.6	19.8 (0.36)	13.7 (0.74)	-6.1 ***	2.0 (0.08)	0.5 (0.12)	-1.5 ***	

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Table A.7
U.S. household budget shares (percent) for food away from home (FAFH), by subpopulation, 2016-19 and 2020

	Limited-service FAFH		Diff	Full-service FAFH		Diff	Other FAFH		Diff
	2016-19	2020		2016-19	2020		2016-19	2020	
200% below poverty line	20.0 (0.34)	17.0 (0.98)	-3.0 **	10.3 (0.30)	6.8 (0.51)	-3.5 ***	1.8 (0.13)	0.9 (0.20)	-0.9 ***
200% above poverty line	19.5 (0.21)	18.7 (0.54)	-0.8	17.2 (0.21)	11.7 (0.42)	-5.5 ***	1.8 (0.05)	0.7 (0.09)	-1.1 ***
Received SNAP	19.8 (0.54)	16.3 (1.77)	-3.5 *	7.2 (0.38)	4.6 (0.68)	-2.6 ***	1.4 (0.12)	0.8 (0.33)	-0.6 *
Did not receive SNAP	19.6 (0.22)	18.5 (0.49)	-1.1 **	15.9 (0.21)	10.9 (0.37)	-5.0 ***	1.9 (0.06)	0.7 (0.08)	-1.2 ***
65 years old or younger	21.6 (0.23)	20.1 (0.54)	-1.5 **	14.6 (0.21)	10.5 (0.37)	-4.1 ***	2.2 (0.07)	0.9 (0.11)	-1.3 ***
Older than 65 years old	13.4 (0.32)	13.0 (0.82)	-0.4	16.6 (0.35)	10.0 (0.60)	-6.6 ***	0.7 (0.05)	0.2 (0.06)	-0.5 ***
Region									
Northeast	17.8 (0.35)	15.0 (1.55)	-2.8 *	14.7 (0.28)	9.4 (1.31)	-5.3 ***	1.7 (0.16)	0.6 (0.17)	-1.1 ***
Midwest	19.3 (0.44)	18.9 (0.94)	-0.4	14.9 (0.42)	9.7 (0.65)	-5.2 ***	2.3 (0.15)	0.8 (0.20)	-1.5 ***
West	20.8 (0.36)	18.7 (0.82)	-2.1 **	15.1 (0.31)	11.4 (0.56)	-3.7 ***	1.7 (0.07)	0.8 (0.15)	-0.9 ***
South	19.8 (0.47)	19.7 (1.03)	-0.1	15.8 (0.57)	9.8 (0.37)	-6.0 ***	1.6 (0.13)	0.7 (0.16)	-0.9 ***
Urban/rural									
Urban	19.8 (0.20)	18.5 (0.49)	-1.3 **	15.3 (0.21)	10.5 (0.35)	-4.8 ***	1.8 (0.07)	0.7 (0.08)	-1.1 ***
Rural	17.5 (0.68)	14.8 (1.58)	-2.7	12.2 (0.68)	7.4 (0.98)	-4.8 ***	1.8 (0.36)	0.9 (0.56)	-0.9

Diff = difference; SNAP = Supplemental Nutrition Assistance Program.

Notes: Consumer Expenditure Surveys' (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-20 CE Diary Survey public-use microdata.

Table A.8

U.S. household budget shares (percent) for food at home protein foods, by subpopulation, 2016-19 and 2020

	Processed red meats			Nonprocessed red meats			Chicken, fish and seafood, and eggs		
	2016-19	2020	Diff	2016-19	2020	Diff	2016-19	2020	Diff
All	2.9 (0.03)	3.2 (0.10)	0.3 ***	4.0 (0.05)	4.6 (0.13)	0.6 ***	5.0 (0.05)	5.6 (0.15)	0.6 ***
Ethnicity and race									
Hispanic	3.0 (0.12)	3.2 (0.18)	0.2	4.8 (0.13)	5.9 (0.40)	1.1 **	6.4 (0.12)	7.0 (0.71)	0.6
Non-Hispanic White	3.0 (0.04)	3.3 (0.13)	0.3 **	3.8 (0.06)	4.2 (0.16)	0.4 **	4.2 (0.07)	4.8 (0.12)	0.6 ***
Non-Hispanic Black	2.9 (0.11)	3.2 (0.38)	0.3	4.7 (0.21)	5.1 (0.48)	0.4	6.8 (0.21)	7.8 (0.49)	1.0 **
Non-Hispanic Asian	1.7 (0.10)	2.3 (0.22)	0.6 **	4.2 (0.19)	4.8 (0.51)	0.6	7.2 (0.29)	7.5 (0.60)	0.3
Non-Hispanic Other	2.8 (0.11)	3.2 (0.34)	0.4	4.4 (0.23)	5.5 (0.78)	1.1	5.1 (0.17)	5.4 (0.46)	0.3
Household composition									
Married without children	3.1 (0.07)	3.3 (0.24)	0.2	4.3 (0.09)	5.1 (0.32)	0.8 **	4.6 (0.09)	5.4 (0.31)	0.8 **
Married with children	3.0 (0.05)	3.5 (0.17)	0.5 ***	4.3 (0.09)	4.8 (0.21)	0.5 **	5.1 (0.09)	5.4 (0.32)	0.3
Single without children	2.6 (0.06)	3.0 (0.18)	0.4 **	3.2 (0.10)	3.4 (0.22)	0.2	4.6 (0.12)	5.3 (0.20)	0.7 ***
Single with children	2.9 (0.14)	3.3 (0.37)	0.4	4.1 (0.21)	6.0 (0.92)	1.9 **	5.6 (0.26)	5.5 (0.53)	-0.1
Other household types	3.1 (0.09)	3.2 (0.19)	0.1	4.8 (0.15)	5.2 (0.35)	0.4	5.6 (0.14)	6.4 (0.29)	0.8 **
Income									
First income quartile	3.2 (0.07)	3.3 (0.19)	0.1	4.3 (0.13)	4.8 (0.29)	0.5	5.4 (0.11)	6.1 (0.36)	0.7 **
Second income quartile	3.2 (0.06)	3.3 (0.19)	0.1	4.4 (0.11)	4.8 (0.33)	0.4	5.2 (0.11)	5.7 (0.29)	0.5 *
Third income quartile	2.8 (0.06)	3.3 (0.18)	0.5 **	3.9 (0.10)	4.6 (0.24)	0.7 **	4.7 (0.08)	5.0 (0.23)	0.3 *
Fourth income quartile	2.5 (0.06)	3.1 (0.15)	0.6 ***	3.6 (0.07)	4.2 (0.21)	0.6 **	4.7 (0.09)	5.5 (0.23)	0.8 ***

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Table A.8
U.S. household budget shares (percent) for food at home protein foods, by subpopulation, 2016-19 and 2020

	Processed red meats			Nonprocessed red meats			Chicken, fish and seafood, and eggs		
	2016-19	2020	Diff	2016-19	2020	Diff	2016-19	2020	Diff
200% below poverty line	3.2 (0.07)	3.2 (0.17)	0.0	4.6 (0.11)	5.2 (0.29)	0.6 *	5.6 (0.11)	6.2 (0.38)	0.6
200% above poverty line	2.8 (0.04)	3.2 (0.11)	0.4 ***	3.8 (0.06)	4.4 (0.15)	0.6 ***	4.7 (0.05)	5.3 (0.15)	0.6 ***
Received SNAP	3.6 (0.12)	3.5 (0.33)	-0.1	5.5 (0.22)	6.1 (0.62)	0.6	6.5 (0.22)	7.6 (0.78)	1.1
Did not receive SNAP	2.9 (0.03)	3.2 (0.09)	0.3 ***	3.9 (0.05)	4.5 (0.13)	0.6 ***	4.8 (0.05)	5.4 (0.12)	0.6 ***
65 years old or younger	2.8 (0.03)	3.1 (0.10)	0.3 **	4.0 (0.07)	4.5 (0.14)	0.5 ***	5.0 (0.06)	5.4 (0.15)	0.4 ***
Older than 65 years old	3.3 (0.07)	3.7 (0.23)	0.4	4.2 (0.09)	4.8 (0.30)	0.6 *	5.0 (0.11)	6.0 (0.31)	1.0 ***
Region									
Northeast	3.1 (0.07)	3.5 (0.14)	0.4 **	4.0 (0.10)	4.8 (0.38)	0.8 **	5.7 (0.09)	6.3 (0.43)	0.6
Midwest	3.1 (0.07)	3.2 (0.18)	0.1	3.9 (0.12)	4.0 (0.23)	0.1	4.2 (0.10)	5.1 (0.24)	0.9 ***
West	3.0 (0.04)	3.3 (0.21)	0.3	4.3 (0.11)	4.9 (0.20)	0.6 **	5.1 (0.09)	5.6 (0.33)	0.5 *
South	2.5 (0.07)	2.9 (0.13)	0.4 ***	3.7 (0.13)	4.6 (0.28)	0.9 ***	5.1 (0.13)	5.6 (0.17)	0.5 **
Urban/rural									
Urban	2.8 (0.03)	3.2 (0.10)	0.4 ***	4.0 (0.06)	4.7 (0.12)	0.7 ***	5.0 (0.05)	5.7 (0.15)	0.7 ***
Rural	4.0 (0.21)	4.1 (0.39)	0.1	4.7 (0.23)	3.7 (0.49)	-1.0 *	3.9 (0.19)	4.3 (0.40)	0.4

Diff = difference; SNAP = Supplemental Nutrition Assistance Program.

Notes: Consumer Expenditure Survey (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis, *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-20 CE Diary Survey public-use microdata.

Table A.9

U.S. household budget shares (percent) for food at home other food products, by subpopulation, 2016-19 and 2020

	Desserts			Prepared meals and salads			Other, NEC		
	2016-19	2020	Diff	2016-19	2020	Diff	2016-19	2020	Diff
All	4.5 (0.06)	5.1 (0.16)	0.6 ***	6.0 (0.07)	6.8 (0.15)	0.8 ***	6.7 (0.07)	7.9 (0.15)	1.2 ***
Ethnicity and race									
Hispanic	4.1 (0.12)	4.2 (0.35)	0.1	5.3 (0.18)	5.9 (0.41)	0.6	6.0 (0.18)	6.3 (0.38)	0.3
Non-Hispanic White	4.7 (0.07)	5.3 (0.17)	0.6 ***	6.4 (0.07)	7.3 (0.18)	0.9 ***	6.8 (0.08)	7.9 (0.15)	1.1 ***
Non-Hispanic Black	4.3 (0.20)	5.7 (0.75)	1.4 *	5.2 (0.17)	5.7 (0.46)	0.5	6.8 (0.21)	8.8 (0.73)	2.0 ***
Non-Hispanic Asian	3.6 (0.21)	3.8 (0.32)	0.2	5.0 (0.24)	6.6 (0.55)	1.6 ***	5.7 (0.26)	7.5 (0.47)	1.8 ***
Non-Hispanic Other	4.1 (0.18)	4.1 (0.40)	0.0	5.6 (0.18)	6.3 (0.49)	0.7	6.8 (0.25)	9.4 (1.50)	2.6
Household composition									
Married without children	4.7 (0.09)	4.9 (0.22)	0.2	5.5 (0.09)	6.6 (0.26)	1.1 ***	6.7 (0.11)	7.8 (0.31)	1.1 ***
Married with children	4.4 (0.09)	5.1 (0.40)	0.7	5.7 (0.12)	6.3 (0.26)	0.6 **	7.2 (0.09)	8.5 (0.44)	1.3 ***
Single without children	4.7 (0.13)	5.2 (0.23)	0.5 *	6.5 (0.14)	7.2 (0.29)	0.7 **	6.0 (0.14)	7.4 (0.24)	1.4 ***
Single with children	4.4 (0.18)	5.9 (0.88)	1.5	6.4 (0.23)	7.2 (0.83)	0.8	6.9 (0.22)	9.0 (1.10)	2.1 *
Other household types	4.4 (0.14)	4.9 (0.41)	0.5	6.0 (0.16)	7.2 (0.40)	1.2 ***	6.8 (0.13)	7.7 (0.35)	0.9 **
Income									
First income quartile	5.2 (0.12)	6.0 (0.40)	0.8 **	6.6 (0.18)	7.0 (0.35)	0.4	7.0 (0.15)	8.1 (0.36)	1.1 ***
Second income quartile	4.7 (0.12)	5.4 (0.30)	0.7 **	6.0 (0.10)	6.4 (0.28)	0.4	6.8 (0.12)	8.0 (0.29)	1.2 ***
Third income quartile	4.3 (0.09)	4.6 (0.39)	0.3	5.8 (0.10)	6.8 (0.25)	1.0 ***	6.7 (0.08)	8.0 (0.38)	1.3 ***
Fourth income quartile	4.0 (0.09)	4.1 (0.25)	0.1	5.5 (0.10)	7.2 (0.29)	1.7 ***	6.1 (0.08)	7.3 (0.36)	1.2 ***

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Table A.9
U.S. household budget shares (percent) for food at home other food products, by subpopulation, 2016-19 and 2020

	Desserts		Diff	Prepared meals and salads		Diff	Other, NEC		Diff
	2016-19	2020		2016-19	2020		2016-19	2020	
200% below poverty line	5.1 (0.11)	6.0 (0.42)	0.9 **	6.4 (0.14)	6.9 (0.34)	0.5	7.1 (0.14)	8.2 (0.30)	1.1 ***
200% above poverty line	4.3 (0.07)	4.7 (0.17)	0.4 **	5.8 (0.07)	6.8 (0.18)	1.0 ***	6.4 (0.07)	7.7 (0.17)	1.3 ***
Received SNAP	5.3 (0.21)	5.3 (0.54)	0.0	6.1 (0.22)	6.5 (0.52)	0.4	7.5 (0.20)	9.3 (0.74)	1.8 **
Did not receive SNAP	4.5 (0.06)	5.0 (0.15)	0.5 ***	6.0 (0.07)	6.9 (0.16)	0.9 ***	6.6 (0.07)	7.7 (0.15)	1.1 ***
65 years old or younger	4.1 (0.07)	4.7 (0.19)	0.6 ***	5.8 (0.07)	6.8 (0.19)	1.0 ***	6.6 (0.07)	7.8 (0.20)	1.2 ***
Older than 65 years old	5.8 (0.10)	6.1 (0.24)	0.3	6.5 (0.15)	6.9 (0.27)	0.4	7.0 (0.15)	8.0 (0.24)	1.0 ***
	Region								
Northeast	4.7 (0.13)	5.6 (0.43)	0.9 *	5.5 (0.15)	5.9 (0.43)	0.4	6.5 (0.16)	7.8 (0.17)	1.3 ***
Midwest	4.6 (0.10)	5.6 (0.57)	1.0	6.3 (0.11)	7.3 (0.37)	1.0 **	6.9 (0.13)	8.2 (0.16)	1.3 ***
West	4.5 (0.10)	4.8 (0.30)	0.3	5.8 (0.13)	6.7 (0.24)	0.9 ***	6.6 (0.08)	8.1 (0.34)	1.5 ***
South	4.3 (0.13)	4.3 (0.27)	0.0	6.3 (0.10)	7.5 (0.27)	1.2 ***	6.4 (0.14)	7.3 (0.22)	0.9 ***
	Urban/rural								
Urban	4.5 (0.07)	4.9 (0.14)	0.4 **	6.0 (0.06)	6.8 (0.16)	0.8 ***	6.5 (0.07)	7.7 (0.17)	1.2 ***
Rural	5.4 (0.25)	7.7 (1.52)	2.3	6.2 (0.40)	7.6 (0.68)	1.4	8.2 (0.25)	10.4 (0.69)	2.2 ***

Diff = difference; NEC = not elsewhere classified; SNAP = Supplemental Nutrition Assistance Program.

Notes: Consumer Expenditure Surveys' (CE) weights were used to compute nationally representative coefficient estimates and appropriate standard errors presented in parenthesis. *** p < 0.01, ** p < 0.05, * p < 0.1.

Source: USDA, Economic Resource Service calculations using data from the U.S. Bureau of Labor Statistics' 2016-20 CE Diary Survey public-use microdata.