The Lasting Effects of COVID-19 on Food Purchasing Behaviors

Abigail Okrent,
USDA, Economic Research Service
abigail.okrent@usda.gov

Eliana Zeballos
USDA, Economic Research Service
eliana.zeballos@usda.gov

Selected Poster prepared for presentation at the 2023 Agricultural & Applied Economics Association Annual Meeting, Washington DC; July 23-25, 2023

The Lasting Effects of COVID-19 on Food Purchasing Behaviors

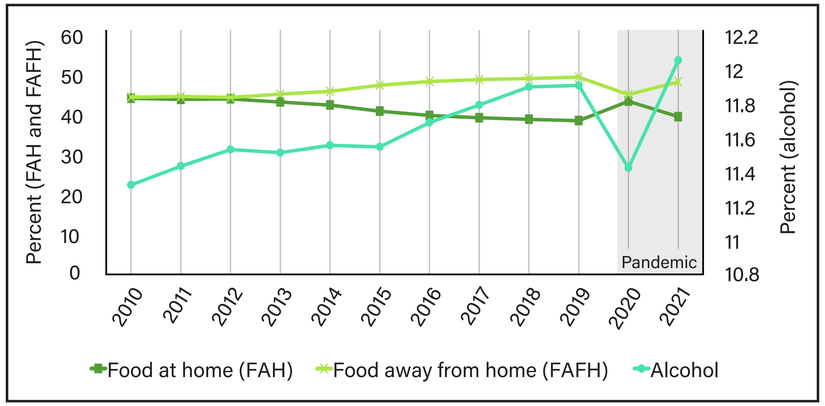
Abigail Okrent and Eliana Zeballos, USDA, Economic Research Service, Food Economics Division

Motivation

- Stay-at-home orders at the onset of the pandemic meant the closure of restaurants, a significant source of food.
- The current literature finds mixed effects of pandemic on food consumption and diet quality, which may arise from use of nonprobability samples or focus on select geographies or foods.

Figure 1

Bucking long-term declines, share of food spending shifted to food at home (FAH) during pandemic



Source: USDA, Economic Research Service, Food Expenditure Series.

Research Aims

1. Investigate whether purchasing behaviors after the 2020 lockdowns persisted into 2021 across foods.
2. Estimate the effect of the pandemic on Engel relationships between income and food expenditures.

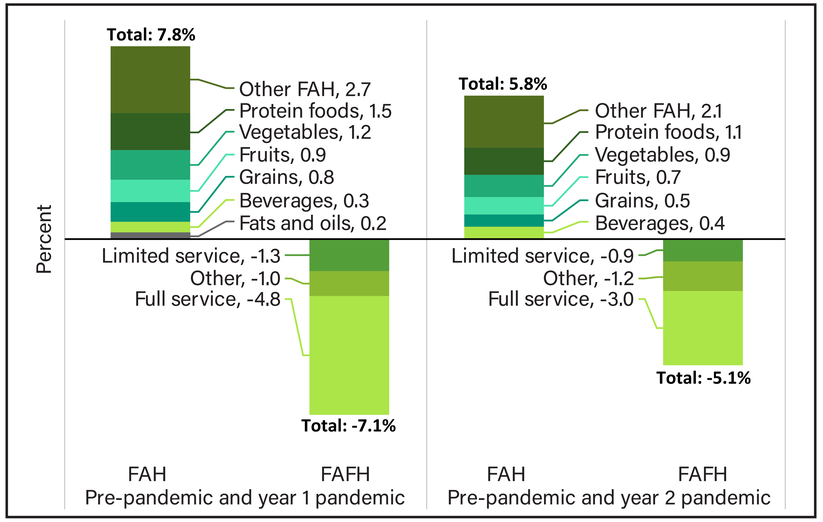
Data

- 2016-21 **Consumer Expenditure Diary Survey** public-use microdata, large probability sample
- Construct food categories to closely align with the **2025 Dietary Guidelines for Americans**
- Compare **pre-pandemic (2016-19)** to **year 1 pandemic (2020)** and **year 2 pandemic (2021)**

Trends in Food Purchasing

Figure 2

The largest contributors to the increase in FAH spending during first 2 years of the pandemic are other FAH, protein foods, vegetables, and fruits



Note: No statistically significant change in dairy products during the two periods and for fats and oils in the last period. A t-test was used to determine if changes between the two periods were statistically significant from zero.

Source: USDA, Economic Research Service calculations based on the 2016-21 Consumer Expenditure Diary Survey public-use microdata.

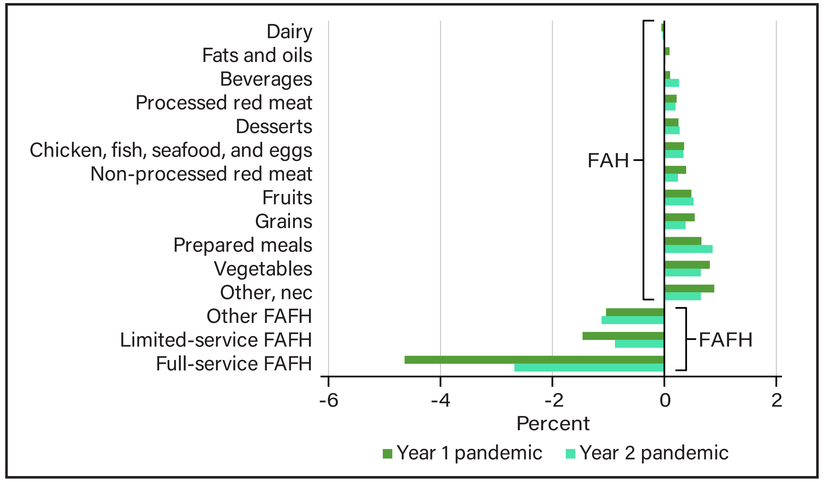
Engel Curve Analysis

- **Engel curve relationships:** $W_{hn} = f(I_h, \mathbf{x}_h, \mathbf{q}, PAN, I_h \times P, \mathbf{x}_h \times P)$ where W_{hn} is expenditure share on n for household h, I_h is income for h, X_h is matrix of demographic and employment for h, q is quarterly fixed effects, and P is indicator of pandemic.
- **Double hurdle model** to account for large mass of zero expenditures:
  1. First hurdle is probit model of whether h purchased n
  2. Second hurdle is generalized linear model with log link and gamma distribution for $W_{hn}|W_{hn}>0$.
- Estimate the double hurdle model using two-step estimator and calculate marginal effects using estimated parameters from each step.

Marginal Effects of Pandemic on Food Purchasing

Figure 3

Shifts into FAH spending during 2020 persisted into 2021 although they were somewhat muted as FAFH spending rebounded



Note: Marginal effects from a double hurdle model control for age, family size, household type, race, SNAP status, living in rural area, income quartile, employment status, if occupation is likely to allow teleworking, region, and quarter.

Source: USDA, Economic Research Service calculations based on the 2016-21 Consumer Expenditure Diary Survey public-use microdata.

Next Steps

- A deeper examination of the interaction between the pandemic and income/demographic characteristics is necessary to understand which subpopulations were most affected by pandemic.
- Although relative prices of food are somewhat stable during the period, a more complete model would disentangle the effects of prices and structural changes in preferences due to the pandemic.

USDA Economic Research Service
U.S. DEPARTMENT OF AGRICULTURE

This research was supported in part by the U.S. Department of Agriculture, Economic Research Service. The findings and conclusions in this publication are those of the author(s) and should not be construed to represent any official USDA of U.S. Government determination or policy.

Presented at the 2023 Agricultural and Applied Economics Association (AAEA) Annual Meeting.

July 23-25, 2023