

The Impact of COVID-19 on CE Survey Estimates

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Consumer Expenditure Surveys Program Report Series



The Consumer Expenditure Surveys (CE) are the most detailed sources of expenditures, income, and demographics collected directly from consumers by the Federal government. As a result of the COVID-19 pandemic, The U.S. Census Bureau, which collects CE data on behalf of the Bureau of Labor Statistics, had to make adjustments to the way data were collected and processed. Beyond that, the CE program also had to implement adjustments to the survey questionnaire to accommodate new questions, allowing for a more accurate understanding of the changes in spending behavior caused by the pandemic. The pandemic continues to have ramifications not only for data that respondents provide, but also for the methods of obtaining it. In the year following the onset of the pandemic, the CE has continued to pursue obtaining high-quality data from its respondents in both the Quarterly Interview Survey (CEQ) and the Diary Survey (CED)¹. However, both surveys encountered obstacles as a result of this pandemic. Starting on March 19, 2020, CE in-person data collection ceased for both the CEQ and the CED. CE adopted mitigation strategies for both the CEQ and CED to allow the continued collection of high-quality data while also taking into account the health and safety of respondents and field staff. With this in mind, all in-person interviews were transitioned to telephone interviews. Interviewers have since had the ability to collect information in this fashion, utilizing resources on the [BLS CE Website](#) to guide users through the interview process and provide additional details usually supplied during the in-person interview process. Specific to the CED, which usually requires respondents to transcribe their expenditures directly onto a daily diary form, interviewers were now transcribing diary entries onto a paper diary on the respondent's behalf. Also, as part of the CED, the CE program added an option for respondents to utilize an online diary as an alternative to traditional in-person data collection and over-the-phone transcriptions.

As a means to account for stimulus payments as part of the Coronavirus Aid, Relief, and Economic Security Act (CARES), which was signed into law on March 27, 2020, the CE program updated the CEQ to allow the collection of these payment amounts from respondents. The CEQ will continue to collect information about stimulus payment amounts with the enactment of any additional legislation that provides payments to US households and consumers².

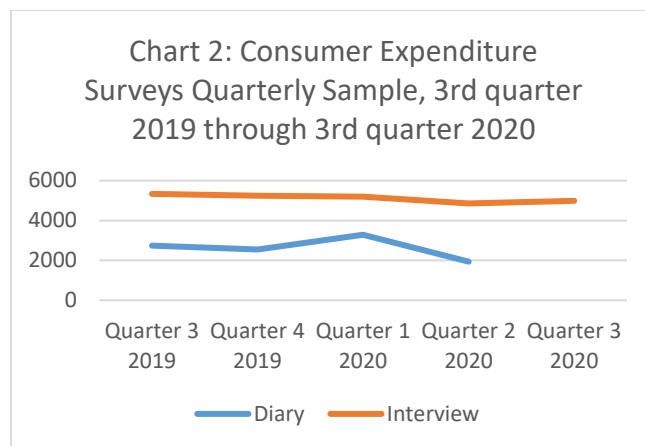
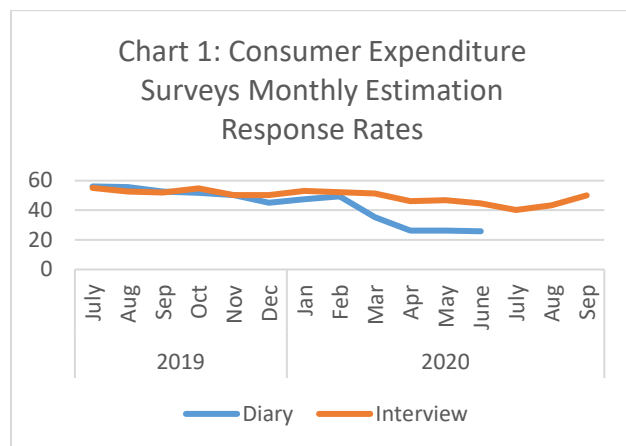
This report provides a brief overview of the observed changes in the CE data from the third quarter of 2019 through the second quarter of 2020. The report highlights changes in quarterly expenditure aggregates, quarterly means, and quarterly measures of relative standard error (RSE). The report also offers a comparison of the quarterly CE aggregate estimates with quarterly aggregates from the Bureau of Economic Analysis's Personal Consumption Expenditures (PCE) to gauge how well CE estimates track with alternative sources of consumer spending data. The results found in this report provide some initial indication of the impact COVID-19 had on consumers during the onset of the pandemic.

¹ The Consumer Expenditure Surveys (CE) data are collected by the Census Bureau for Bureau of Labor Statistics (BLS) in two surveys, the Quarterly Interview Survey (CEQ) for major or recurring items and the weekly Diary Survey (CED) for more minor or frequently purchased items. CE's data are primarily used to revise the relative importance of goods and services for the Consumer Price Index market basket. The CE is the only federal household survey to provide information on the complete range of consumers' expenditures and incomes.

² Households and consumers in the CE are defined as consumer units (CU). A CU is made up of: (1) all members of a particular household who are related by blood, marriage, adoption, or other legal arrangements; (2) a person living alone or sharing a household with others or living as a roomer in a private home or lodging house or in permanent living quarters in a hotel or motel, but who is financially independent; or (3) two or more persons living together who use their income to make joint expenditure decisions. The sum of CE population weights are designed to equal the total population of CUs for that weight.

Data Quality

Estimation response rates for the second half of 2019 remained relatively stable, with only slight declines within each survey³. However, as seen in Chart 1 below, starting with the February data collection period, both surveys did experience a drop in response, with a much larger decrease associated with the CED. While the pandemic caused a larger drop in response rates in the CED, Chart 2 shows that the CED drop in response was partially offset due to a larger sample, which was introduced in January 2020.

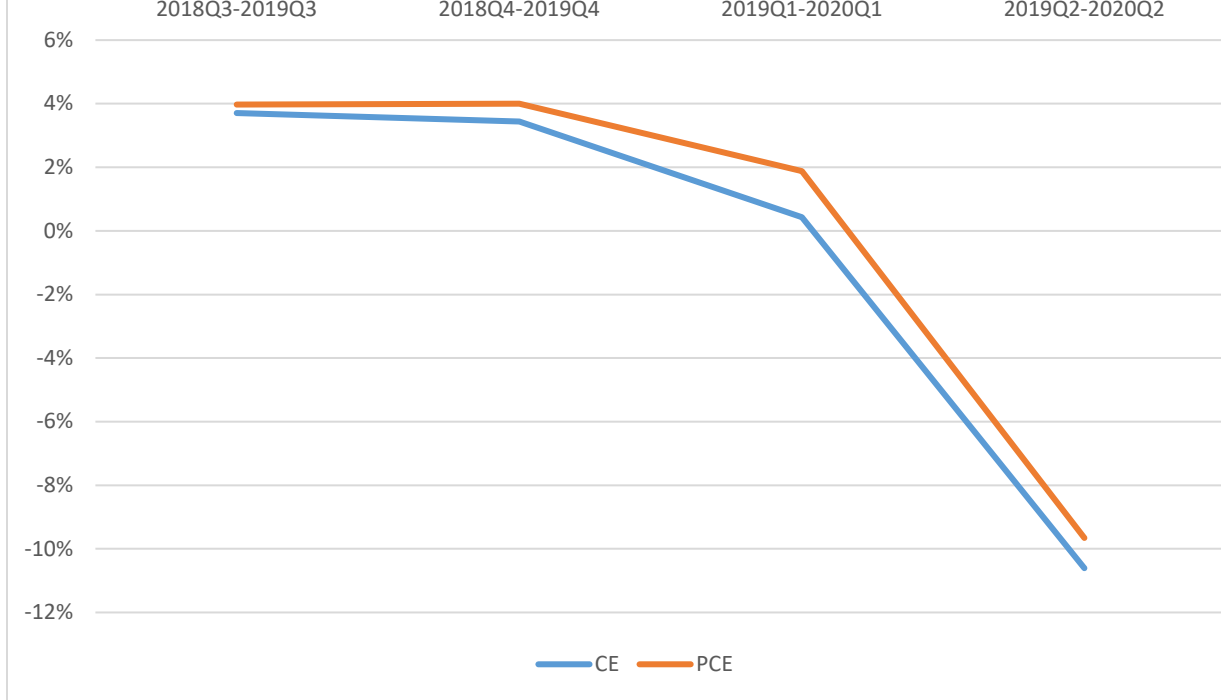


As a means to assess the quality of CE data, integrated quarterly CEQ and CED estimates from the 3rd quarter of 2019 through the 2nd quarter of 2020 were compared against those of the PCE for the same period. The PCE defines total consumption as the goods and services purchased by, or on behalf of, people living in the United States. While significant methodological differences exist between the CE and the PCE, year-over-year change between the two can be used to gauge how well the CE data is tracking against other indicators of consumer spending⁴. As seen in Chart 3A below, year-over-year percent changes from the third quarter of 2019 through the second quarter of 2020 for both the CE and PCE show similar trends. Starting in the first quarter of 2020 and carrying through to the second, the CE did show a larger year-over-year percent change decrease than PCE.

³ Estimation response rates are calculated based on the set of CUs that were included in the computation of mean expenditures and other estimated statistics produced on the CE website. These response rates will differ slightly from the response rates published on the [household and establishment response rates](#) webpage, which include CUs that responded, but do not meet the minimum threshold for inclusion in estimation.

⁴ The CE program collects data from CUs that represent the civilian, non-institutional population of the United States. PCE covers all persons resident in the United States, as well as non-profit institutions serving households.

Chart 3A: Year-over-year percent change in quarterly expenditure aggregates, Consumer Expenditure Surveys and Personal Consumption Expenditures, 3rd quarter 2019 through 2nd quarter 2020

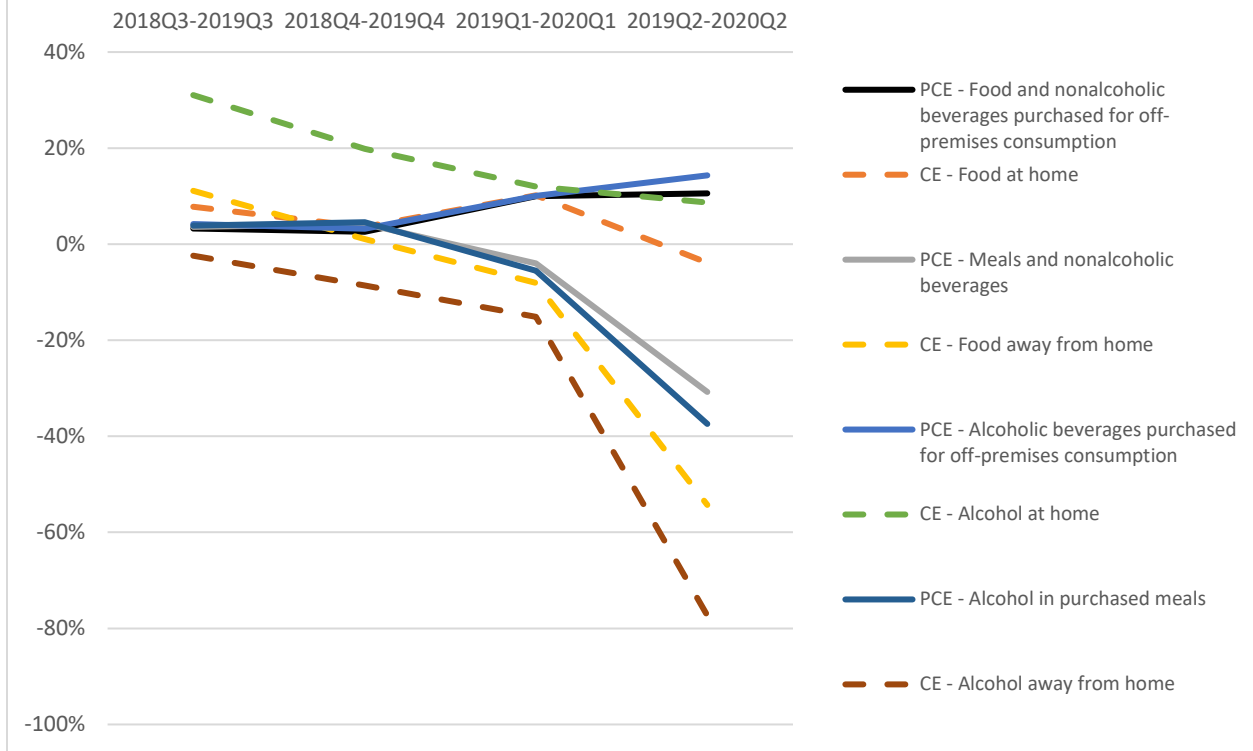


In an effort to look at some of the more detailed expenditure categories from both data sources, the CE staff compared quarterly aggregates from the CE to PCE for categories that corresponded well with each other (i.e., that are defined similarly). This comparison was made by looking at how food and alcohol expenditures compared with their counterpart categories from the PCE. The CE defines food and alcohol as part of two broad categories, at home⁵ and away from home⁶. PCE identifies spending on alcohol and food in a similar manner, classifying them as either for off-premises consumption or as part of purchased meals. Chart 3B below shows that while aggregates for away from home expenditures related to food and alcohol dropped for both PCE and CE, the drop was much larger for the CE in quarter 2 of 2020. Total spending on alcohol away from home and food away from home in the CE fell 77 percent and 54 percent, compared to declines of 37 percent and 30 percent in the like PCE categories. While the CE aggregate expenditures of alcohol at home (9 percent) showed a similar percent increase to its counterpart in the PCE (14 percent), the food at home aggregate expenditures did not, with CE showing a 4 percent decrease, compared with an 11 percent increase in the PCE for quarter 2 of 2020.

⁵ Food at home refers to the total expenditures for food at grocery stores (or other food stores) and food prepared by the CU on trips. It excludes the purchase of nonfood items.

⁶ Food away from home includes all meals (breakfast and brunch, lunch, dinner and snacks and nonalcoholic beverages) including tips at fast food, take-out, delivery, concession stands, buffet and cafeteria, at full-service restaurants, and at vending machines and mobile vendors. Also included are board (including at school), meals as pay, special catered affairs, such as weddings, bar mitzvahs, and confirmations, school lunches, and meals away from home on trips.

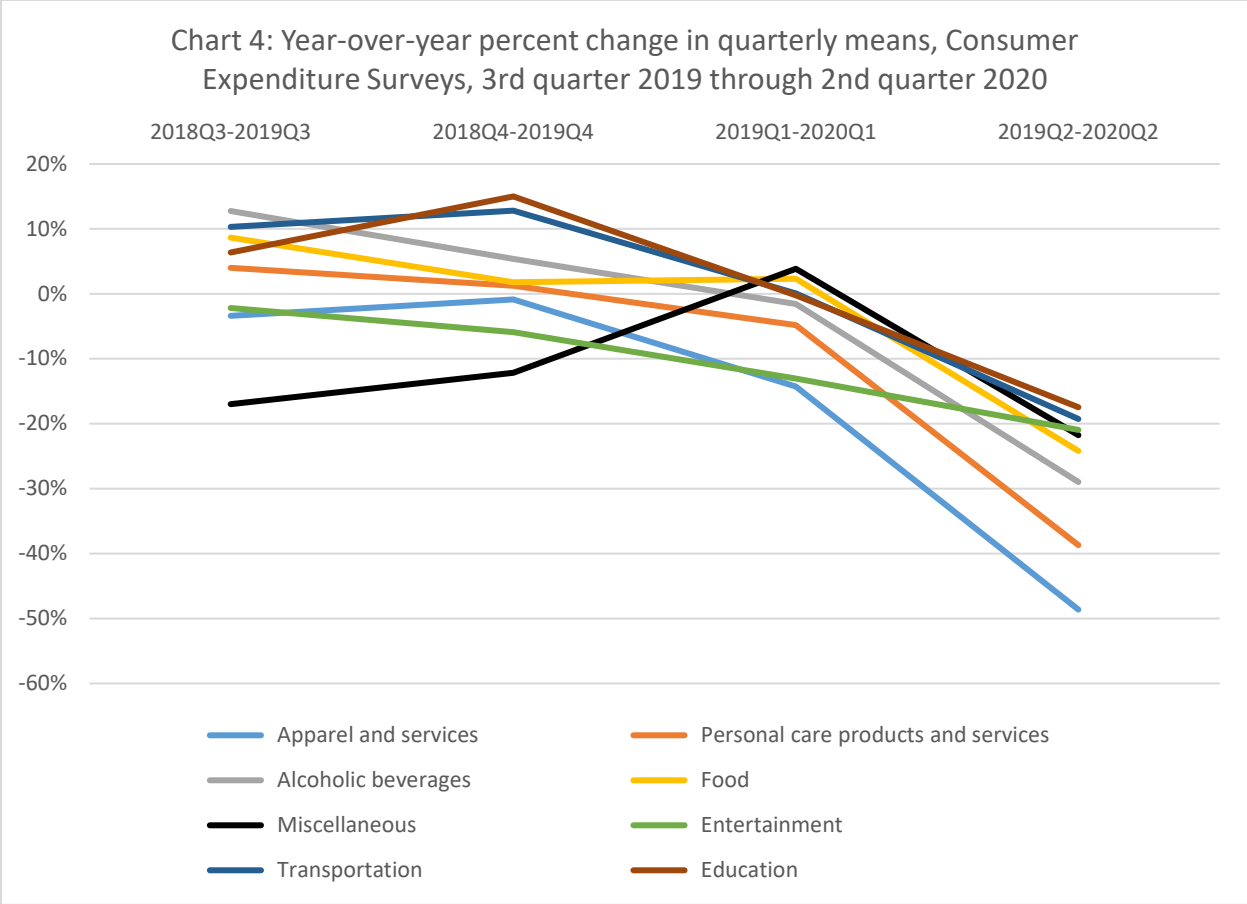
Chart 3B: Year-over-year percent change in quarterly expenditure aggregates, Consumer Expenditure Surveys and Personal Consumption Expenditures, 3rd quarter 2019 through 2nd quarter 2020



Expenditure Mean Estimates

As noted in the 2020 Midyear News Release, the CE program observed several notable changes in the major expenditure categories. Of the 14 major spending categories, only three showed an increase over the previous midyear estimate, leaving 11 categories that showed declines over the same period.

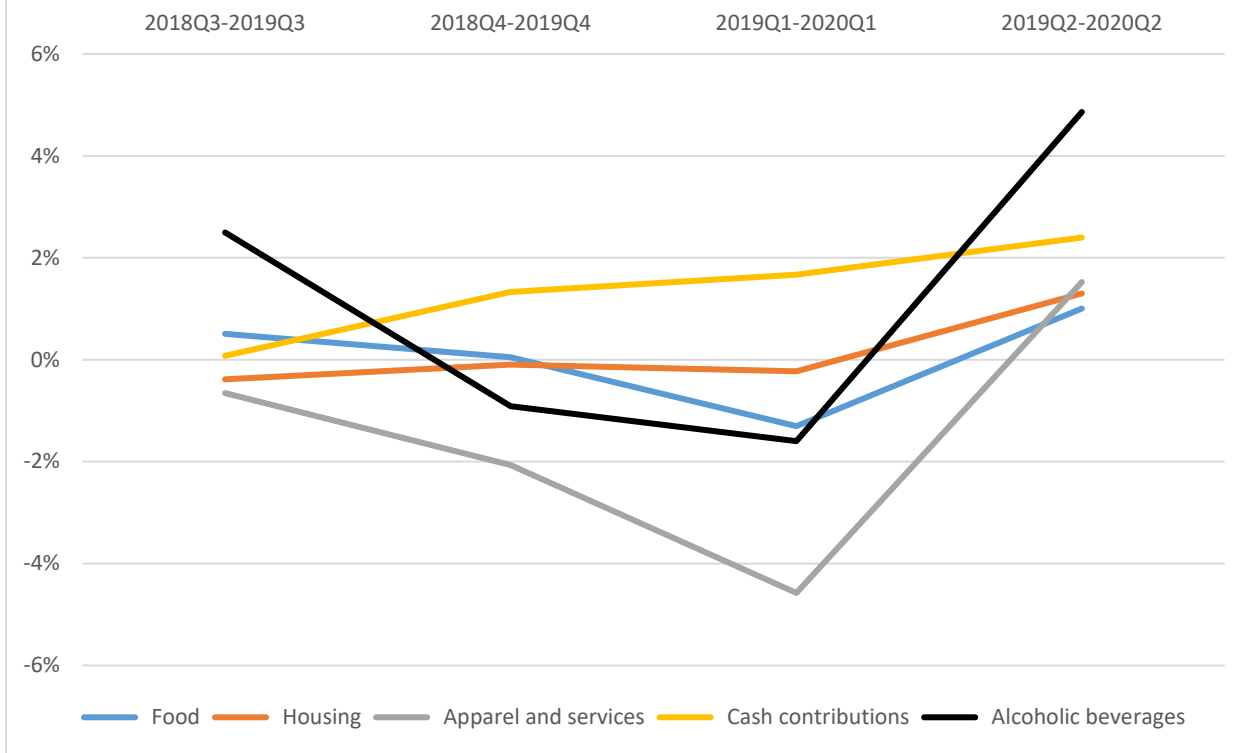
As seen in Chart 4 below, the decrease for these 11 categories was more prevalent in the second quarter of 2020, with eight of these categories showing a year-over-year percent decrease in quarterly means greater than 15 percent. Of these eight, apparel and services, personal care products and services, alcoholic beverages, and food saw the largest decreases. The decreases in food and alcoholic beverages were primarily associated with away from home purchases for these two categories. Food at home experienced a 3 percent drop, while food away from home experienced a reduction in expenditures of 54 percent. For alcoholic beverages, the at-home spending portion increased 10 percent, but this increase was outweighed by a drop of 77 percent in away from home spending.



The CE staff also looked at the year-over-year change in quarterly variance in the CE data from July 2019 through June 2020. By looking at the RSE specifically, defined as the ratio of the standard error of an expenditure to its mean, we can establish if estimates were associated with a larger degree of sampling error. Only five of the 14 major spending categories in the second quarter of 2020 increased in RSE greater than one percent. As seen in Chart 5 below, only two categories, cash contributions and alcoholic beverages, showed a year-over-year increase in RSE greater than two percent. While entertainment also showed a large increase in RSE in the second quarter of 2020, the increase was offset by an equally large RSE in the second quarter of 2019. For this reason, entertainment does not show a large year-over-year increase in RSE in the second quarter of 2020.

It should be noted that although the major spending categories listed above did not show a large shift in variance in the second quarter of 2020, users should still be mindful of the variance measures associated with each underlying expenditure, as some expenditures, particularly those with low percent reporting, are more susceptible to larger degrees of variance. For more information on how to interpret the various measurements of variance provided in the CE tables, please see [How does the variability of Consumer Expenditure data impact your analysis?](#)

Chart 5: Year-over-year change in quarterly relative standard error, Consumer Expenditure Surveys, 3rd quarter 2019 through 2nd quarter 2020



The CE program will continue to analyze the impact of COVID-19 on the CE data and products (microdata files, tables, etc.). Annual calendar year estimates and the full 2020 Public Use Microdata package will be available in September of 2021. Updates on these products and more will be provided on the [CE website](#) accordingly.

For further information, contact the Consumer Expenditure Surveys, Office of Prices and Living Conditions at (202) 691-6900 or by email at cexinfo@bls.gov. CE program staff are available Monday through Friday to respond to inquiries. To be notified when new products are available, please sign up for [CE updates](#). The menu will prompt you to select Consumer Expenditures.