



Comparing Global questions and answers to results from detailed specific questions: Data on Food Expenditures from the Consumer Expenditure Survey, 1998 - 2016

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How do the dollar amounts collected from global questions on spending categories compare to answers gathered by specific questions? Are they higher or lower, or similar? Research comparing 18 years of reports of itemized expenditures on food at home and food away from home from the Consumer Expenditure Survey (CE) Diary instrument with the responses from the global food questions from the CE Interview Survey show that *it depends*. Using detailed prepublication data from 1998 to 2016, the aggregate dollars reported in the Diary for specific food purchases for eating at home are **always lower** than the global estimates from the Interview. The Diary to Interview ratio for this group of food at home items has consistently ranged between 76 percent and 82 percent.

Conversely, the expenditures reported for eating at restaurants and away from home collected in the Diary are **always higher** than the global estimates from the Interview survey. The range is greater, from 166 percent higher to 189 percent higher between 1998 and 2006, and then from 104 percent to 122 percent higher between 2007 and 2016. There was a change in how the global question in the Interview Survey was asked in 2007 which caused a shift in the ratios.

As a historical note, these same ratios have been observed since the CE began collecting data on a continuous basis. The first published look at the 1980-81 Interview results included these paragraphs:

For food-at home expenditures, respondents in the Interview survey are asked a “global” question, that is, to estimate the number of trips they made to the grocery store for the 30month period prior to the Interview survey, the average expenditures per trip, and how much of the expenditure was for nonfood items, which is then subtracted from the total. Food expenditures at specialty and convenience store are added to give an estimate of food at home. In the Diary survey, respondents keep an itemized record of diary expenditures on food and other items. Food-at-home estimates from the Interview survey were about 22 percent to 23 percent higher than the Diary survey estimates in 1980 and 1981.

The opposite result was obtained for expenditure for *food away from home*, which are also collected with a global question in the Interview survey. Expenditures for food away from

home (including trips) in the Interview survey were about 4 percent lower than the Diary survey estimates in 1980 and about 5 percent lower in 1981.

Source: Consumer Expenditure Survey: Interview Survey, 1980-81, US Department of Labor Bureau of Labor Statistics April 1985 Bulletin 2225, page 8.

Results:

Table 1 shows the Diary/Interview ratios for Food at Home, with the amounts adjusted for comparability. See the Methodology section below for how the categories were adjusted. Reported itemized purchases in the Diary are consistently lower than the global estimates from the Interview.

Table 1
Itemized expenditures for Food at Home from the Diary
compared to Interview Global Estimates
Diary/Interview Ratio
(comparable categories only)

Year	Percent
1998	78%
1999	81%
2000	81%
2001	81%
2002	80%
2003	81%
2004	82%
2005	79%
2006	78%
2007	77%
2008	78%
2009	80%
2010	77%
2011	78%
2012	78%
2013	79%
2014	77%
2015	76%
2016	76%

Table 2 shows the adjusted Diary/Interview ratios for Food away from Home. Respondents in the Diary always report higher spending on itemized meals away from home than the global estimates provided by respondents in the Interview Survey.

Table 2
Itemized expenditures for Food away from Home from the Diary
compared to Interview Global Estimates
Diary/Interview Ratio
(comparable categories only)

Year	Percent
1998	166%
1999	172%
2000	169%
2001	185%
2002	189%
2003	178%
2004	185%
2005	192%
2006	189%
2007	104%
2008	121%
2009	122%
2010	117%
2011	121%
2012	116%
2013	117%
2014	116%
2015	119%
2016	121%

Impact for data users

The results of this comparison are important for researchers who select data from only one survey, rather than using the integrated results from the Diary and Interview that are used in the published CE tables and as cost weights used by the Consumer Price Index. Research work that only uses food expenditures reported in the Interview Survey will undercount the actual amount spent at restaurants, and will overcount the amount spent on food for home consumption. Table 3 shows the ratio of aggregate dollars spent for Food at Home + Food Away from the Diary compared to Food at Home + Food Away from the Interview for comparable categories. For the past 9 years the Diary combined amounts have been between 86 and 91 percent of the Interview amounts. The table shows that using the combined global estimates for food from the Interview instead of the reported amounts from the Diary overstates the dollars spent by U.S. households on food. The Interview overcount for groceries is higher than the undercount for restaurant meals, and the differences do not cancel each other out.

Table 3
Itemized expenditures for Food at Home Plus Food Away from Home from the Diary
compared to aggregated Interview Global Estimates
Diary/Interview Ratio
(comparable categories only)

Year	Percent
1998	97%
1999	101%
2000	100%
2001	102%
2002	103%
2003	102%
2004	104%
2005	104%
2006	102%
2007	86%
2008	90%
2009	91%
2010	88%
2011	90%
2012	88%
2013	89%
2014	88%
2015	89%
2016	89%

Methodology and Data Used

Published total annual food expenditures primarily come from the Diary; however a few expenditures in the integrated total are sourced from the Interview Survey. For the comparisons in this research paper, the only Food at Home expenditure that comes from the Interview -- food for home consumption purchased on trips -- was subtracted from the total before calculating the ratios. For calculating the Diary-to-Interview ratios for Food away from Home, the amounts for integrated categories that come from the Interview, i.e., board, catered affairs, meals during out of town trips, school lunches, and meals as pay, were subtracted from the total.

Analysis

Why are expenditures for itemized food at home purchases from the Diary always lower than global Interview responses? There are two suggested causes.

1. There is a difference in how consumers estimate their usual weekly amount compared to their actual itemized expenses, and the weekly estimated amount is not cognitively the same. In addition to asking respondents to record each food purchase, Diary respondents are asked the same global questions about food purchases as the respondents in the Interview Survey. Past research that used 2011 Diary data showed that the weekly itemized total was higher just one third of the time than the global estimate from

that same household – that is, respondents said they spent more this week than their estimate of a usual week – but was lower in approximately two thirds of the cases. Investigating these cases further, over 10% of all the 2011 Diary households reported zero purchases in a week. They indicated that they bought no groceries in that time period. However at the same time, those households responded to the global question that their average weekly grocery bill was \$98. These zeroes lowered the published average for Diary food, and caused the global estimated amount to be higher than the published itemized amount.

2. The global estimate for food at home is calculated as the difference between total purchases at grocery stores minus the purchase of non-food items, plus other purchases of food other than at grocery stores. Because the amount spent on food is the residual, the cause of the higher ratio may be consumers consistently underestimating the non-food amount of their usual weekly grocery shopping trip.

Why are itemized food away from home purchases always higher than global estimates? What caused the change in the ratios from 2006 to 2007 in Table 2 and Table 3? There are two key findings.

1. When asked a global question on spending on food away from home, respondents always underestimated their actual costs or perhaps the number of times they eat out over an average length of time compared to filling out a diary. Eighteen years of data show a consistent pattern: asking for specific restaurant expenditures yields a higher dollar total.
2. Secondly, the longer the time period over which respondents are asked to provide an expenditure estimate to a global question, the more respondents under-reported their spending on food away from home. From 1998 to 2006 Interview participants were asked to estimate how much *per month* they spent eating out. The Diary/Interview ratio was between 166 to 192 percent higher. In 2007 the global question was changed from “monthly” to “weekly.”
The new question was “What has been your or your CU's usual WEEKLY expense for meals, or snacks from restaurants, fast food places, cafeterias, carryouts or other such places?”
The pre-2007 question had been “What was the usual MONTHLY expense for these purchases?”
The shorter reference period initially brought the ratio closer to 100 percent. Note that in 2007 the estimates from the Interview and Diary were almost identical – the Diary to Interview ratio was only four percent higher that year. Economists in the CE Production and Control Branch suggested there was some overlap that year in how the global question was asked; perhaps some field representatives were still asking for “monthly estimates” out of familiarity with the old survey question, while the computer system was recording the amount as weekly and then multiplying it to get monthly and quarterly amounts. As shown in Table 2, the Diary/Interview ratio then jumped to 21 percent higher in 2008 and has stayed between 16 and 22 percent higher each year since then.