

Comparing global questions and answers to results from detailed specific questions: Data on food expenditures from the Consumer Expenditure Survey, 1998 - 2017

Steven Henderson

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Overview and summary

How do the dollar amounts collected from global questions that ask respondents to estimate their usual spending for a certain time period compare to answers gathered by specific questions? Are they higher or lower, or similar? Research comparing 20 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 Interview Survey show that *it depends*. Using detailed prepublication data from 1998 to 2017, the aggregate dollars reported in the Diary Survey for specific food purchases for eating at home are **always lower** than the global estimates from the Interview Survey. 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 Survey 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 128 percent higher between 2007 and 2017. There was a change in how the global question in the Interview Survey was asked in 2007 which caused a shift in the ratios.

Results and analysis

Table 1 shows how the reported amounts for food from the Diary Survey compare with global estimates for food expenditures from the Interview Survey for each year. See the Methodology section below for how the categories were adjusted.

The Food at home Diary/Interview Ratio column shows that itemized purchases in the Diary Survey are consistently lower than the global estimates from the Interview Survey, ranging from 76 to 81 percent.

The Food away from home Diary/Interview Ratio column shows that respondents in the Diary Survey always report higher spending on itemized meals away from home in their week of diary record keeping, compared to the global estimates by respondents in the Interview Survey asked to provide either a monthly or weekly estimate.

The last column in the table shows the ratio of total aggregate dollars spent for Food at home plus Food away from home from the Diary Survey compared to Food at home plus Food away from home from the Interview Survey for comparable categories. Starting in 2007, the Diary Survey combined amounts for both food categories have been between 86 and 94 percent of the Interview Survey amounts.

The table shows that using the combined global estimates for food from the Interview Survey instead of the reported amounts from the Diary Survey would exceed the reported dollars spent by U.S. Diary households on food. The positive dollar difference for Interview groceries is larger than the negative dollar difference for restaurant meals, and the differences do not cancel each other out.

Table 1
Itemized expenditures for food from the Diary Survey compared to Interview global estimates
comparable categories only

Year	Food at home Diary/ Interview Ratio	Food away from home Diary/Interview Ratio	Total \$ Food at home plus \$ Food away Ratio
1998	78	166	97
1999	81	172	101
2000	81	169	100
2001	81	185	102
2002	80	189	103
2003	81	178	102
2004	82	185	104
2005	79	192	104
2006	78	189	102
2007	77	104	86
2008	78	121	90
2009	80	122	91
2010	77	117	88
2011	78	121	90
2012	78	116	88
2013	79	117	89
2014	77	116	88
2015	76	119	89
2016	76	121	89
2017	80	128	94

Why are expenditures for itemized Food at home purchases from the Diary Survey always lower than global Interview Survey 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 Survey respondents are asked the same global questions about food purchases as the respondents in the Interview Survey. Internal unpublished research using 2017 data comparing the Diary Survey variables for itemized food totals with the global estimates showed that the weekly itemized total was higher than the global estimate from that same household only 39 percent of the time from – that is, just under 40 percent of the respondents said they actually spent more in itemized grocery spending this week than their estimate for a usual week – but

was lower in approximately 61 percent of the cases. Investigating these cases further, over 11 percent of all the 2017 Diary Survey households reported zero purchases in that week's diary. 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 weekly estimated grocery bill averaged \$94. 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? And what caused the change in the ratios from 2006 to 2007? 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. Twenty 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 Survey 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 Surveys 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 the table, the Diary/Interview ratio then jumped to 21 percent higher in 2008 and has stayed between 16 and 28 percent higher each year since then.

Conclusions and 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 Surveys that are used in the published CE tables and as cost weights used by the Consumer Price Index.

These results suggest that respondents do not report the same dollar amounts when asked for global estimates compared to itemizing expenditures.

Researchers should be aware of these differences when using the CE data. Analysis that only uses food expenditures reported in the Interview Survey will have lower totals than the Diary Survey amount spent at restaurants, and will have higher totals than the Diary reported amounts spent on food for home consumption.

Methodology and data used

The data used in this report come from the annual detailed prepublication tables for Integrated data, Interview Survey only data, and Diary Survey only data. In order to make direct comparisons between the Diary and Interview Surveys dollar amounts, the following adjustments were made. Most of the published total food expenditures in the annual tables come from the Diary Survey; however a few expenditures in the integrated total are sourced from the Interview Survey. For the Food at home comparisons used in this research paper, the only Food at Home expenditure that comes from the Interview Survey -- 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 expenditure amounts for integrated categories that come from the Interview Survey, i.e., board, catered affairs, meals during out of town trips, school lunches, and meals as pay, were subtracted from the total.

For a list of the detailed prepublication categories for all expenditures including food and their selected sources from the Interview or Diary Survey, see the annual “All consumer units: Annual detailed expenditure means, standard errors, coefficients of variation, and weekly (D) or quarterly (I) percent reporting” [table](#).

As a historical note, these same ratios in this 1998 through 2017 data comparison have been observed since the CE began collecting data on a continuous basis. The first published look at the 1980-81 Interview Survey 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 3-month 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 stores are added to give an estimate of food at home. In the Diary survey, respondents keep an itemized record of daily 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 expenditures 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.