



May 25, 2018

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SUBJECT: Differences in Response Rates in the Consumer Expenditure Survey

## 1. Introduction

This memo documents the codes and formulae used to calculate the response rates in the Consumer Expenditure Survey (CE). It updates a similar memo written by Sally Reyes-Morales in 2011 showing more recent data as well as changes made in the processing of response rate codes in the intervening years.

The CE consists of two separate surveys, a quarterly Interview survey (CEQ) and a two-week Diary survey (CED). Response rates are computed separately for each survey, because each survey has its own questionnaire and its own sample of households.<sup>1</sup> The CEQ and CED are collected and processed separately, due to the differences in format and design. The United States Census Bureau (Census) carries out data collection for both surveys under contract with the Bureau of Labor Statistics (BLS).

Response rates are calculated for both surveys at different stages of data processing by Census and BLS. Differences between these response rates are the result of changes made during data processing at both agencies, and also differences in the ways interviews and noninterviews are defined at the two agencies. Response rates are calculated by two groups at Census (the Field Division, and the Demographic Statistical Methods Division, or DSMD)<sup>2</sup>, and by one group at BLS (the Statistical Methods Division, or CESMD), hence response rates are calculated by three groups for two surveys. This makes six response rates – three response rates for the Interview survey, and three response rates for the Diary survey.

The same formula is used for all six response rate computations:

$$\text{Response Rate} = \frac{\text{Completed Interviews}}{\text{Eligible Cases}} \times 100\%$$

<sup>1</sup> The two surveys have independent samples of households in the sense that each year a systematic sample of 12,000 addresses is drawn from the Census Bureau's sampling frame for the Interview survey, and another systematic sample of 12,000 addresses is independently drawn from the sampling frame for the Diary survey. Prior to 2015, a single sample of 240,000 addresses (= 12,000 addresses per year x 10 years x 2 surveys) was drawn for the entire decade for both surveys, with addresses alternatingly assigned to the Interview survey and the Diary survey. Thus prior to 2015 the two samples were not independent of each other, but starting in 2015 the two samples are independent of each other.

<sup>2</sup> DSMD no longer calculates what we, for historical reasons, continue to call the DSMD response rates; however, BLS still receives them monthly from the Demographic Surveys Division (DSD) and Associate Directorate for Demographic Programs (ADDP) at Census. Since 2016, DSMD has begun calculating a weighted response rate for the Quarterly Interview Survey, in response to an internal program review, and began calculating a weighted response rate for the Diary Survey in 2017. However, we do not use these weighted response rates at this time at BLS.

where the denominator is the number of “eligible” housing units in the sample, and the numerator is the number of eligible housing units that completed an interview. The basic concept is straightforward, but the three offices have different definitions of “eligible” housing units and “completed interviews,” which cause their response rates to be different.<sup>3</sup>

## 2. Basic Concepts

A few basic concepts need to be discussed at this point: eligible/ineligible, in-scope/out-of-scope, completed interviews, and Type A/B/C noninterviews. But before discussing these concepts, the more basic concept of a “case” needs to be defined.

A “case” is the most basic element of a field representative’s (FR’s) workload. Every month FRs are given a list of cases to contact, from which they are expected to get interviews. Their initial “caseloads” are a list of addresses, since that is the basic sample unit that Census draws from its sampling frame. However, after visiting the addresses, some turn out to be bad addresses – some turn out to be vacant housing units, nonexistent addresses, or nonresidential buildings, while others turn out to be housing units whose occupants are not in the CE’s target population, such as nursing homes, military barracks, or prisons. These addresses are removed from the FR’s caseloads upon their discovery. Furthermore, separate records are created for each consumer unit (CU) in a housing unit, so that ultimately each CU becomes a separate case. Thus, the FR’s initial caseloads are addresses, but in subsequent waves of the survey they become housing units, which then become consumer units. For the purpose of clarity, this mixture of addresses, housing units, and consumer units are called “cases<sup>4</sup>.”

Now that cases are defined, the next basic concepts that needs to be discussed are the different ways that outcomes of the cases are categorized. The different outcomes of a case for either the Interview or Diary survey are categorized in three main ways: in-scope/out-of-scope, eligible/ineligible, and by type (completed interview, or Type A/B/C noninterview).

A case is considered “in-scope” for the survey if it has a residential housing unit; otherwise it is considered “out-of-scope.” Examples of in-scope cases include houses, condominiums, and apartment buildings. Examples of out-of-scope cases include addresses that could not be found or do not exist, addresses where the housing unit was demolished or converted to a nonresidential use, and addresses located on military bases.

A case is considered “eligible” to participate in the survey if it has a residential housing unit that is occupied by its usual residents; otherwise it is “ineligible.” Examples of ineligible cases include housing units which are vacant or under construction, and those which are occupied by people whose usual residence is elsewhere.

Cases are also categorized into four other types of outcomes: completed interviews, Type A noninterviews, Type B noninterviews, and Type C noninterviews. A “completed interview” is where the sample address has an occupied housing unit whose members are in CE’s target population (the civilian noninstitutional population), and who have successfully completed an interview. A “Type A” noninterview is where the sample address has an occupied housing unit whose members are in CE’s target population, but who did not complete an interview. A “Type B” noninterview is where the sample address has an unoccupied housing unit, or an occupied unit whose occupants are not in CE’s target population. Finally, a “Type C” noninterview is where the sample address does not have a housing unit.

Both completed interviews and Type A nonrespondents are considered eligible. Type A cases are most often refusals<sup>5</sup>, as well as occupied households which cannot be contacted despite repeated contact attempts.

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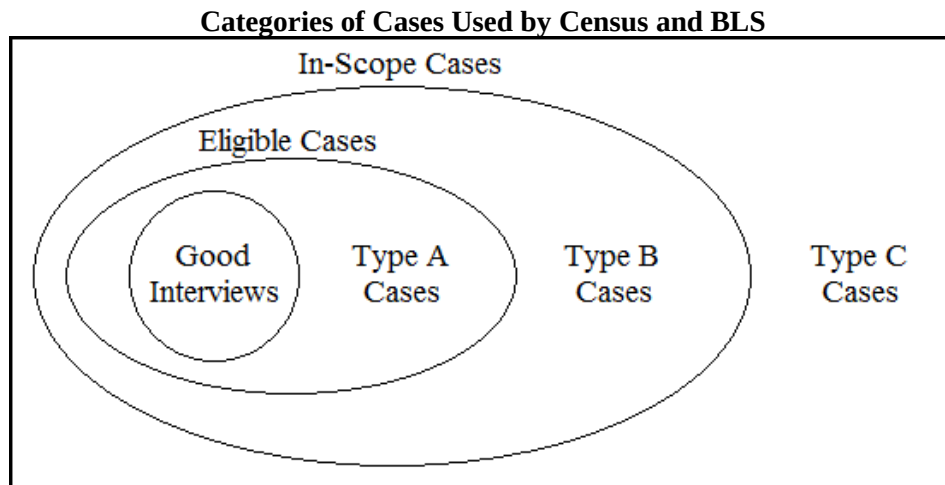
<sup>3</sup> Should a housing unit whose residents are away from home for six months be included in the denominator? Should an interview that was only partially completed be included in the numerator? Issues such as these are the reason the three offices have different response rates.

<sup>4</sup> It should be noted that for the Diary survey Census and BLS use the term “case” differently. Census considers the entire two-week period to be a single case, whereas BLS considers each week to be a separate case. As a result, it is important to know which audience is being addressed when using the word “case.” To avoid confusion, it is a good habit to routinely refer to the Census concept as “bi-weekly cases” and the BLS concept as “weekly cases.”

Thus, Type A cases are eligible, and thus part of the denominator of the response rate, which is also used as a success rate for field representatives. Type B cases are not eligible, but are part of the denominator of a calculated eligibility rate, out of all residential addresses. Type C cases are considered out-of-scope.

Once a case is determined to be Type C, it is never visited again; it is presumed that a Type C case by definition cannot “improve” to a good interview, or to a Type A or B noninterview. If the first interview attempt is classified as a Type C case, then the system at BLS will automatically generate a Type C case for the second and subsequent interview numbers, but these subsequent Type C cases are not included in the totals shown in our internal memos, because the purpose of BLS response rates is to measure the success of the interview process, and the address has not been revisited. However, the purpose of Type C totals in the Census response rates is to measure the quality of the sampling frame. Therefore, Census includes subsequent noninterviews of Type C cases in their totals, even though the address is not revisited, in order to keep the total number of addresses in the sampling frame consistent.

The response rate (Good Interviews / Eligible Cases) is one of the three rates that can be determined from the total numbers in each category of case. The other two are the eligibility rate (Eligible Cases / In-Scope Cases), useful for measuring the quality of the sample, and the in-scope rate (In-Scope Cases / All Cases), useful for measuring the quality of the sampling frame. The categories of cases by Census and BLS can be seen in this diagram:



### 3. Monthly Reports from Census

Every month, Census sends BLS two progress reports on the collection process, one showing response rates for CEQ and CED calculated by the Field division, and another showing the “DSMD” response rates for CEQ and CED provided by ADDP. In this memo, the response rates presented in these two reports are compared with the response rates calculated by CESMD.

The first progress report, “CE Comparison and Progress Final Report,” includes response rates (“Field RR”) calculated using the outcome codes pulled directly from the Regional Office Survey Control Operation (ROSCO) system.

<sup>5</sup> Refusals are usually clarified further in the system, such as “Refused, Hostile Respondent” or “Refused, Time-Related Excuses.” One specific type of refusal is a Congressional Refusal, which occurs when a Congressional Office contacts the regional office or Census headquarters on behalf of a survey respondent or nonrespondent who wishes to be permanently removed from the sample. If the Congressional office instructs Census to cease all contact efforts, then Census will assign a Type A Refusal outcome code for the current interview, but the household is then removed from the sample address file so that no more contacts will be attempted in the future. This happens rarely enough that it is not given its own outcome code, however – there was only one reported instance of a Congressional Refusal in 2017.

The second progress report, “CE Diary Regional Office Monthly Rates and CE Quarterly Regional Office Monthly Rates,” includes the response rates (“DSMD RR”) formerly calculated by the Census DSMD office<sup>6</sup>, at both the national level and for each of the twelve regional offices. These response rates are calculated using the final Census outcome codes after data processing has finished, which is why the response rates in this progress report are slightly different from those in the first progress report.

#### 4. Data Processing at BLS

Monthly data are received at BLS from the Census Bureau for both surveys and processed by the Initial Edit System (IES), formerly known as the Phase 2 system. The IES has several screening processes in place to ensure data quality. One of these processes is the minimal expenditure edit, a process which screens out cases with no entries or unusually low reported total expenditures, and reclassifies their response status from interviews to noninterviews. The minimal expenditure edit has been in place in the Diary survey since 2002, and in the Interview survey since 2006.

In the minimal expenditure edit in the Interview survey, households are selected by an automated process to be manually reviewed on an individual basis before being reclassified. However, in the Diary survey, the minimal expenditure edit is an entirely automated process, and none of the selected diaries are manually reviewed before being reclassified as noninterviews; these are what are called “reclassified cases.”

The next stage of processing is the Edit and Estimation System (EES), formerly known as Phase 3. After the EES is completed, the official response rates are calculated by CESMD, using the variable OUTCOME for the CEQ and the variable PICKCODE for the CED.

These outcome codes are generated at Census, but not all codes generated by Census are applicable at BLS. For example, Census treats the two weeks of the Diary Survey as one case, but BLS treats the two weeks as separate cases, each with their own outcome code<sup>7</sup>. Some outcome codes used by Census such as 206 (“Week 1 Type A, Week 2 interview”) are not used at BLS; instead the two weeks are given two separate outcome codes, in this example given a Type A code and a completed interview response code respectively.

(For complete OUTCOME and PICKCODE definitions, see **Attachment A**.)

#### 5. CEQ Response Rates

Here is the formula used for all three response rate calculations (BLS, “DSMD,” and “Field”) for CEQ:

$$CEQ \text{ Response Rate} = \frac{\text{Completed Interviews}}{\text{Eligible Cases}} \times 100\% \quad \text{and} \quad \frac{\text{Completed Interviews}}{\text{Completed Interviews} + \text{Type A Cases}} \times 100\%$$

$$\text{and} \quad \frac{(201+203)}{(201+203)+(215+216+219+321+322+323+324)} \times 100\%$$

Since all three offices use the same formula it is natural to think all three response rates would be the same. However, relatively small differences exist in spite of using the same formula.

<sup>6</sup> DSMD began producing weighted response rates in 2016. We are not currently using these in our comparisons, but instead continue to use the Census-supplied response rates, formerly produced by DSMD, which we still refer to as “DSMD Response Rates” for the sake of continuity.

<sup>7</sup> Census sends BLS three outcome codes for each biweekly case – one outcome code for week 1, one outcome code for week 2, and a third outcome code for both weeks combined, which we do not use.

There are several reasons Field, “DSMD,” and CESMD have different response rates in spite of using the same formula. The first reason is that, prior to the 2010-Census based revision of the CE Survey, which took effect in 2015, the CEQ consisted of five interviews; Census used all five interviews in its response rate calculations, but BLS used only the last four interviews. The first interview was a “bounding interview,” which provided baseline data and was designed to remove out-of-scope expenditures that respondents tended to report through a flawed cognitive process called “telescoping.”<sup>8</sup> Expenditure data was collected in that interview, but it was not used in CE’s final published expenditure estimates. Census included the bounding interview in its response rate calculations, because it was collected. BLS did not include the bounding interview in its response rate calculations, because it was not used in the published expenditure estimates. However, the bounding interview no longer exists, so the discrepancy no longer exists.

This illustrates a second reason for different response rates between agencies, which is that Census and BLS are really measuring different concepts. Census is measuring the performance of its field representatives over all their assigned cases, while BLS is measuring the field representatives’ ability to collect usable data for the final expenditure estimates. Despite the end of the bounding interview, there are still small differences in the numbers used in the response rate formulae, such as whether incomplete (partial) interviews should be counted as “good” interviews. The differences of these estimates can be observed in **Graph 1** and **Graph 2** below. The monthly response rates from Census have historically been slightly higher than those from BLS, but this difference has decreased in the past two years, with a difference between “DSMD” and BLS of 0.045 percent in 2015 and 0.022 percent in 2016. (See complete list in **Attachment B**.) Notice on the graphs that the Field and “DSMD” data points are mostly the same, and the BLS data points are as well for 2015 and 2016. (Also visible on the graphs is the result in lost productivity from the October 2013 federal government shutdown.)

While BLS response rates are different from Census response rates, monthly and annual response rates calculated at Census by Field and “DSMD” differ very little. The differences of the reported monthly response rates between the two sources has been consistently less than one percentage point since 2005, and the rates have been identical for the majority of the months over that time. The largest difference between the two was 0.63 in September 2016. (See complete list in **Attachment B**.)

## 6. CED Response Rates

Although the response rate formula shown in the introduction is used to calculate all the response rates discussed in this study, differences in the definition of a good interview and the eligibility of a noninterview can result in big differences among them. The classification variable used in the CED is called PICKCODE.

Based on the classification of PICKCODE values, here are the current CED response rate formulae:

$$CED\ Response\ Rate = \frac{Completed\ Interviews}{Eligible\ Cases} \times 100\% \quad \& \quad \frac{Completed\ Interviews}{Completed\ Cases + Type\ A\ Cases} \times 100\%$$

The BLS version of the formula is as follows:

$$RR = \frac{(201+217)}{(201+217)+(216+219+320+321+322+323+324+325+326+reclassified\ cases)} \times 100\%$$

The two Census response rates (“Field” and “DSMD”) are now calculated the same as each other:

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<sup>8</sup> Telescoping is the flawed cognitive process in which a respondent incorrectly recalls expenditures made outside the recall period to have been made inside the recall period. In 1964, John Neter and Joseph Waksberg found that telescoping was a significant problem in expenditure surveys, and they developed the concept of the bounding interview to reduce its effect. However, research in the past decade by various people in the CE program (Ian Elkin, Catherine Hackett, Neil Tseng, et. al.) found that it was no longer a significant problem in our survey, paving the way for the removal of the bounding interview from the CE survey in 2015.

$$RR = \frac{(201+203+206+reclassified\ cases)}{(201+203+206+reclassified\ cases)+(216+217+219+320+321+322+323+324+325+326)} \times 100\%$$

However, prior to 2017, the Census response rates used these formulae:

*old Field CED Response Rate:*

$$RR = \frac{(201+203+204+206+207+reclassified\ cases)}{(201+203+204+206+207+reclassified\ cases)+(210+216+219+321+322+323+324+325)} \times 100\%$$

*old “DSMD” CED Response Rate:*

$$RR = \frac{(201+203+204+206+207+reclassified\ cases)}{(201+203+204+206+207+reclassified\ cases)+(210+216+217+219+321+322+323+324+325)} \times 100\%$$

Because Census considers the two weeks of the Diary Survey to be a single record, there are several outcome codes for Diary which are non-applicable for us at BLS.<sup>9</sup> For example, the codes 203 and 206 consist of, from the BLS point of view, a good interview one week and a Type A non-interview the other week. However, Census considers these codes to be good interviews for the two weeks combined, thus partially explaining the higher response rates reported by Census.

Monthly and annual Field and “DSMD” response rates calculated at Census differed prior to 2016 largely because the cases coded as PICKCODE = 217 (“Temporarily Absent”) were classified as Type A noninterviews for the DSMD response rate calculations, but Type B noninterviews for the Field response rate calculations. However, in 2016, Field began classifying Temporarily Absent cases as Type A’s as well.

Temporarily Absent cases are those where the CU is not at home during the interview period due to a vacation or business trip for less than six months. Therefore, they have no expenditures at home during that week, and as such, BLS considers them complete diaries with a valid total expenditure of \$0, although this has recently been of some concern at BLS.

The formulae above show the “reclassified cases,” which are considered complete interviews by Census, but as Type A noninterviews by BLS. As discussed above, “reclassified cases” are those interviews automatically selected by the minimal expenditure edit to be considered Type A cases.

The only other change in PICKCODE values, as shown in the formulae above, occurred in the last year at Census. Prior to 2017, an outcome of 326 was classified as a Type B noninterview for both Field and “DSMD,” but in 2017 BLS directed Census to change the classification of the 326 outcome code to a Type A. Consequently, all three response rate calculations are now made using 326 as a Type A, but this was another difference in the past between Census and BLS response rates for CED.

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<sup>9</sup> These include the codes 203 (“Week 1 interview, Week 2 Type A,” 204 (“Week 1 interview, Week 2 Type B/C”), 206 (“Week 1 Type A, Week 2 interview”), 207 (“Week 1 Type B/C, Week 2 interview”), and 210 (“Type A one week, Type B/C the other week”). (Codes 204, 207, and 210 were removed from the system with changes made at Census in 2017.)

As shown above, the list of PICKCODE values classified as Type C noninterviews has always been constant across Census and BLS.

While the differences among the three types of response rates are very small for the CEQ survey, the differences for the CED survey can be quite big. These differences are the result of a combination of factors that include changes made during data processing at Census, changes made during the IES reclassification process at BLS, and differences in the classification of interviews and noninterview cases between Field, “DSMD,” and BLS (especially prior to the changes made in the past two years.)

**Graph 3** and **Graph 4** show the differences between the response rates, and the complete list of response rates is shown in **Attachment C**. (Visible in the graph is the sharp drop in productivity caused by the October 2013 federal government shutdown, which affected the weekly CED survey much more than the quarterly CEQ survey.)

For reference, I have appended the e-mails I received from Census. (**Attachment D**).

## 7. Further Reading

Bass, S. (2008). “Reclassifying Low-Expenditure Consumer Units in the Consumer Expenditure Interview Survey.” Consumer Expenditure Survey Anthology, 2008. (<https://www.bls.gov/cex/anthology08/csxanth6.pdf>)

Elkin, I. (2013). “Recommendation Regarding the Use of a CE Bounding Interview.” BLS research paper. ([https://www.bls.gov/cex/research\\_papers/pdf/Recommendation-Regarding-the-Use-of-a-CE-Bounding-Interview.pdf](https://www.bls.gov/cex/research_papers/pdf/Recommendation-Regarding-the-Use-of-a-CE-Bounding-Interview.pdf))

Hackett, C. (2011). “Consumer Expenditure Quarterly Interview Survey: Effectiveness of the Bounding Interview.” BLS internal report.

Neter, J. and Waksberg, J. (1964). “A study of response errors in expenditure data from household interviews.” Journal of the American Statistical Association, 59, 18-55.

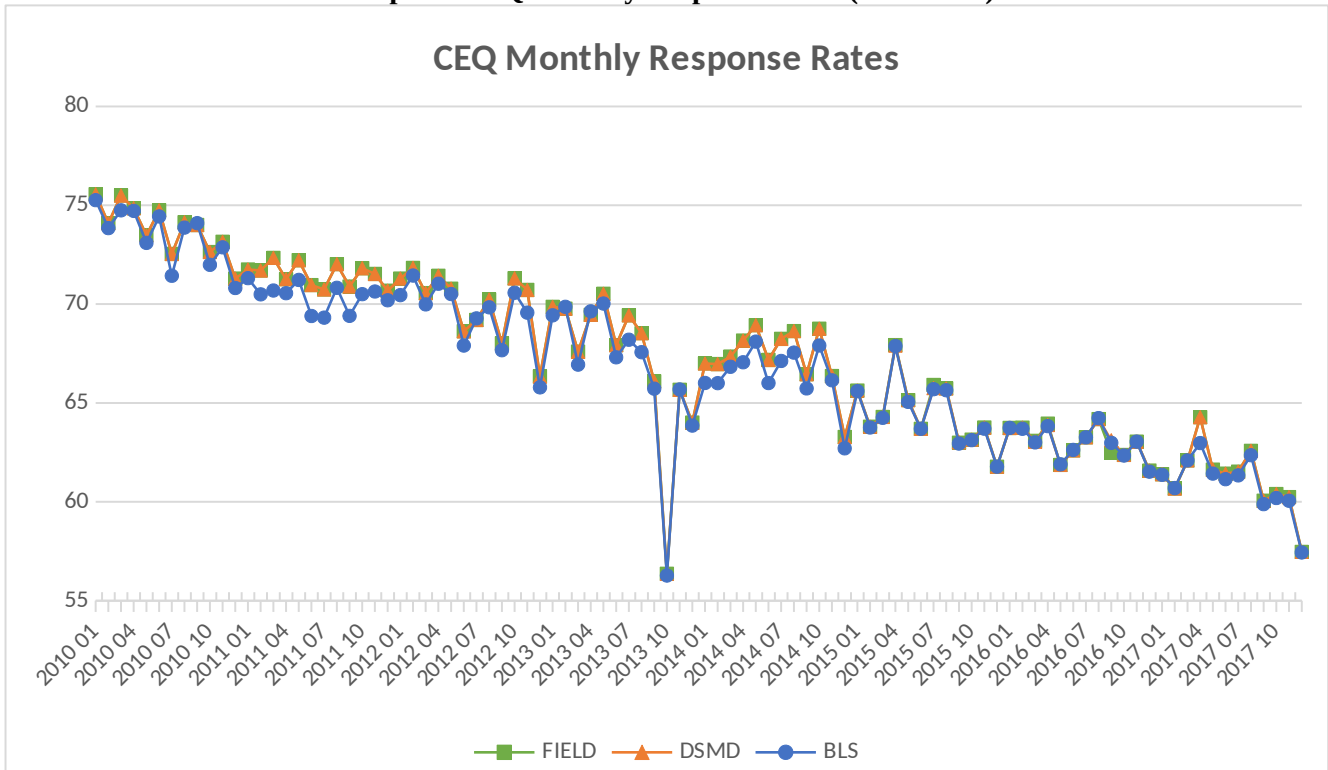
Reyes-Morales, S. (2011). “Consumer Expenditure Survey: Differences in Response Rates.” BLS internal report.

Tseng, N., and Tan, L. (2009). “An exploration of the effectiveness of the Bounding Interview in the Consumer Expenditure Interview Survey.” BLS internal report.

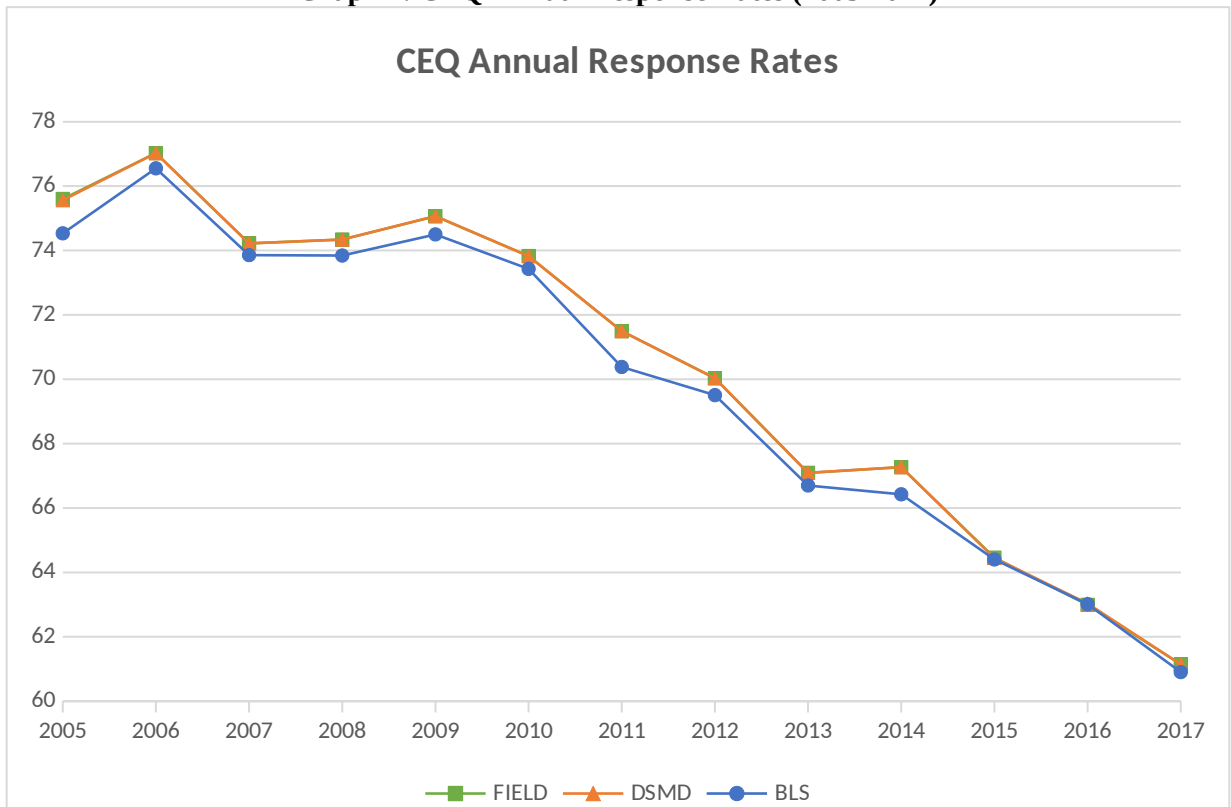
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**Graph 1: CEQ Monthly Response Rates (2010-2017)**

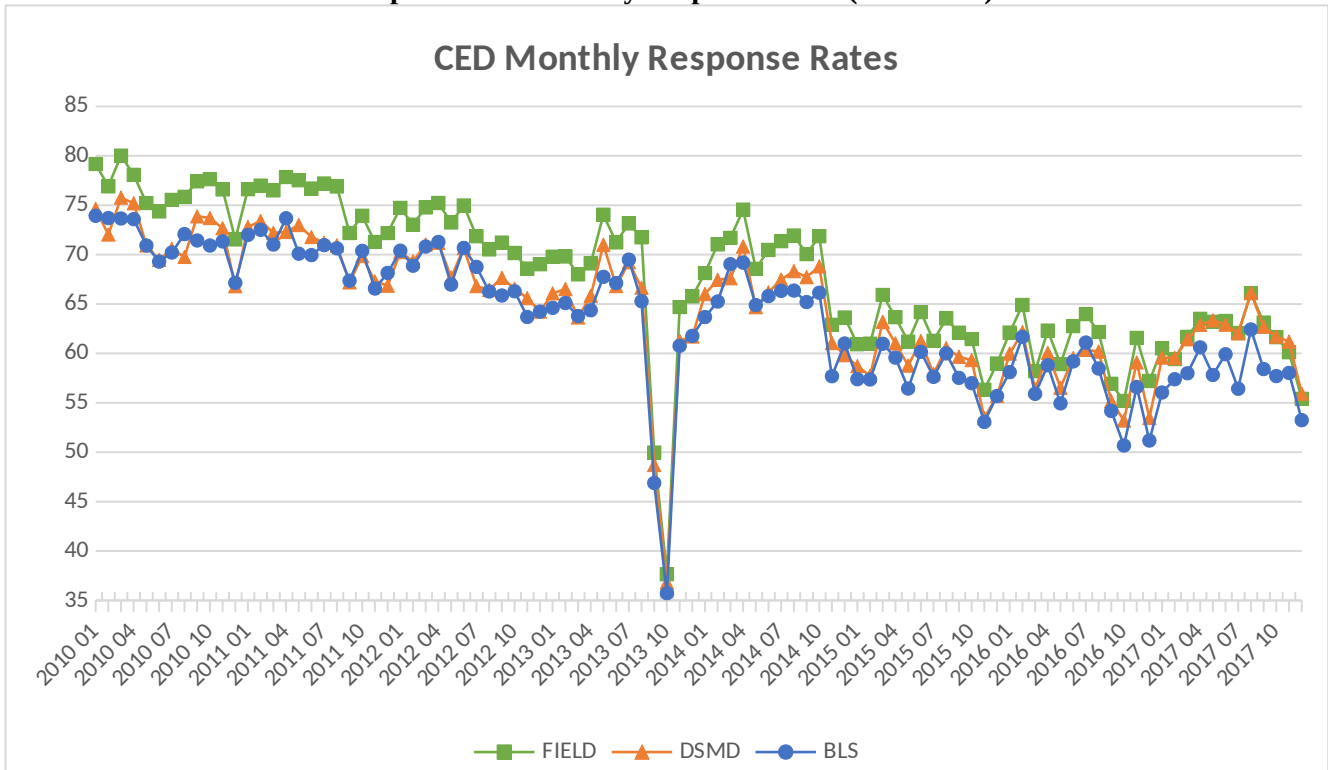


**Graph 2: CEQ Annual Response Rates (2005-2017)**

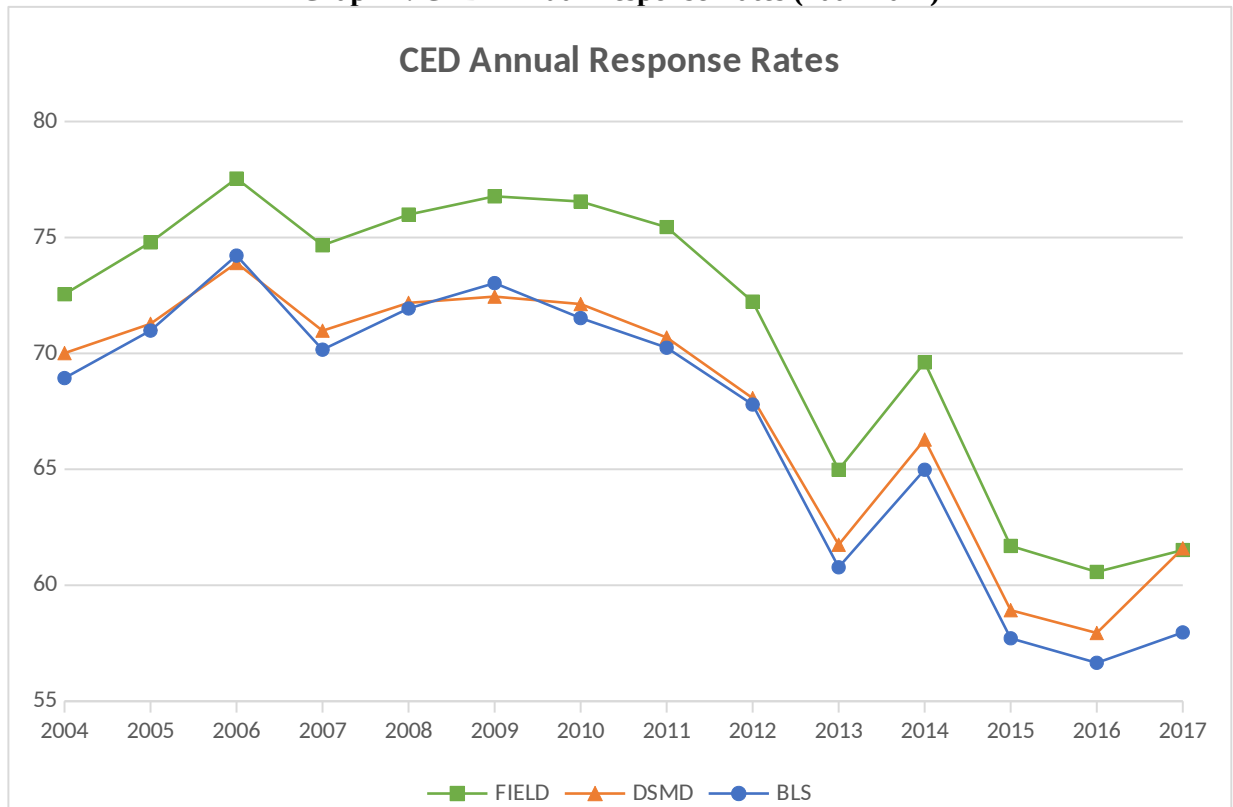




**Graph 3: CED Monthly Response Rates (2010-2017)**



**Graph 4: CED Annual Response Rates (2004-2017)**



**ATTACHMENT A: Complete (Current) Response Code Classifications**

Selected variable is OUTCOME for CEQ, PICKCODE for CED.

(✓ = Good Interview, A = Type A Noninterview, B = Type B Noninterview, C = Type C Noninterview)

CEQ	CED	Code	Description in Data Dictionary	Notes
✓	✓	201	Completed Interview	
✓		203	CEQ: Transmit, no more follow-up possible (Through Section 20 complete) CED: Week 1 Interview, Week 2 Type A	CED: Two-week code not used by BLS; Census considers complete interview.
		204	Week 1 Interview, Week 2 Type B/C	CED: Two-week code not used by BLS; Census considers complete interview. Not used after 2016.
		206	Week 1 Type A, Week 2 Interview	CED: Two-week code not used by BLS; Census considers complete interview.
		207	Week 1 Type B/C, Week 2 Interview	CED: Two-week code not used by BLS; Census considers complete interview. Not used after 2016.
		210	Type A one week, Type B/C the other week	CED: Two-week code not used by BLS; Census considered to be Type A. Not used after 2016.
A	✓	217	Temporarily Absent	CED: Type A for Census
A	-	215	Insufficient Partial	
A	A	216	No one home, unable to contact	
A	A	219	Other Type A – Specify	CED: Includes reclassified diaries (reclassified from code 201)
	A	320	Week 2 Diary Picked Up Too Early	CED: Not used before 2017. Not a final outcome code for Census.
A	A	321	Refused, Hostile respondent	
A	A	322	Refused, Time-related excuses	
A	A	323	Refused, Language problems	
A	A	324	Refused, Other – Specify	
-	A	325	Diary placed Too Late	
-	A	326	Blank Diary, majority of items recalled without receipts	CED: Type B at Census before 2017.
B	B	224	All persons under 16	
B	B	225	Occupied by persons with usual residence elsewhere	
B	B	226	Vacant for rent	
B	B	228	Unfit, to be demolished	
B	B	229	Under construction	
B	B	231	Unoccupied tent/trailer site	
B	B	232	Permit granted, construction not started	
B	B	233	Other Type B – Specify	
B	B	331	Vacant for sale	
B	B	332	Vacant other – Specify	
C	C	240	Demolished	
C	C	241	House or trailer moved	
C	C	243	Converted to permanent nonresidential use	
C	C	244	Merged units within the same structure	
C	C	245	Condemned	

C	C	246	Built after April 1, 1990	Not used after 2015.
C	C	247	Unused serial number on listing sheet	
C	C	248	Other Type C – Specify	
C	C	252	Located on military base or post	
C	C	256	Removed during subsampling	Not used after 2015.
C	C	257	Unit already had a chance of selection	Not used after 2015.
C	C	258	Unlocated sample address	Not used before 2015.
C	C	259	Unit does not exist or is out-of-scope	Not used before 2015.
C	-	290	Spawned in error	
C	C	341	Household replaced	
C	C	342	CU merged with other CE CU within same address	

As mentioned in the main text, there have been two changes in the classification of response codes, both affecting only Diary (CED) at Census:

217 (“Temporarily Absent”) changed for Field in 2016 from Type B to Type A, but was always Type A for “DSMD.”

326 (“Blank Diary, majority of items recalled without receipts”) changed for Census (both Field and “DSMD”) from Type B to Type A (now matching BLS) in 2017.

**ATTACHMENT B: Consumer Expenditure Survey Response Rates: Quarterly Interview Survey (CEQ)**

Month	FIELD RR	DSMD RR	Field - DSMD	BLS RR	DSMD - BLS
201001	75.55	75.55	0.00	75.26	0.30
201002	74.09	74.09	0.00	73.84	0.25
201003	75.50	75.49	0.01	74.74	0.75
201004	74.85	74.85	0.00	74.72	0.14
201005	73.48	73.48	0.00	73.10	0.38
201006	74.74	74.74	0.00	74.43	0.31
201007	72.54	72.54	0.00	71.43	1.10
201008	74.14	74.14	0.00	73.87	0.27
201009	74.00	74.00	0.00	74.09	-0.09
201010	72.63	72.63	0.00	71.99	0.65
201011	73.15	73.15	0.00	72.87	0.28
201012	71.29	71.29	0.00	70.81	0.48
201101	71.75	71.75	0.00	71.31	0.43
201102	71.70	71.70	0.00	70.49	1.21
201103	72.34	72.34	0.00	70.69	1.65
201104	71.26	71.26	0.00	70.55	0.71
201105	72.22	72.22	0.00	71.22	1.00
201106	70.96	70.96	0.00	69.40	1.56
201107	70.74	70.74	0.00	69.32	1.43
201108	72.02	72.02	0.00	70.82	1.20
201109	70.89	70.89	0.00	69.41	1.48
201110	71.82	71.82	0.00	70.50	1.31
201111	71.52	71.52	0.00	70.64	0.89
201112	70.68	70.68	0.00	70.19	0.48
201201	71.29	71.29	0.00	70.45	0.84
201202	71.83	71.83	0.00	71.45	0.38
201203	70.55	70.55	0.00	69.98	0.57
201204	71.44	71.44	0.00	71.03	0.40
201205	70.78	70.78	0.00	70.51	0.27
201206	68.62	68.62	0.00	67.90	0.72
201207	69.20	69.20	0.00	69.28	-0.08
201208	70.23	70.23	0.00	69.84	0.39
201209	68.01	68.01	0.00	67.67	0.35
201210	71.30	71.30	0.00	70.57	0.73
201211	70.72	70.72	0.00	69.57	1.15
201212	66.34	66.34	0.00	65.79	0.55
201301	69.86	69.86	0.00	69.43	0.43
201302	69.77	69.77	0.00	69.86	-0.09
201303	67.60	67.60	0.00	66.94	0.66
201304	69.46	69.46	0.00	69.63	-0.17
201305	70.52	70.52	0.00	70.03	0.50
201306	67.92	67.92	0.00	67.31	0.61
201307	69.43	69.43	0.00	68.20	1.24
201308	68.53	68.53	0.00	67.57	0.96
201309	66.09	66.09	0.00	65.72	0.37
201310	56.36	56.36	0.00	56.27	0.09
201311	65.66	65.66	0.00	65.68	-0.02
201312	64.01	64.01	0.00	63.86	0.15
201401	67.00	67.00	0.00	66.01	0.98
201402	66.97	66.97	0.00	66.00	0.97
201403	67.34	67.34	0.00	66.83	0.51
201404	68.16	68.16	0.00	67.06	1.10
201405	68.93	68.93	0.00	68.10	0.83
201406	67.18	67.18	0.00	66.01	1.17
201407	68.24	68.24	0.00	67.12	1.12

201408	68.64	68.64	0.00	67.55	1.09
201409	66.45	66.45	0.00	65.73	0.72
201410	68.76	68.76	0.00	67.91	0.85
201411	66.36	66.36	0.00	66.15	0.22
201412	63.28	63.28	0.00	62.71	0.57
201501	65.63	65.63	0.00	65.60	0.03
201502	63.80	63.80	0.00	63.76	0.04
201503	64.29	64.29	0.00	64.25	0.04
201504	67.93	67.91	0.02	67.88	0.03
201505	65.14	65.14	0.00	65.06	0.09
201506	63.69	63.69	0.00	63.69	0.00
201507	65.91	65.75	0.16	65.69	0.06
201508	65.73	65.73	0.00	65.64	0.09
201509	62.99	63.01	-0.02	62.95	0.06
201510	63.15	63.15	0.00	63.12	0.03
201511	63.76	63.76	0.00	63.70	0.06
201512	61.78	61.78	0.00	61.78	0.00
201601	63.74	63.74	0.00	63.74	0.00
201602	63.75	63.75	0.00	63.69	0.06
201603	63.08	63.04	0.04	63.00	0.04
201604	63.95	63.89	0.07	63.83	0.06
201605	61.86	61.86	0.00	61.90	-0.03
201606	62.60	62.60	0.00	62.62	-0.02
201607	63.26	63.26	0.00	63.26	0.00
201608	64.19	64.19	0.00	64.23	-0.05
201609	62.48	63.11	-0.63	62.98	0.13
201610	62.37	62.37	0.00	62.34	0.03
201611	63.04	63.04	0.00	63.04	0.00
201612	61.58	61.58	0.00	61.52	0.05
201701	61.40	61.40	0.00	61.37	0.03
201702	60.68	60.68	0.00	60.69	-0.02
201703	62.09	62.09	0.00	62.09	0.00
201704	64.28	64.28	0.00	62.97	1.31
201705	61.63	61.63	0.00	61.43	0.20
201706	61.42	61.42	0.00	61.14	0.28
201707	61.53	61.53	0.00	61.34	0.19
201708	62.58	62.58	0.00	62.36	0.22
201709	60.05	60.05	0.00	59.88	0.17
201710	60.39	60.39	0.00	60.19	0.20
201711	60.24	60.24	0.00	60.05	0.19
201712	57.47	57.47	0.00	57.44	0.03

Year	FIELD RR	DSMD RR	Field - DSMD	BLS RR	DSMD - BLS
2005	75.60	75.56	0.04	74.53	1.03
2006	77.02	77.02	0.00	76.55	0.47
2007	74.22	74.22	0.00	73.86	0.36
2008	74.34	74.34	0.00	73.84	0.50
2009	75.06	75.06	0.00	74.50	0.56
2010	73.83	73.83	0.00	73.43	0.40
2011	71.49	71.49	0.00	70.38	1.11
2012	70.03	70.03	0.00	69.51	0.52
2013	67.09	67.09	0.00	66.70	0.39
2014	67.27	67.27	0.00	66.43	0.85
2015	64.46	64.45	0.01	64.40	0.04
2016	62.99	63.03	-0.04	63.01	0.02
2017	61.14	61.14	0.00	60.90	0.24



**ATTACHMENT C: Consumer Expenditure Survey Response Rates: Diary Survey (CED)**

Month	FIELD RR	DSMD RR	Field - DSMD	BLS RR	DSMD - BLS
201001	79.17	74.62	4.55	73.93	0.69
201002	76.91	72.03	4.88	73.70	-1.66
201003	80.02	75.77	4.26	73.66	2.11
201004	78.07	75.20	2.87	73.59	1.61
201005	75.21	70.93	4.29	70.92	0.01
201006	74.37	69.45	4.92	69.29	0.16
201007	75.53	70.58	4.95	70.21	0.37
201008	75.84	69.76	6.08	72.07	-2.31
201009	77.42	73.87	3.55	71.43	2.44
201010	77.63	73.70	3.93	70.92	2.79
201011	76.60	72.66	3.94	71.33	1.33
201012	71.53	66.81	4.72	67.15	-0.34
201101	76.63	72.80	3.83	72.00	0.80
201102	76.99	73.40	3.58	72.51	0.89
201103	76.51	72.20	4.31	71.02	1.18
201104	77.85	72.29	5.55	73.68	-1.38
201105	77.53	73.00	4.53	70.09	2.91
201106	76.68	71.78	4.90	69.95	1.83
201107	77.19	71.20	6.00	70.96	0.24
201108	76.89	70.93	5.96	70.63	0.30
201109	72.19	67.19	5.00	67.36	-0.17
201110	73.93	69.85	4.08	70.38	-0.53
201111	71.27	67.28	3.99	66.56	0.72
201112	72.18	66.86	5.33	68.14	-1.28
201201	74.73	70.26	4.47	70.40	-0.14
201202	73.02	69.31	3.71	68.87	0.43
201203	74.78	71.03	3.75	70.81	0.22
201204	75.23	71.20	4.03	71.28	-0.08
201205	73.25	67.68	5.57	66.96	0.72
201206	74.97	70.66	4.31	70.68	-0.02
201207	71.86	66.81	5.05	68.75	-1.94
201208	70.53	66.42	4.11	66.27	0.15
201209	71.21	67.64	3.57	65.86	1.78
201210	70.16	66.55	3.61	66.28	0.27
201211	68.58	65.59	2.99	63.69	1.90
201212	69.03	64.24	4.79	64.23	0.01
201301	69.80	66.08	3.71	64.61	1.47
201302	69.81	66.52	3.28	65.10	1.43
201303	67.99	63.65	4.35	63.78	-0.13
201304	69.11	65.84	3.27	64.36	1.48
201305	74.04	71.00	3.04	67.75	3.25
201306	71.23	66.81	4.42	67.12	-0.31
201307	73.16	69.22	3.94	69.49	-0.27
201308	71.76	66.65	5.11	65.28	1.36
201309	49.97	48.71	1.26	46.88	1.82
201310	37.64	36.82	0.83	35.73	1.09
201311	64.69	61.29	3.40	60.77	0.52
201312	65.76	61.72	4.05	61.78	-0.06
201401	68.13	66.01	2.12	63.68	2.33
201402	71.03	67.45	3.58	65.25	2.20
201403	71.69	67.61	4.09	69.02	-1.42
201404	74.54	70.83	3.72	69.19	1.64
201405	68.56	64.69	3.87	64.89	-0.20
201406	70.47	66.18	4.29	65.80	0.38
201407	71.37	67.48	3.89	66.33	1.14
201408	71.93	68.33	3.59	66.36	1.97

201409	70.05	67.72	2.33	65.20	2.52
201410	71.86	68.80	3.06	66.14	2.66
201411	62.90	61.05	1.84	57.69	3.36
201412	63.63	59.82	3.81	61.00	-1.18
201501	60.92	58.71	2.21	57.39	1.32
201502	61.00	57.73	3.26	57.36	0.37
201503	65.92	63.19	2.72	60.98	2.21
201504	63.66	61.02	2.64	59.57	1.45
201505	61.20	58.77	2.43	56.44	2.33
201506	64.18	61.25	2.93	60.16	1.10
201507	61.27	57.92	3.35	57.63	0.30
201508	63.54	60.53	3.01	60.00	0.53
201509	62.09	59.66	2.43	57.52	2.13
201510	61.45	59.32	2.13	56.99	2.33
201511	56.32	53.45	2.87	53.07	0.39
201512	58.98	55.70	3.28	55.69	0.01
201601	62.10	59.99	2.12	58.10	1.88
201602	64.90	62.14	2.76	61.67	0.47
201603	58.21	56.36	1.85	55.91	0.45
201604	62.31	60.05	2.26	58.80	1.25
201605	58.92	56.53	2.39	54.94	1.59
201606	62.76	59.53	3.24	59.19	0.34
201607	63.97	60.36	3.61	61.10	-0.74
201608	62.17	60.19	1.98	58.47	1.72
201609	56.92	55.17	1.75	54.18	1.00
201610	55.19	53.21	1.98	50.68	2.53
201611	61.56	59.09	2.48	56.60	2.49
201612	57.21	53.47	3.74	51.18	2.29
201701	60.50	59.57	0.93	56.04	3.53
201702	59.43	59.55	-0.11	57.38	2.16
201703	61.68	61.43	0.25	57.99	3.44
201704	63.50	62.89	0.61	60.61	2.28
201705	63.20	63.35	-0.15	57.82	5.53
201706	63.28	62.91	0.37	59.91	3.00
201707	62.06	62.03	0.04	56.42	5.60
201708	66.10	66.13	-0.04	62.42	3.71
201709	63.12	62.69	0.42	58.42	4.28
201710	61.64	61.71	-0.06	57.71	4.00
201711	60.12	61.19	-1.08	58.02	3.17
201712	55.40	55.92	-0.51	* 53.24	2.67

\* - BLS Diary response rates for December 2017 are preliminary

Year	FIELD RR	DSMD RR	Field - DSMD	BLS RR	DSMD - BLS
2004	72.55	70.01	2.54	68.94	1.08
2005	74.79	71.28	3.52	70.98	0.29
2006	77.54	73.90	3.64	74.22	-0.32
2007	74.67	70.98	3.69	70.16	0.82
2008	75.99	72.18	3.81	71.94	0.24
2009	76.78	72.45	4.32	73.03	-0.58
2010	76.55	72.13	4.42	71.52	0.61
2011	75.45	70.69	4.76	70.25	0.44
2012	72.23	68.07	4.16	67.79	0.28
2013	64.99	61.75	3.24	60.78	0.97
2014	69.62	66.28	3.33	64.98	1.30
2015	61.70	58.93	2.77	57.71	1.21
2016	60.58	57.94	2.64	56.66	1.28
2017	61.52	61.59	-0.07	* 57.97	3.63

\* - BLS Diary response rates for 2017 are preliminary



**ATTACHMENT D:** E-mails from Census

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**From:** Michael Bagley (CENSUS/ADDP FED) [mailto:Michael.Bagley@census.gov]  
**Sent:** Friday, August 25, 2017 10:55 AM  
**To:** Galemore, Adam J. <Adam.J.Galemore@census.gov>; Nix, Brian T. - BLS <Nix.Brian@bls.gov>  
**Subject:** Re: BLS/Census response rate definitions

Prior to 2017, an outcome of 326 was classified as a Type B (with an action code of 31 in ROSCO). In 2017, BLS directed us to change the classification of the 326 outcome code to a Type A. This outcome code occurs pretty infrequently. Of course, these classifications are internal to Census. I can't speak to how BLS interprets/translates these codes.

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**Michael Bagley**  
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Consumer Expenditure Surveys  
Associate Directorate for Demographic Programs  
U.S. Census Bureau

Office 301.763.9470  
[michael.bagley@census.gov](mailto:michael.bagley@census.gov)

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**From:** Adam J Galemore (CENSUS/ADDP FED)  
**Sent:** Friday, August 25, 2017 10:29:24 AM  
**To:** Nix, Brian T. - BLS  
**Cc:** Michael Bagley (CENSUS/ADDP FED)  
**Subject:** Re: BLS/Census response rate definitions

Hey Brian,

Code 326 is a type A; however, (Mike correct me if I'm wrong) I think the code is used to describe the case as a whole since that is how FLD calculates response rates. DSMD on the other hand calculates the rate based off each diary.

In response to your other email, code 320 is a Type A as well.

Mike Bagley would be able to answer CED specific questions better than me though so you might want to forward them to him in the future.

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**From:** Adam J Galemore (CENSUS/ADDP FED) [<mailto:Adam.J.Galemore@census.gov>]  
**Sent:** Wednesday, July 19, 2017 9:20 AM  
**To:** Nix, Brian T. - BLS <[Nix.Brian@bls.gov](mailto:Nix.Brian@bls.gov)>  
**Cc:** Patricia M. Holley <[Patricia.M.Holley@census.gov](mailto:Patricia.M.Holley@census.gov)>  
**Subject:** Re: BLS/Census response rate definitions

Hey Brian,

Yes we don't have a 215 in CEQ, it would have to be coded as a Type A.

For CED, I've attached 2 documents, 1 with the current outcome codes and the other with the codes from a few years ago. If you have any other questions, you might be better asking Tricia Holley (she's cc'd) since she's more familiar with CED.

As far as the response rate calculations, below are the calculations for ROSCO (FLD) and DSMD.

ROSCO - FLD calculates CED response rates based on the final outcome code for the case. The formula used to calculate the rr is:

$$\frac{(201s+203s+206s+207s+209s)}{(201s+203s+206s+207s+209s+216s+217s+219s+321s+322s+323s+324s+325s+320s+326s)}$$

DSMD - calculates the CED response rate based on the individual diary using the PICK\_UP1 and PICK\_UP2 variables so the workload ends up being double. The formula they use is:

$$201s / (201s+216s+217s+321s+322s+323s+324s+219s+325s)$$

Lastly, the only code I know that has changed types is the 217 Temporarily Absent. For CEQ this has always been a Type A; however, for CED this used to be considered a Type B, but last year changed to a Type A.

Hopefully this email helps in understanding the differences in the way CED rates are calculated. If you need further clarification please don't hesitate to give me a call at 301-763-1290. I'm teleworking today but leave me a message and I can call you back. Also, as I mentioned, if you have further questions with CED rates feel free to reach out to Tricia as well.

Thanks

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**From:** Adam J Galemore (CENSUS/ADDP FED) [<mailto:Adam.J.Galemore@census.gov>]

**Sent:** Monday, July 10, 2017 9:02 AM

**To:** Nix, Brian T. - BLS <[Nix.Brian@bls.gov](mailto:Nix.Brian@bls.gov)>

**Subject:** Re: BLS/Census response rate definitions

Hey Brian,

I'm still waiting to hear back from FLD for how they calculate the CED response rates, I'll let you know as soon as I do. However, DSMD and FLD calculate the CEQ rates the same way and it hasn't changed much since 6 years ago. The only changes should be adding and removing a few Type C codes.

Here's a list of the final outcome codes that we use for CEQ:

201 - Completed interview

203 - Sufficient Partial

216 Type A - No one home (unable to contact)

217 Type A - Temporarily absent

219 Type A - Other - specify

321 Type A - Refused, Hostile respondent

322 Type A - Refused, Time related excuses

323 Type A - Refused, Language problems

324 Type A - Refused, Other – specify

224 Type B - All persons under 16

225 Type B - Occupied by persons with URE

226 Type B - Vacant for rent

331 Type B - Vacant for sale

332 Type B - Vacant other – specify

228 Type B - Unfit, to be demolished  
229 Type B - Under construction, not ready  
231 Type B - Unoccupied tent/trailer site  
232 Type B - Permit granted, construction not started  
233 Type B - Other – specify

240 Type C - Demolished  
241 Type C - House or trailer moved  
243 Type C - Converted to permanent nonresidential use  
244 Type C - Merged units within same structure  
245 Type C - Condemned  
247 Type C - Unused serial # or listing sheet  
248 Type C - Other - specify  
252 Type C - Located on military base or post  
258 Type C - Unlocatable sample address  
259 Type C - Unit does not exist or unit is out-of-scope  
290 Type C - Spawned in error  
341 Type C - CU moved  
342 Type C - CU merged with another CE CU within same address