

The 2018 CE Data Quality Profile

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Consumer Expenditure Surveys Program Report Series



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Overview

In keeping with [Statistical Policy Directory No. 1](#), covering the Fundamental Responsibilities of Federal Statistical Agencies, the Consumer Expenditure Surveys Program (CE) is committed to producing data that are of consistently high statistical quality, i.e., accurate, objective, relevant, timely, and accessible. CE has historically provided data users with a variety of metrics to evaluate overall data quality. [Official tables](#) provide standard errors, the [public-use microdata user documentation](#) provides response rates, the program publishes [data comparisons](#) with other household survey estimates as well as the results of [nonresponse bias studies](#), and the datasets contained in the [public-use microdata](#) provide variables and flags necessary for users to create their own quality measures.

The Data Quality Profile (DQP) provides a comprehensive set of metrics that are timely, routinely updated, and accessible to users. For data users, the DQP metrics are an indication of quality and cover both the CE Quarterly Interview Survey (CEQ) and the CE Diary Survey (CED). For internal stakeholders, they also are actionable and provide a basis for survey improvements. Since the quality of survey estimates is affected by errors that can occur throughout the survey lifecycle, it is expected that the set of DQP metrics will evolve over time as the CE continually researches methods to monitor and improve data quality. For each metric, a brief description is provided along with the results, which are tabulated and graphed. The [DQP Reference Guide](#) provides detailed descriptions of the metrics, computations, and methodology. The metrics are reported in quarterly format, where the quarter is the quarter in which the survey data were collected. For example, “2018q1” refers to all surveys collected in the months of January, February, and March of 2018.

Highlights

In this section, we highlight metric trends for their respective reporting periods. Subsequent sections describe the individual metrics with detailed data tables.

Trends that are encouraging

- The rate of unedited total amount of family income before taxes continued to increase since 2017 for both CED and CEQ, due to declining rates of bracket imputation ([Section 5](#)).
- The increase in expenditure allocation rates in the CEQ beginning in 2017 is offset by an equal decline in expenditure imputation rates because of a process improvement for how missing data on cable, internet, and telephone bills are handled that preserves more respondent provided data ([Section 4](#)).

Trends for concern

- CED and CEQ response rates have continued to decline ([Section 1](#)). This is largely attributable to the continuing rise in refusal rates for both surveys.
- Other nonresponse rates in the CED declined but were partially offset by an increase in the refusal rate.

New metrics (2018 DQP): Additional metrics were introduced for the CEQ in the 2018 DQP – an indicator of final wave respondents' perception of survey burden ([Section 6](#)), a frequency of usage of the information booklet ([Section 3](#)), a measurement of the mode of collection ([Section 7](#)), and the median length of time necessary to complete the survey ([Section 8](#)).

1. Final disposition rates of eligible sample units (Diary and Interview Surveys)

Final disposition rates of eligible sample units report the final outcome of the field staff's survey participation recruitment effort among the eligible sample. The CE classifies the final outcome of eligible sample units into four main final disposition categories: *completed interview*, nonresponse due to *refusal*, nonresponse due to *noncontact*, and nonresponse due to *other* reasons. Among the *other nonresponse* category is a subcategory called the *non-response reclassification*, where an edit check results in reclassifying a completed interview into a nonresponse. More information on the non-response reclassification edit, along with additional information on how we calculate response rates can be found in the [DQP Reference Guide](#).

Low response rates, examined with other indicators, may be indicative of potential non-response bias of a survey expenditure estimate if the nonresponse is correlated with that expenditure category. In addition, higher response rates are preferred for more precise estimates. We present unweighted response rates in this report.

CED

- Response rates have been declining since at least 2010, consistent with other federal household surveys and with voluntary surveys in general.
- The dip in response rates in 2013 is attributed to the shutdown of the Federal Government.
- Refusal rates increased by 6.5 percentage points in 2017q1.
- Despite two quarters of higher CED response rates, the overall trend of declining response rates continued, driven primarily by the continuing increase in refusal rates.

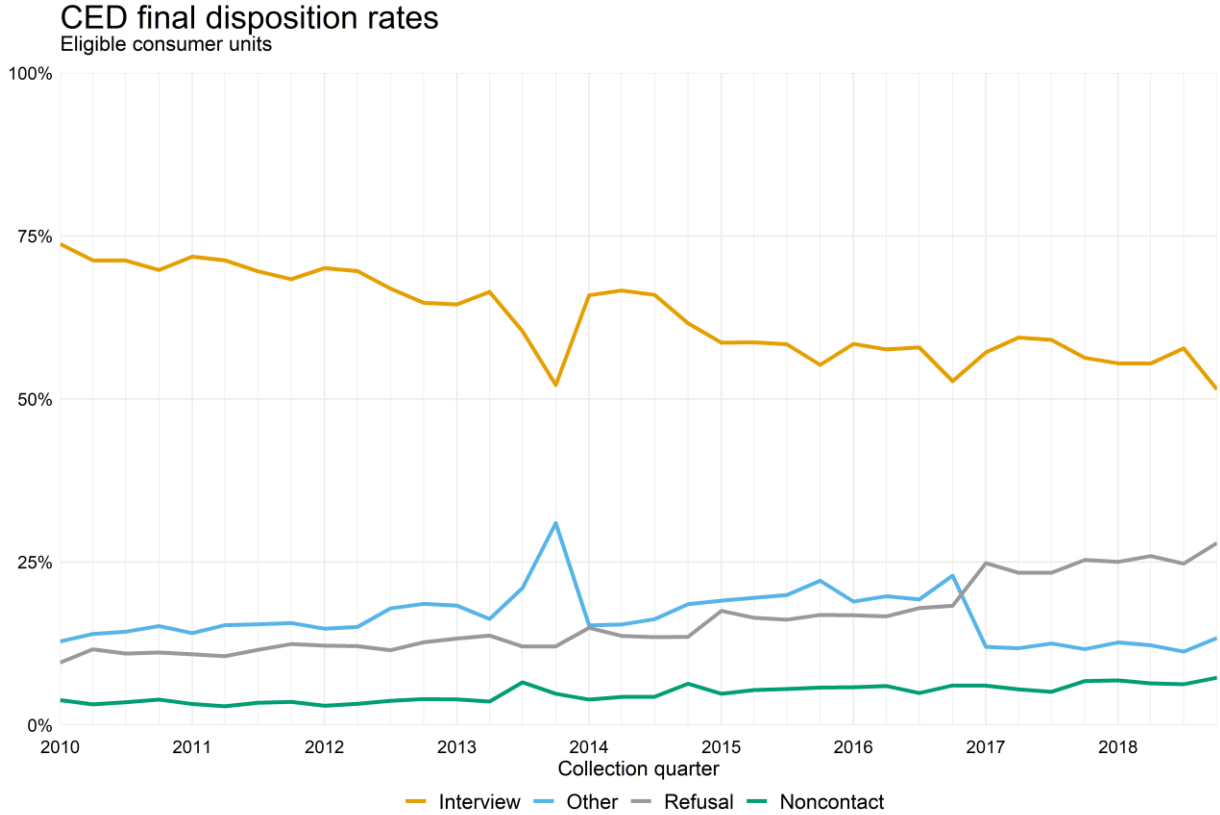


Table 1.1 CED: distribution of final dispositions for eligible CUs (unweighted)

Quarter	Number of eligible CUs	Interview	Refusal	Noncontact	Other Nonresponse
Row percent distribution					
2016q1	5,050	58.4	16.8	5.8	18.9
2016q2	5,108	57.6	16.7	6.0	19.8
2016q3	5,076	57.9	17.9	4.9	19.3
2016q4	5,157	52.7	18.3	6.1	22.9
2017q1	4,972	57.1	24.8	6.0	12.0
2017q2	5,054	59.4	23.3	5.5	11.8
2017q3	4,916	59.1	23.3	5.1	12.5
2017q4	5,168	56.3	25.3	6.8	11.6
2018q1	5,032	55.5	25.0	6.9	12.7
2018q2	5,015	55.5	25.9	6.4	12.2
2018q3	5,014	57.8	24.8	6.2	11.2
2018q4	5,072	51.5	27.9	7.3	13.3

Table 1.2 CED: prevalence of nonresponse reclassifications (unweighted)

Quarter	Number of eligible CUs	Number of other nonresponse	Nonresponse reclassifications		
			Number of CUs	Other nonresponse (%)	Eligible CUs (%)
2016q1	5,050	956	218	22.8	4.3
2016q2	5,108	1,009	257	25.5	5.0
2016q3	5,076	978	215	22.0	4.2
2016q4	5,157	1,181	311	26.3	6.0
2017q1	4,972	596	225	37.8	4.5
2017q2	5,054	595	250	42.0	4.9
2017q3	4,916	615	283	46.0	5.8
2017q4	5,168	601	227	37.8	4.4
2018q1	5,032	637	227	35.6	4.5
2018q2	5,015	613	241	39.3	4.8
2018q3	5,014	564	247	43.8	4.9
2018q4	5,072	677	205	30.3	4.0

CEQ

- Response rates have been declining since at least 2010, consistent with with other federal household surveys and with voluntary surveys in general.
- The dip in response rates in 2013 is attributed to the shutdown of the Federal Government.
- This decline is driven by refusal rates which rose to over 30 percent of eligible consumer units in 2017q4.

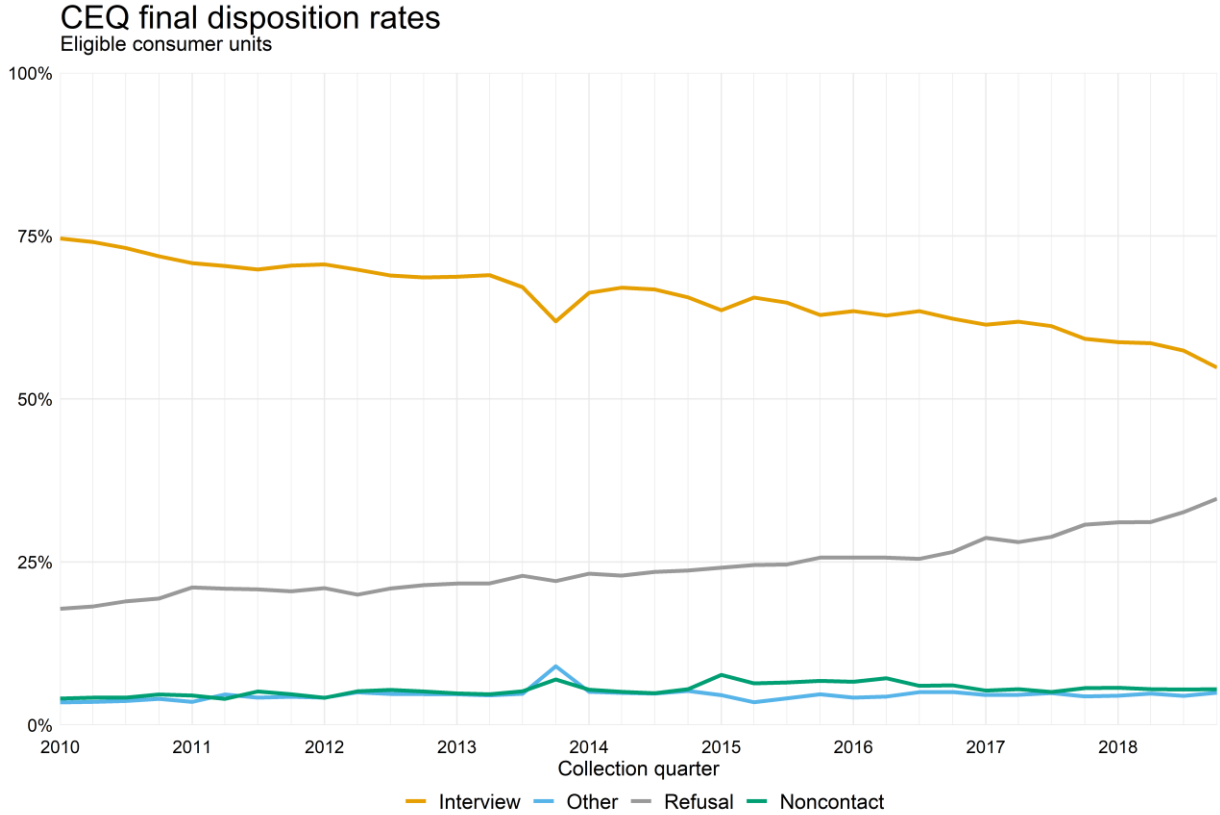


Table 1.3 CEQ: distribution of final dispositions for eligible CUs (unweighted)

Quarter	Number of eligible CUs	Interview	Refusal	Noncontact	Other nonresponse
Row percent distribution					
2016q1	10,123	63.5	25.7	6.6	4.2
2016q2	10,101	62.8	25.7	7.2	4.4
2016q3	10,037	63.5	25.7	6.0	5.0
2016q4	10,114	62.3	26.5	6.1	5.1
2017q1	10,113	61.4	28.7	5.3	4.6
2017q2	9,988	61.8	28.0	5.5	4.6
2017q3	9,954	61.2	28.9	5.1	4.9
2017q4	10,138	59.2	30.7	5.7	4.4
2018q1	10,077	58.7	31.1	5.7	4.5
2018q2	10,075	58.6	31.1	5.5	4.8
2018q3	10,053	57.4	32.6	5.5	4.5
2018q4	10,161	54.8	34.7	5.5	5.0

Table 1.4 CEQ: prevalence of nonresponse reclassifications (unweighted)

Quarter	Number of eligible CUs	Number of other nonresponse	Nonresponse reclassifications		
			Number of CUs	Other nonresponse (%)	Eligible CUs (%)
2016q1	10,123	425	1	0.2	0.01
2016q2	10,101	441	3	0.7	0.03
2016q3	10,037	505	4	0.8	0.04
2016q4	10,114	513	4	0.8	0.04
2017q1	10,113	467	1	0.2	0.01
2017q2	9,988	462	21	4.6	0.21
2017q3	9,954	487	21	4.3	0.21
2017q4	10,138	445	15	3.4	0.15
2018q1	10,077	454	1	0.2	0.01
2018q2	10,075	486	1	0.2	0.01
2018q3	10,053	450	8	1.8	0.08
2018q4	10,161	504	5	1.0	0.05

2. Records use (Interview Survey)

This metric measures how many respondents used records in answering the CEQ survey questions. Examples of records include but are not limited to: receipts, bills, checkbooks, and bank statements. Records use is recorded by the interviewer at the time of the interview. Respondents' use of expenditure records result in lower measurement error, so a higher prevalence of records use is desirable.

CEQ

- Records usage temporarily trended up throughout 2016, most noticeably for wave 1 respondents. This was likely due to a monetary incentive given to a subset of respondents for using records as part of a field test during this period.

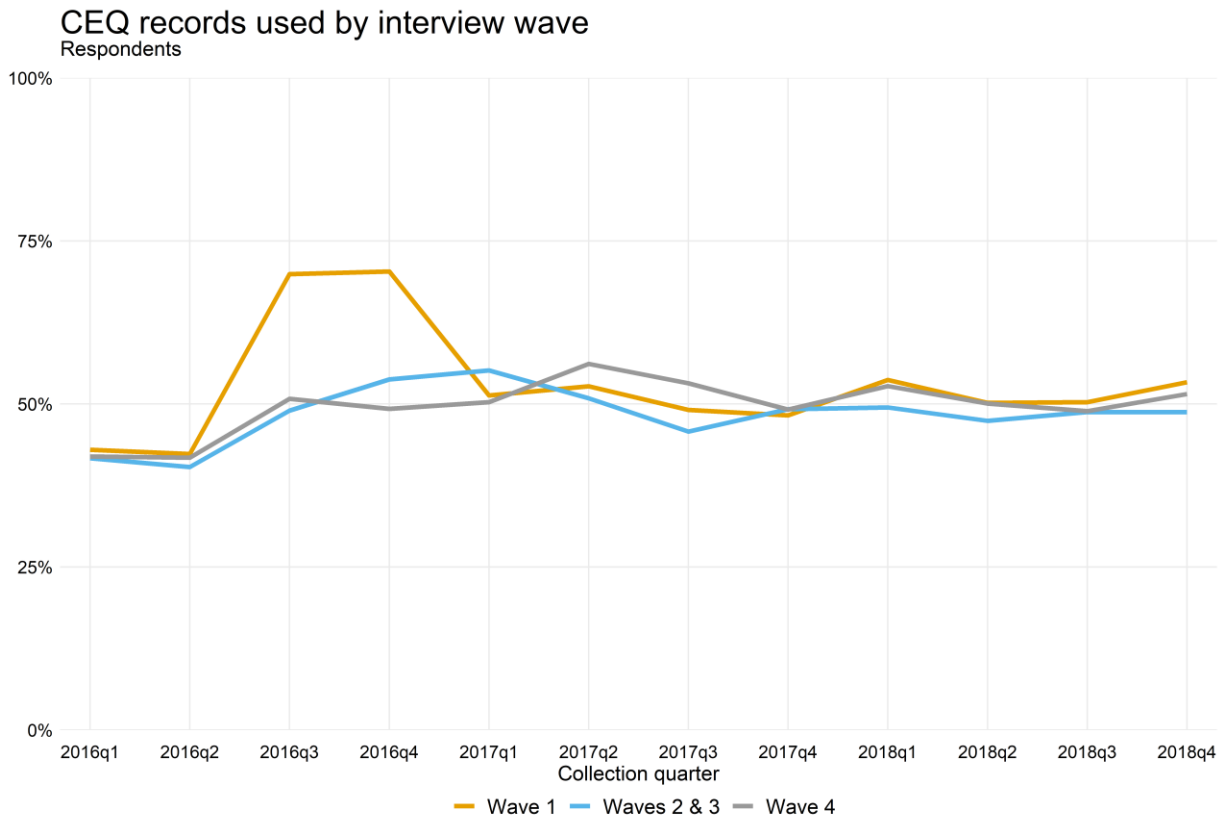


Table 2.1 CEQ: prevalence of records use among respondents

Collection quarter	Wave	Number of eligible CUs	Records	None	Missing
			Row percent distribution		
2016q1	wave 1	1,631	43.0	55.9	1.1
2016q1	wave 2&3	3,172	41.7	57.8	0.5
2016q1	wave 4	1,623	42.0	57.2	0.9
2016q2	wave 1	1,633	42.3	56.1	1.6
2016q2	wave 2&3	3,102	40.3	59.2	0.5
2016q2	wave 4	1,607	41.8	57.6	0.7
2016q3	wave 1	1,688	69.9	29.6	0.5
2016q3	wave 2&3	3,087	49.0	50.5	0.5
2016q3	wave 4	1,597	50.8	48.6	0.6
2016q4	wave 1	1,660	70.3	29.0	0.7
2016q4	wave 2&3	3,108	53.8	45.8	0.5
2016q4	wave 4	1,533	49.2	49.5	1.2
2017q1	wave 1	1,557	51.3	47.4	1.3
2017q1	wave 2&3	3,078	55.1	44.3	0.6
2017q1	wave 4	1,573	50.3	49.0	0.7
2017q2	wave 1	1,573	52.7	46.5	0.8
2017q2	wave 2&3	3,003	50.9	48.6	0.5
2017q2	wave 4	1,601	56.2	43.3	0.5
2017q3	wave 1	1,581	49.1	50.1	0.8
2017q3	wave 2&3	2,933	45.8	53.6	0.6
2017q3	wave 4	1,576	53.2	46.0	0.8
2017q4	wave 1	1,592	48.2	50.5	1.3
2017q4	wave 2&3	2,935	49.2	50.3	0.5
2017q4	wave 4	1,477	49.2	50.1	0.7
2018q1	wave 1	1,501	53.7	45.2	1.1
2018q1	wave 2&3	2,951	49.5	50.0	0.5
2018q1	wave 4	1,464	52.7	46.4	0.9
2018q2	wave 1	1,529	50.2	48.7	1.1
2018q2	wave 2&3	2,884	47.4	52.0	0.6
2018q2	wave 4	1,486	50.1	49.4	0.5
2018q3	wave 1	1,494	50.3	48.9	0.9
2018q3	wave 2&3	2,815	48.8	50.9	0.4
2018q3	wave 4	1,464	48.9	50.2	0.9
2018q4	wave 1	1,399	53.3	45.7	0.9
2018q4	wave 2&3	2,782	48.7	50.8	0.4
2018q4	wave 4	1,390	51.5	47.4	1.1

3. Information book use (Diary and Interview Surveys)

The information book is a recall aide the interviewer can provide the respondent. For the CEQ, it provides examples that can clarify the kinds of expenditures that each section/item code is intended to collect. For both CED and CEQ, it provides the response options for demographic questions and the income bracket response options. This metric measures the prevalence of information book useage among the respondents. Higher rates of usage are preferred since the use of such recall aides may alleviate under-reporting.

CED

- The prevalence of information book use among CED respondents has declined 13.5 percentage points since 2016.

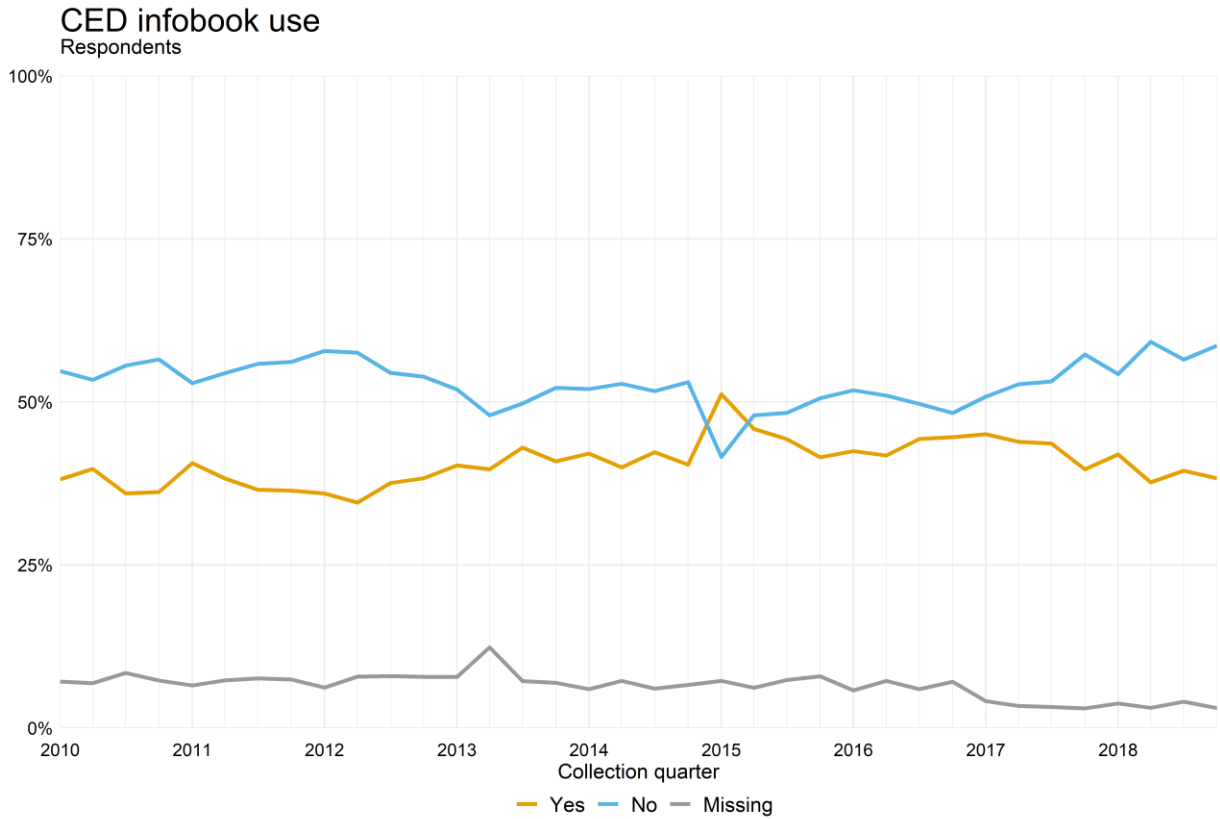


Table 3.1 CED: prevalence of information book use among respondents

Quarter	Number of eligible CUs	No	Yes	Missing
		Row percent distribution		
2016q1	2,951	51.8	42.5	5.8
2016q2	2,942	51.0	41.8	7.2
2016q3	2,939	49.7	44.3	6.0
2016q4	2,720	48.3	44.6	7.1
2017q1	2,841	50.8	45.1	4.1
2017q2	3,003	52.7	43.9	3.4
2017q3	2,904	53.1	43.6	3.2
2017q4	2,910	57.3	39.7	3.0
2018q1	2,791	54.3	42.0	3.8
2018q2	2,781	59.2	37.7	3.1
2018q3	2,896	56.5	39.5	4.0
2018q4	2,611	58.6	38.3	3.1

CEQ

- Information book useage, which for CEQ begins in 2016q1, is conditioned by wave. For wave 1, information book users represent almost half of respondents for the initial quarter; there is a jump in users in 2016q3 to 58 percent, but usage during wave 1 has declined since, and is now 49 percent for 2018q4. Usage during waves 2 and 3 and wave 4 is considerably lower, at around 30-40 percent; this could be due to higher rates of telephone interviews after the first interview or respondents becoming more familiar with the survey.

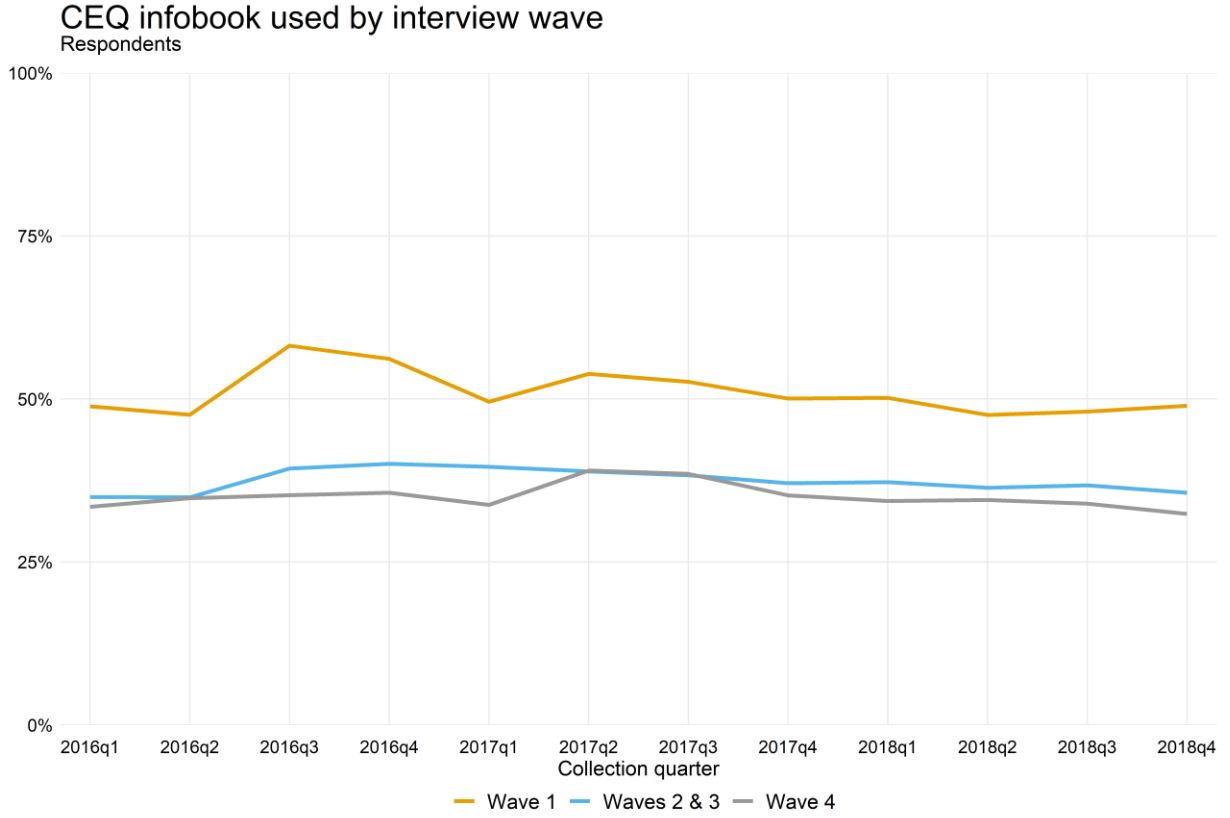


Table 3.2 Prevalence of infobook usage among CEQ respondents

Quarter	Wave	No. CUs	Used	Did not use	No Infobook	Missing
			Row percent distribution			
2016q1	wave 1	1,631	48.9	18.9	31.1	1.1
2016q1	wave 2&3	3,172	35.0	17.3	47.2	0.5
2016q1	wave 4	1,623	33.5	16.8	48.9	0.9
2016q2	wave 1	1,633	47.6	19.7	31.2	1.6
2016q2	wave 2&3	3,102	34.9	18.2	46.4	0.5
2016q2	wave 4	1,607	34.8	16.9	47.6	0.7
2016q3	wave 1	1,688	58.2	15.2	26.1	0.5
2016q3	wave 2&3	3,087	39.3	16.1	44.1	0.5
2016q3	wave 4	1,597	35.3	14.6	49.5	0.6
2016q4	wave 1	1,660	56.1	13.1	30.1	0.7
2016q4	wave 2&3	3,108	40.1	14.8	44.7	0.5
2016q4	wave 4	1,533	35.6	16.8	46.3	1.2
2017q1	wave 1	1,557	49.6	15.4	33.7	1.3
2017q1	wave 2&3	3,078	39.6	12.7	47.1	0.6
2017q1	wave 4	1,573	33.8	14.8	50.7	0.7
2017q2	wave 1	1,573	53.8	17.0	28.4	0.8
2017q2	wave 2&3	3,003	38.9	15.4	45.2	0.5
2017q2	wave 4	1,601	39.0	13.4	47.1	0.5
2017q3	wave 1	1,581	52.6	16.6	30.0	0.8
2017q3	wave 2&3	2,933	38.3	16.2	44.9	0.6
2017q3	wave 4	1,576	38.5	13.9	46.8	0.8
2017q4	wave 1	1,592	50.1	15.9	32.8	1.3
2017q4	wave 2&3	2,935	37.1	15.4	47.0	0.5
2017q4	wave 4	1,477	35.2	14.8	49.3	0.7
2018q1	wave 1	1,501	50.2	16.5	32.2	1.1
2018q1	wave 2&3	2,951	37.2	14.5	47.7	0.5
2018q1	wave 4	1,464	34.4	13.9	50.9	0.9
2018q2	wave 1	1,529	47.5	17.7	33.6	1.1
2018q2	wave 2&3	2,884	36.4	16.3	46.7	0.6
2018q2	wave 4	1,486	34.5	16.8	48.1	0.5
2018q3	wave 1	1,494	48.1	20.6	30.5	0.9
2018q3	wave 2&3	2,815	36.8	15.9	47.0	0.4
2018q3	wave 4	1,464	33.9	14.9	50.3	0.9
2018q4	wave 1	1,399	49.0	17.3	32.8	0.9
2018q4	wave 2&3	2,782	35.6	15.9	48.1	0.4
2018q4	wave 4	1,390	32.4	16.7	49.9	1.1

4. Expenditure edit rates (Diary and Interview Surveys)

This metric measures the prevalence of reported expenditure data that are edited. Expenditure data edits are defined as changes made to the reported expenditure data by CE data processing, excluding changes due to calculations (e.g. conversion of weekly value to quarterly value) and top-coding/suppression of values for respondent confidentiality. Imputation, allocation, as well as manual edits are performed for both the CEQ and CED:

- *Imputation* replaces missing or invalid responses with a valid value
- *Allocation* edits are applied when respondents provide insufficient detail to meet tabulation requirements. For example, if a respondent provides a non-itemized overall expenditure report for the category of fuels and utilities, that overall amount will be allocated to the target items mentioned by the respondent (such as natural gas and electricity).
- *Manual* edits occur when certain cases are manually edited by CE economists based on research and expert judgment.

Almost all edits in CED are allocations. The other edits category encompasses all other expenditure edits including manual edits.

The need for expenditure data imputation results from missing data (item or price nonresponse). Thus, lower imputation rates are desirable. The need for expenditure data allocation is a consequence of responses that did not contain the required details of the item asked by the survey. Likewise, lower allocation rates are also preferred, and in general, lower data editing rates are preferred since that lowers the risk of processing error. However, edits based on sound methodology can improve the completeness of the data, and thereby reduce the risk of measurement error and non-response bias in survey estimates. Additional information on expenditure edits are available in the [DQP Reference Guide](#).

CED

- The rate of edited reported expenditure records has been relatively constant around 10 percent since 2016.

CED expenditure edit rates

Reported expenditures

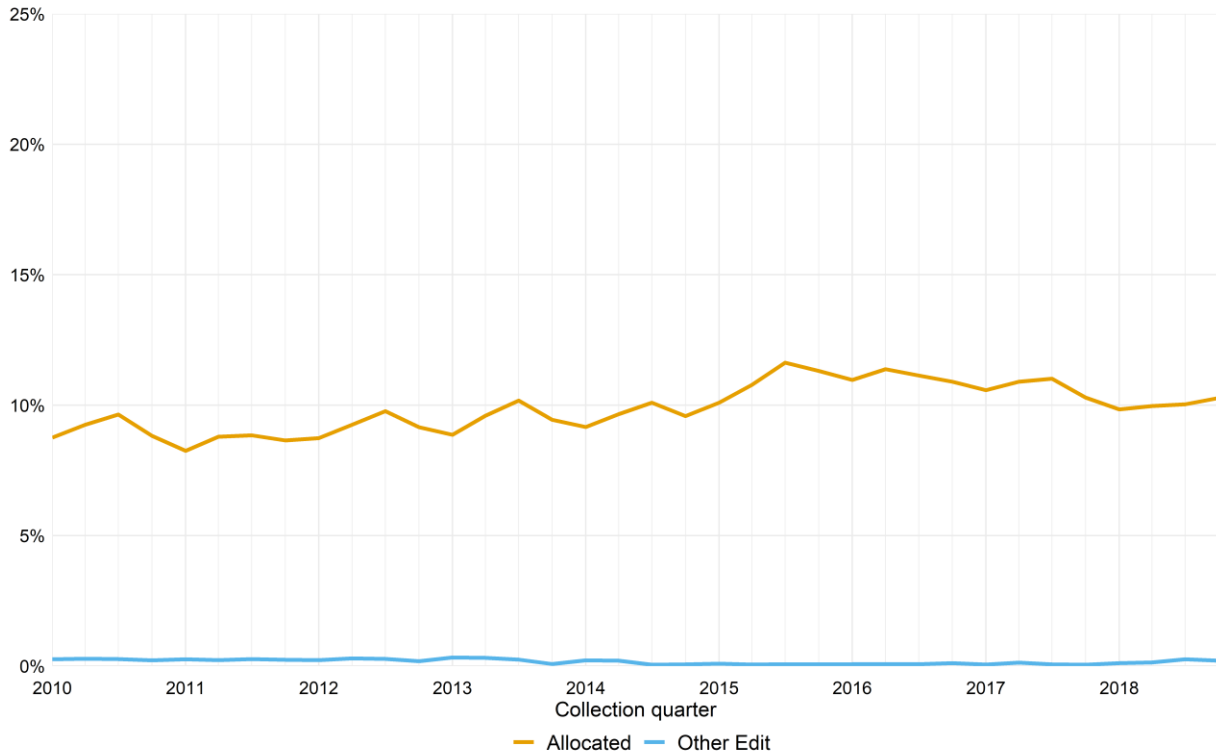


Table 4.1 CED: reported expenditure records

Quarter	Number of expn reports	Type of edit		
		Allocated	Other edit	Unedited
		Row percent distribution		
2016q1	87,411	11.0	0.1	89.0
2016q2	84,232	11.4	0.1	88.5
2016q3	82,285	11.1	0.1	88.8
2016q4	80,515	10.9	0.1	89.0
2017q1	88,654	10.6	0.1	89.4
2017q2	92,985	10.9	0.1	89.0
2017q3	89,370	11.0	0.1	88.9
2017q4	92,031	10.3	0.1	89.7
2018q1	86,798	9.8	0.1	90.1
2018q2	87,649	9.9	0.1	89.9
2018q3	88,342	10.0	0.3	89.7
2018q4	80,129	10.3	0.2	89.5

CEQ

- Overall expenditure edit rates remain constant with their 2015 levels
- Beginning in 2017q2, CE changed how cable, internet, and telephone utility expenditures are processed, from imputing these expenditures, to allocating reported totals bills. This preserves more of the respondent provided data.
- Thus, imputation rates declined 6.7 percentage points while allocation rates increased by 6.5 percentage points.

CEQ expenditure edit rates

Reported expenditures

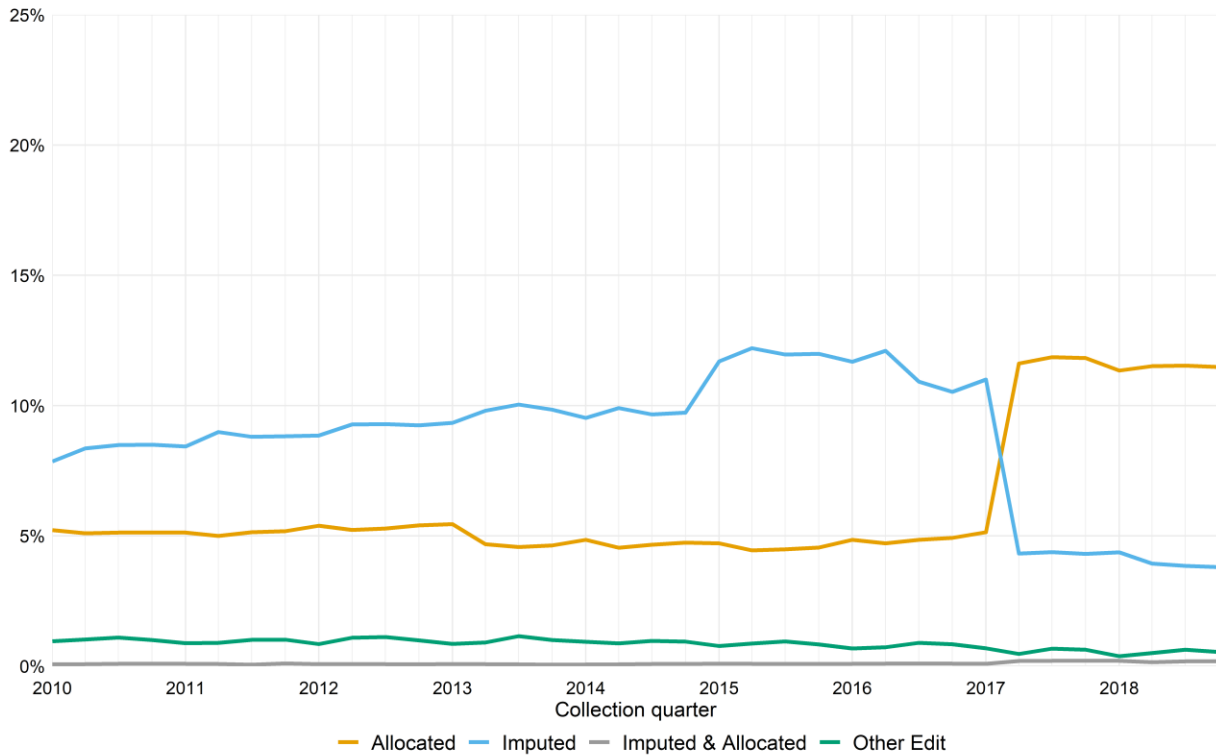


Table 4.2 CEQ: reported expenditure records, edit type rate

		Type of Edit				
		Allocated	Imputed & allocated	Imputed	Other edit	Unedited
Quarter	Number of expn reports	Row percent distribution				
2016q1	273,729	4.8	0.1	11.7	0.7	82.7
2016q2	268,405	4.7	0.1	12.1	0.7	82.4
2016q3	279,542	4.8	0.1	10.9	0.9	83.2
2016q4	276,290	4.9	0.1	10.5	0.8	83.6
2017q1	272,929	5.1	0.1	11.0	0.7	83.1
2017q2	276,568	11.6	0.2	4.3	0.5	83.4
2017q3	281,533	11.9	0.2	4.4	0.7	82.9
2017q4	277,032	11.8	0.2	4.3	0.6	83.0
2018q1	275,949	11.3	0.2	4.4	0.4	83.7
2018q2	270,726	11.5	0.2	3.9	0.5	83.9
2018q3	269,909	11.5	0.2	3.9	0.6	83.8
2018q4	259,508	11.5	0.2	3.8	0.5	84.0

5. Income imputation rates (Diary and Interview Surveys)

This metric describes the rate of editing performed on a consumer unit's reported *total income before taxes*. This edit is based on three types of imputation methods, applicable to both the CEQ and CED:

1. *Model-based* imputation: when the respondent indicates an income source but fails to report an amount of income received.
2. *Bracket response* imputation: when the respondent indicates the receipt of an income source, fails to report the exact amount of income but does provide a bracket range estimate of the amount of income received.
3. *All valid blank conversion*: when the respondent reports no receipt of income from any source, but the CE imputes receipt from at least one source when there is evidence that the CU has some income.

Since the need for imputation reflects item nonresponse or that insufficient item detail was provided, lower imputation rates are desirable for lowering measurement error. However, imputation based on sound methodology can improve the completeness of the data and reduce the risk of non-response bias.

CED

- Between 2016 and 2018, the declining rate of mode-based imputation has driven a rising rate of *unimputed* total income before tax.

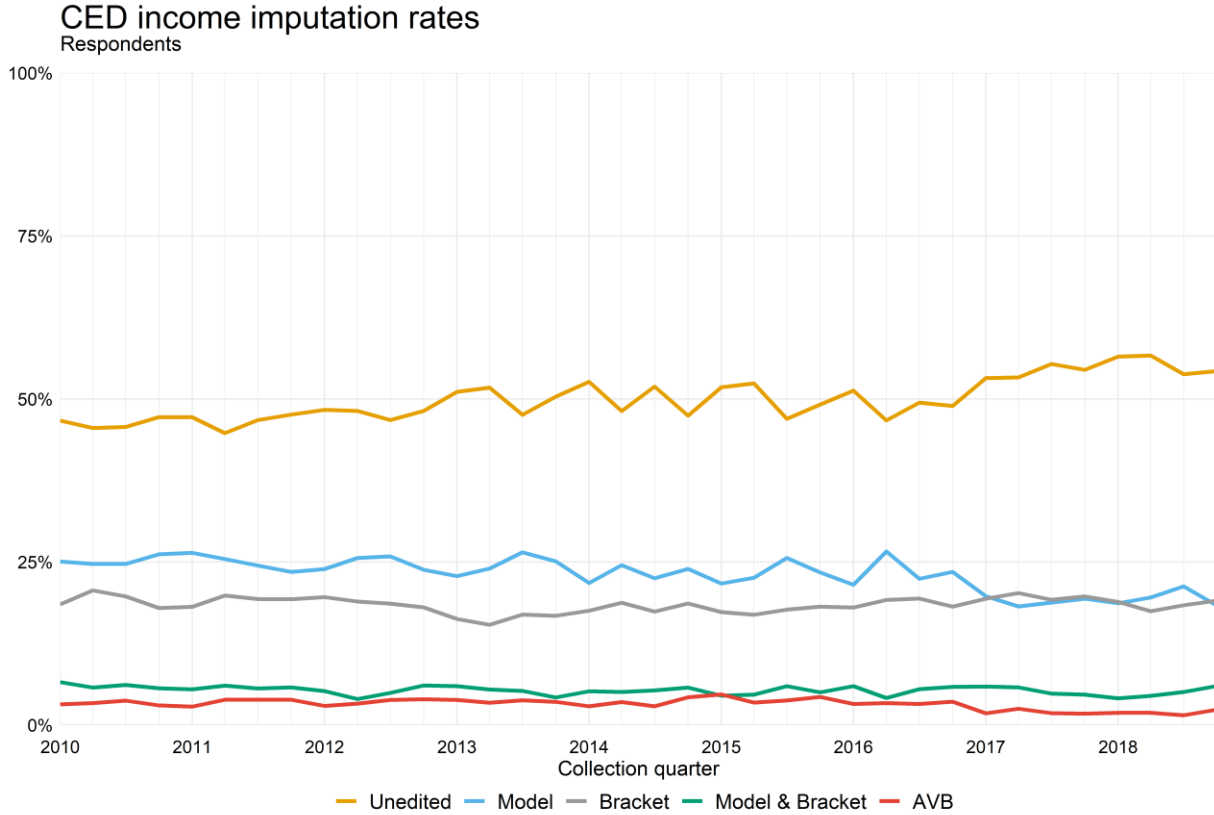


Table 5.1 CED: income imputation rates for total amount of family income before taxes

Quarter	Number of eligible CUs	Valid blank converted (AVB)	Bracket imputation only	Model imputation only	Model & bracket imputation	Not imputed
			Row percent distribution			
2016q1	2,951	3.2	18.0	21.5	6.0	51.3
2016q2	2,942	3.4	19.2	26.6	4.1	46.7
2016q3	2,939	3.2	19.4	22.4	5.5	49.4
2016q4	2,720	3.6	18.2	23.5	5.8	48.9
2017q1	2,841	1.8	19.4	19.7	5.9	53.2
2017q2	3,003	2.5	20.2	18.2	5.8	53.3
2017q3	2,904	1.8	19.2	18.8	4.8	55.4
2017q4	2,910	1.8	19.7	19.4	4.7	54.5
2018q1	2,791	1.9	18.9	18.7	4.1	56.5
2018q2	2,781	1.9	17.4	19.6	4.5	56.7
2018q3	2,896	1.5	18.4	21.3	5.1	53.8
2018q4	2,611	2.4	19.1	18.3	6.0	54.3

CEQ

- Overall, the declining rate of model-based imputation has driven the rising rate of *unimputed* total income before tax since 2015.

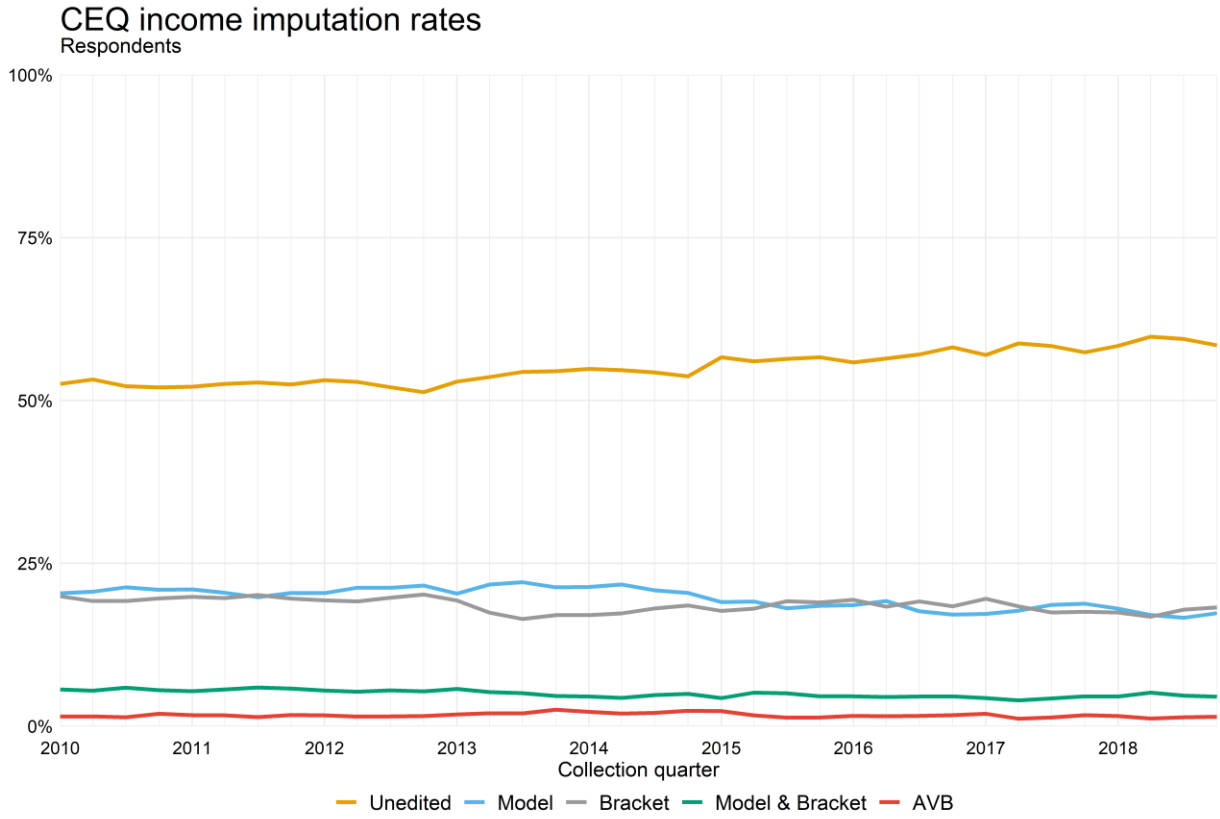


Table 5.2 CEQ: income imputation rates for total amount of family income before taxes

Year	Number of eligible CUs	Valid blank converted (AVB)	Bracket imputation only	Model imputation only	Model & bracket imputation	Not imputed
			Row percent distribution			
2016q1	6,426	1.6	19.4	18.6	4.6	55.8
2016q2	6,342	1.5	18.3	19.2	4.5	56.4
2016q3	6,372	1.6	19.2	17.6	4.6	57.1
2016q4	6,301	1.7	18.4	17.1	4.6	58.2
2017q1	6,208	1.9	19.6	17.2	4.3	57.0
2017q2	6,177	1.1	18.4	17.7	4.0	58.8
2017q3	6,090	1.3	17.4	18.6	4.3	58.4
2017q4	6,004	1.7	17.6	18.8	4.6	57.4
2018q1	5,916	1.5	17.5	18.0	4.6	58.4
2018q2	5,899	1.2	16.8	17.1	5.2	59.8
2018q3	5,773	1.4	17.9	16.6	4.7	59.4
2018q4	5,571	1.4	18.2	17.3	4.5	58.5

6. Respondent burden (Interview Survey)

This metric measures the prevalence of burden (“none”, “some”, “very”) respondents perceive from having participated in the final wave (wave 4) of the CEQ. The CEQ began continuously tracking self-reported respondent burden in 2017q2. A caveat to the interpretation of this metric is that since the burden question is asked of respondents only in their final wave (wave 4) of the CEQ, this measure likely underestimates survey burden due to survivorship bias.

CEQ

- Since 2017q2, the levels of respondent burden have fluctuated within a couple percentage points.

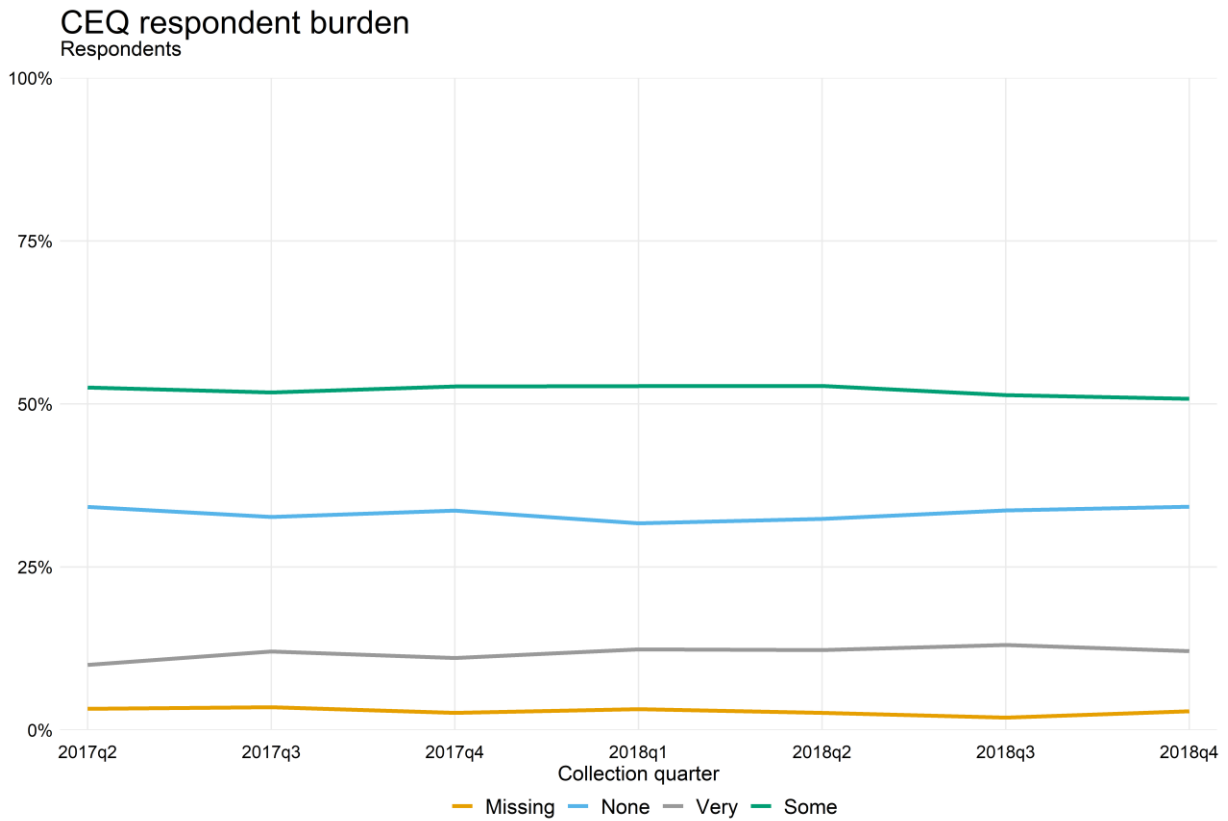


Table 6.1 CEQ: respondents' perceived burden in the final survey wave

Collection quarter	Number of eligible CUs	Unanswered*	Not burdensome	Some burden	Very burdensome
		Row percent distribution			
2017q2	1,601	3.2	34.2	52.5	10.0
2017q3	1,576	3.5	32.7	51.8	12.1
2017q4	1,477	2.6	33.6	52.7	11.0
2018q1	1,464	3.2	31.7	52.7	12.4
2018q2	1,486	2.6	32.4	52.8	12.2
2018q3	1,464	1.9	33.7	51.4	13.0
2018q4	1,390	2.9	34.2	50.8	12.1
*Unanswered due to valid blank / don't know / refusal					

7. Survey mode (Interview Survey)

This metric measures the prevalence of the mode of data collection. The interviewer can collect data for the CEQ in person, over the phone, or there can be a combination of the two modes. The CEQ was designed to be an in-person interview. Higher prevalence of in-person data collection is preferred since the interviewer can actively prompt the respondent, as well as encourage the use of recall aids, thereby reducing the risk of measurement error.

CEQ

- Survey Mode also begins in 2016q1 and is conditioned by wave. The preferred collection method for the CE Interview Survey is in-person, but there is some leeway to collect respondent data by phone when necessary. The percentage of surveys collected in person is high for first interviews, ranging between about 75 and 80 percent for the three years presented. The percentages drop considerably for second and third wave interviews, hovering around 60 percent in person, and they drop again for wave four interviews, ranging between about 55 and 60 percent, presumably as respondents become more familiar with the survey.

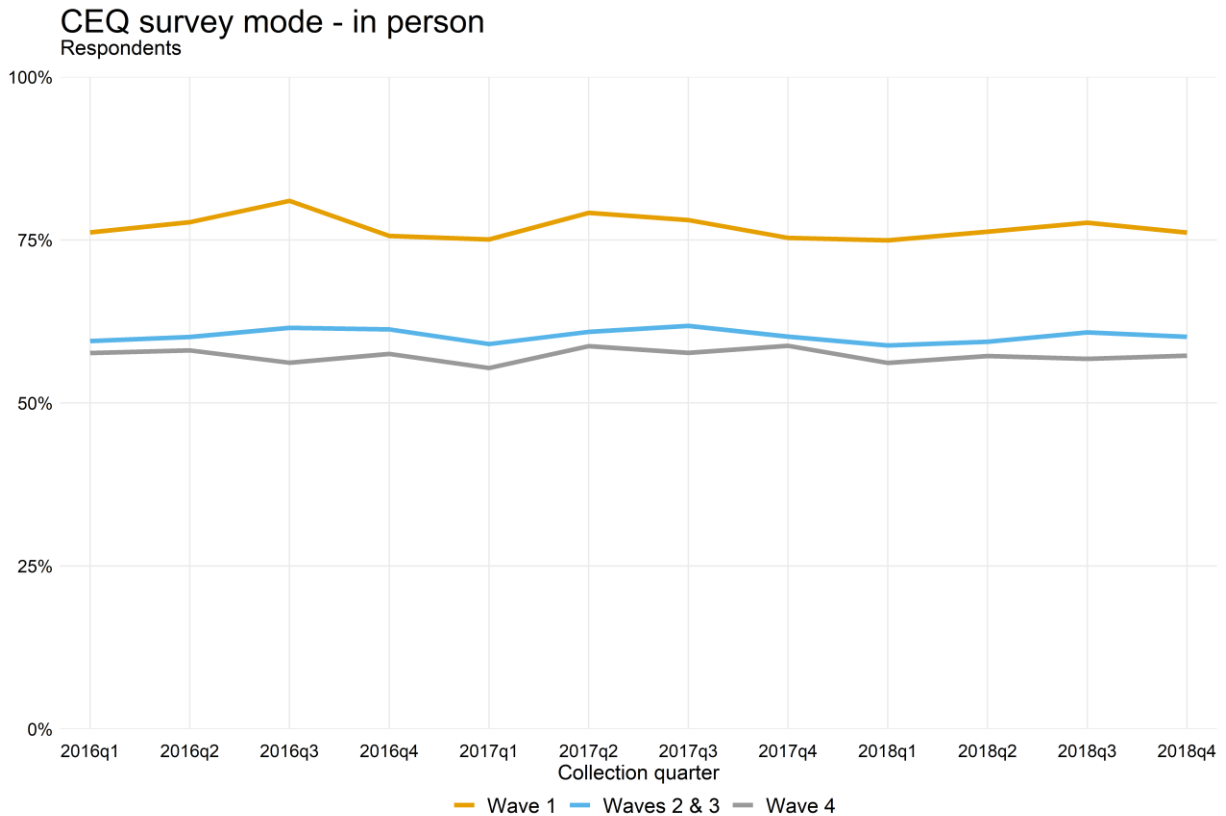


Table 7.1 CEQ: survey mode

Quarter	Wave	Number of CUs	All personal visit	Equally split	Telephone	Missing
			Row percent distribution			
2016q1	wave 1	1,631	76.1	1.2	22.0	0.6
2016q1	wave 2&3	3,172	59.5	0.4	39.6	0.5
2016q1	wave 4	1,623	57.7	0.2	41.7	0.4
2016q2	wave 1	1,633	77.7	0.9	20.1	1.3
2016q2	wave 2&3	3,102	60.1	0.5	39.0	0.4
2016q2	wave 4	1,607	58.1	0.4	41.3	0.2
2016q3	wave 1	1,688	81.0	1.5	17.1	0.4
2016q3	wave 2&3	3,087	61.5	0.5	37.7	0.3
2016q3	wave 4	1,597	56.2	0.6	43.1	0.2
2016q4	wave 1	1,660	75.6	1.1	22.8	0.5
2016q4	wave 2&3	3,108	61.3	0.6	37.7	0.4
2016q4	wave 4	1,533	57.5	0.7	41.3	0.5
2017q1	wave 1	1,557	75.1	1.0	22.9	1.0
2017q1	wave 2&3	3,078	59.0	0.5	40.0	0.5
2017q1	wave 4	1,573	55.4	0.2	44.1	0.3
2017q2	wave 1	1,573	79.1	1.5	18.6	0.8
2017q2	wave 2&3	3,003	60.9	0.8	37.9	0.4
2017q2	wave 4	1,601	58.7	0.6	40.5	0.2
2017q3	wave 1	1,581	78.1	1.2	20.1	0.6
2017q3	wave 2&3	2,933	61.8	0.4	37.2	0.6
2017q3	wave 4	1,576	57.7	0.4	41.5	0.4
2017q4	wave 1	1,592	75.3	0.8	22.8	1.1
2017q4	wave 2&3	2,935	60.2	0.5	38.9	0.4
2017q4	wave 4	1,477	58.8	0.3	40.3	0.6
2018q1	wave 1	1,501	75.0	1.5	22.6	1.0
2018q1	wave 2&3	2,951	58.8	0.4	40.3	0.5
2018q1	wave 4	1,464	56.1	0.5	42.7	0.7
2018q2	wave 1	1,529	76.3	0.8	22.3	0.7
2018q2	wave 2&3	2,884	59.4	0.3	39.8	0.5
2018q2	wave 4	1,486	57.2	0.6	41.9	0.3
2018q3	wave 1	1,494	77.6	1.5	20.1	0.7
2018q3	wave 2&3	2,815	60.8	0.3	38.5	0.3
2018q3	wave 4	1,464	56.8	0.3	42.3	0.5
2018q4	wave 1	1,399	76.1	1.2	21.9	0.7
2018q4	wave 2&3	2,782	60.1	0.6	38.9	0.4
2018q4	wave 4	1,390	57.3	0.4	42.0	0.3

8. Survey time (Diary and Interview Surveys)

For the CEQ, this metric measures the median length of time (survey time) to complete the interview. For the CED, this metric measures the survey time to complete the personal interview component that collects information about income and demographics. Survey time is often used as an objective indicator for respondent burden; the longer the time needed to complete the survey, the more burdensome the survey. This is a concern because respondent burden [negatively impacts both response rates and data quality](#). However, survey response time could also reflect the degree of engagement by the respondent, as an engaged and conscientious respondent could take longer to complete the survey because more extensive use of records or more complete reporting occur during the interview. In spite of this problem of ambiguity in interpreting survey response time as a standalone metric, it is nonetheless useful to track the median survey response time so that the impact of changes in survey features on this dimension of the survey design can be assessed.

CED

- The time to complete the personal interview component of the CED has remained fairly constant around half-an-hour since 2016.

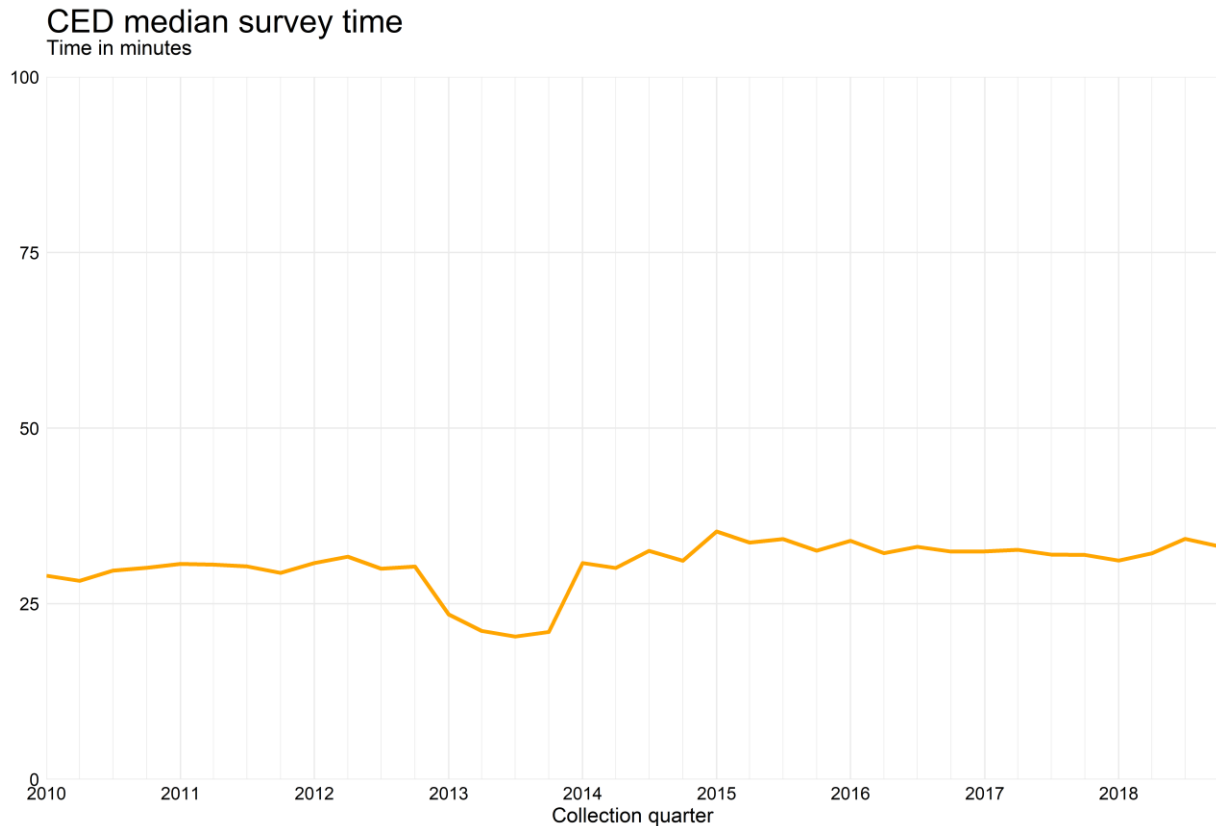


Table 8.1 CED: median length of time (minutes) to complete the interview components (income and demographics)

Quarter	Minutes
2016q1	34.0
2016q2	32.2
2016q3	33.1
2016q4	32.4
2017q1	32.5
2017q2	32.7
2017q3	32.0
2017q4	32.0
2018q1	31.2
2018q2	32.2
2018q3	34.2
2018q4	33.2

CEQ

- The increase in survey time from 2018q2 to 2018q3 could be explained by the survey changes (i.e. implementing point of purchase questions) in 2018q3.

CEQ median survey time by interview wave

Time in minutes

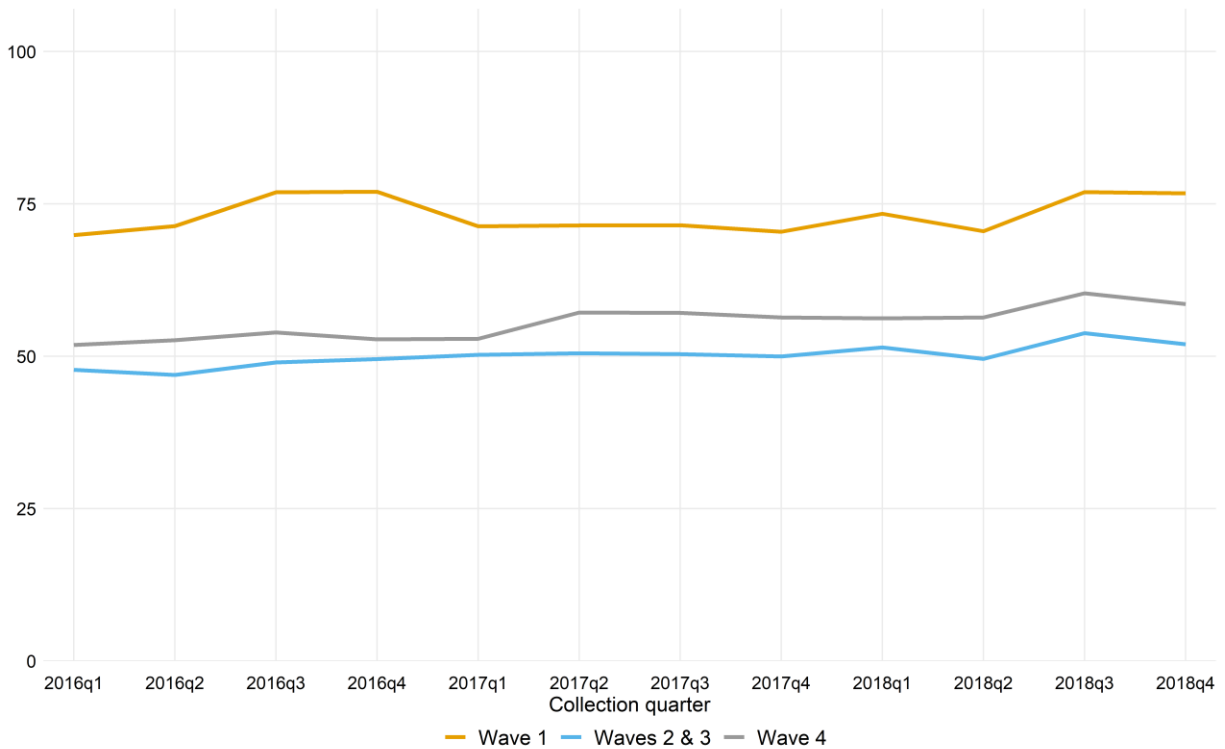


Table 8.2 CEQ: time to complete survey

Quarter	Number of eligible CUs	Wave 1	Wave 2 and 3	Wave 4
2016q1	6,421	69.9	47.8	51.9
2016q2	6,336	71.4	46.9	52.6
2016q3	6,367	76.9	49.0	53.9
2016q4	6,297	77.0	49.6	52.8
2017q1	6,202	71.3	50.2	52.9
2017q2	6,163	71.5	50.5	57.2
2017q3	6,081	71.5	50.4	57.1
2017q4	6,003	70.5	50.0	56.4
2018q1	5,910	73.4	51.5	56.2
2018q2	5,894	70.5	49.6	56.4
2018q3	5,771	77.0	53.8	60.3
2018q4	5,570	76.7	52.0	58.6

Conclusion

In 2018, some trends are encouraging, other trends warrant concern, or have an uncertain significance. For a brief summary of these findings, see the [Highlights](#) section at the beginning of this report. The next issue of the CE Data Quality Profile will be released in 2020, with metrics incorporating data through 2019.