



# Evaluating the Impact of Eliminating a Bounding Interview

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## BACKGROUND

The Consumer Expenditure Interview Survey (CEQ) moved from a five-wave panel design to a four-wave design in 2015, eliminating the interview used to 'bound' a household's expenditure reports. This poster shows how three aspects of the CEQ changed following introduction of the new design:

1. the proportion of respondents reporting having an expenditure by expenditure category
2. the interview length, and
3. the subsequent wave non-response rates.

Findings about the design change can guide decisions regarding the utility of having bounding interviews in multi-wave surveys and inform how changes in interview length may affect subsequent wave non-response.

## METHODS

The CEQ is an in-person survey that collects all expenditures a household incurs over a prior 3-month period (a small proportion of cases are interviewed by telephone). Starting in 2015, the Consumer Expenditure (CE) Survey staggered introduction of the CEQ that did not include the first bounding wave, shifting questions from that wave onto the new first wave. This allowed us to compare households answering questions after having completed a prior interview to bound their reports ('Old Wave (OW)') with households in the same month getting the same question content but without a prior interview to bound their reports ('New Wave (NW)').

First, we examined two sets of expenditure categories: large/irregularly-purchased items (e.g., furniture, major appliances) more vulnerable to have reports 'telescoped' into the reference period, and smaller/regularly-purchased items (e.g., health care, small appliances) less vulnerable to telescoping errors\*.

A second comparison involved the average length of the interview waves. The length of November 2015 interviews were compared to interviews involving the same content, but fewer questions, one year earlier.

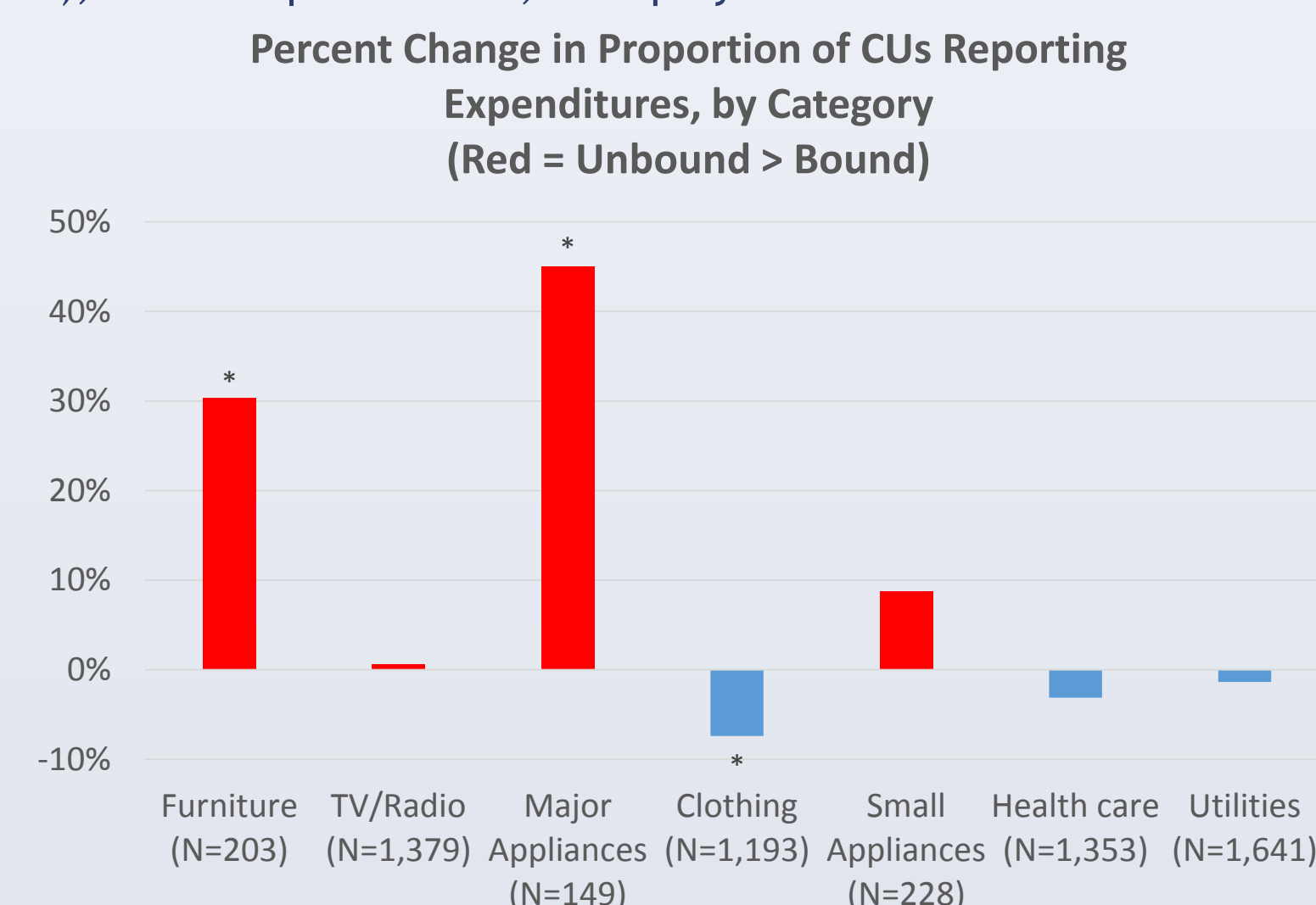
Relatedly, we examined whether the change in interview length affected later non-response rates. We calculated the change in non-response between the first (unbounded, longer) wave and the second wave in the first half of 2015, contrasted with that same change in the prior year when the initial wave was shorter.

\*Telescoping error occurs when an event (or expenditure) is temporally misreported as occurring in a time period different from when it actually occurred. This is thought to mainly effect large events which are salient in respondents' memories and thus are not forgotten but instead are reported in a later time period ('forward telescoping').

## 1. Increases in Expenditure Reporting

**Hypothesis 1:** A larger proportion of households will report large expenditures in the NW compared to the OW group (consistent with telescoping errors in new unbounded interviews).

The comparison of reporting frequency between the sample without a bounding interview (NW) and those with data to bound their interview (OW), both in April of 2015, is displayed below.



Tests\* of the differences indicate significant differences for Furniture (increase), Major Appliances (increase), and Clothing (decrease).

	Prop. Bound (OW)	Prop. Unbound (NW)	% Difference	Wilcoxon Z	Prob. > Z
Furniture	0.108	0.141	30.4%	2.01	0.045
TV/Radio	0.816	0.822	0.6%	0.27	0.790
Major Appliances	0.076	0.110	45.0%	2.39	0.017
Clothing	0.728	0.674	-7.4%	-2.36	0.018
Small Appliances	0.131	0.142	8.7%	0.67	0.506
Health Care	0.813	0.787	-3.1%	-1.27	0.203
Utilities	0.979	0.966	-1.4%	-1.67	0.094

Two characteristics of the samples may have affected the proportion reporting expenditures - income, and rural/urban geography.

**Income:** The bound (OW) sample had significantly higher income levels (median family income \$52,757) than the unbound (NW) sample (median family income \$38,000) (Z=-5.27 p<0.0001).

**Geography:** The bound (OW) sample was less like to be comprised of rural households (8.0%) than the unbound (NW) sample (35.7%) (Z=737, p<0.0001).

Controlling for the geographic differences, Furniture remained significant, while Major Appliances and Clothing were no longer significant (Health Care and Utilities now showed significant decreases).

\*Wilcoxon-Mann-Whitney two-sided tests

## 2. Increased Interview Length

**Hypothesis 2:** Average interview lengths for the new first interview will increase from adding questions from the old bounding interview.

Interview waves were compared with their equivalent waves before elimination of the bounding interview to identify the change in duration that resulted.

Old name (new)	2014		2015		Net	
	N	Mean	N	Mean	Difference	% Difference
Wave 1 (NA)	560	56.6				
Wave 2 (1)	574	62.4	522	79.5	17.1	27.4%
Wave 3 (2)	529	54.8	540	55.9	1.1	2.0%
Wave 4 (3)	550	53.1	543	53.1	0.0	0.0%
Wave 5 (4)	539	58.1	200	61.3	3.2	5.5%

The results indicated that new initial interviews, having added questions from the prior wave 1 interview, were an average of 17.1 minutes longer than corresponding wave 2 interviews a year prior. Duration increases were small or non-existent for subsequent wave interviews. There was a 12 percent overall reduction in interview time across waves due to the move from 5 to 4 waves.

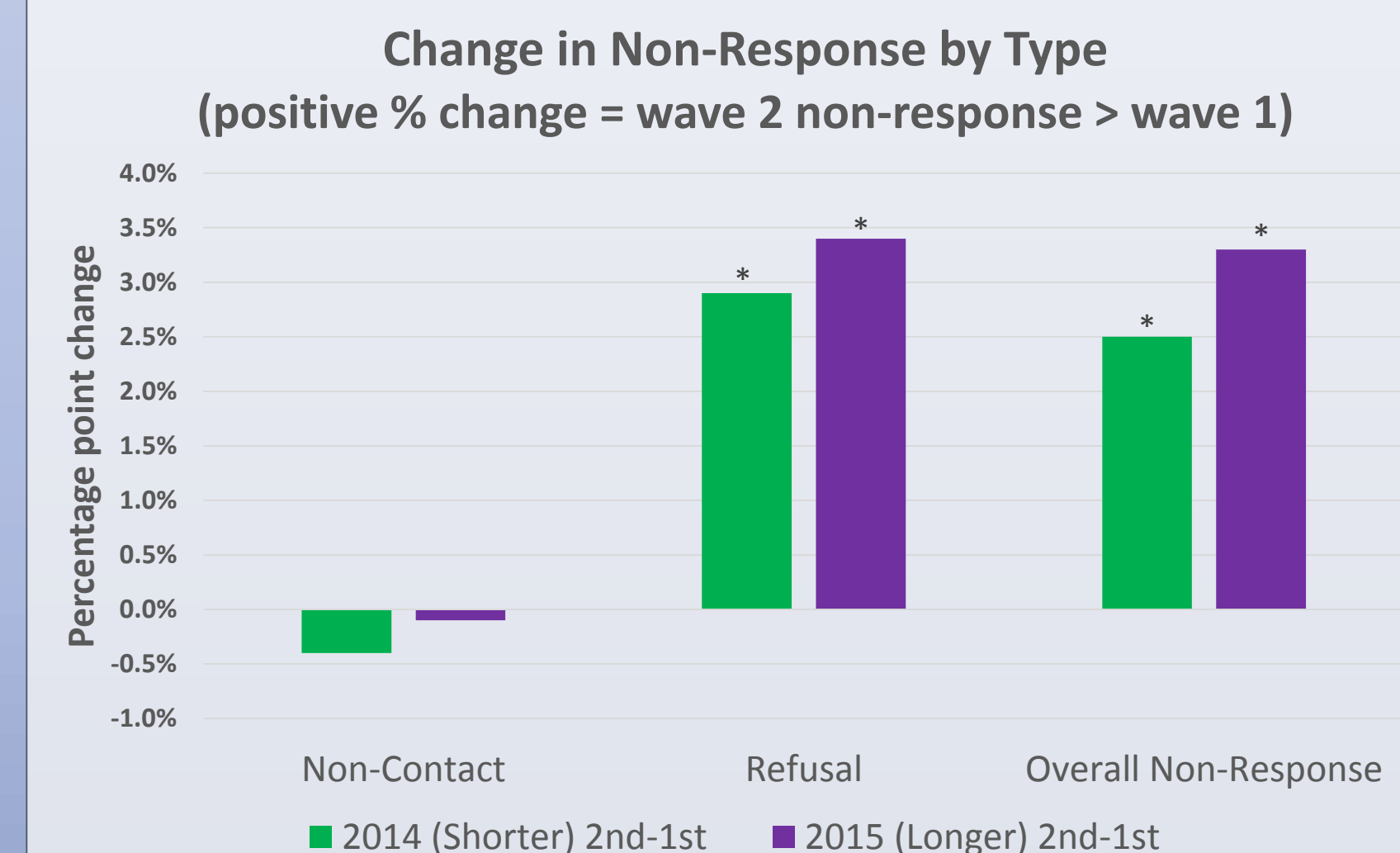
The increases above (using November data) were smaller than they were for the year-over-year comparison in May, when new wave 2 interviews took over 20 minutes longer than old wave 1 interviews. Note that the compared interviews were completed primarily in-person.

## 3. Similar Non-Response Patterns

**Hypothesis 3:** In 2015, after bounding elimination, there will be higher rates of non-response at the second wave due to respondents having longer first wave interviews.

The change in non-response (first to second wave) was compared between 2014 (in green) and January-June 2015 (in purple), each with the following first wave characteristics:

- 2014: bounding interview, shorter
- 2015: no bounding, with additional questions, and longer



	2014 (2nd-1st)	2015 (2nd-1st)
Non-Contact	-0.4%	-0.1%
Refusal	2.9%*	3.4%*
Overall Non-Response	2.5%*	3.3%*

\* Indicates significant change (Chi-Sq p<0.01)

### Non-contact

The second wave had non-significantly lower rates of non-contact than in the first wave in 2015 (-0.1%, in purple) but the difference from 2014 to 2015 was not significant (Breslow-Day 0.9025).

### Refusal

There was a significant increase in refusals going from the first wave to the second wave in 2014, prior to the longer first wave (2.9%, in green). The increase in refusals was also significant in 2015 (3.4%, in purple), but the increase was not significantly higher than in the prior year (Breslow-Day 0.9213).

### Non-Response

Overall non-response (with its non-contact and refusal components) exhibited the same changes as refusal - increasing, but not increasing significantly more after the first interview became longer.

## CONCLUSIONS

Moving from a five-wave design to a four wave-design in 2015 was associated with changes in both reporting frequencies and the length of interview components, but not associated with changes in non-response patterns.

The findings related to our hypotheses were:

- 1) Increase in proportion of households reporting large expenditures - furniture, major appliances - in the unbound interviews
  - a) This was despite households in the unbound sample having lower income levels than those in the other sample
  - b) There were geographic differences between the samples - more rural households in the bound sample; Removing those households led the increase in reporting for major appliances to no longer be significant, while the increase in reporting furniture expenditures remained significant
- 2) An average increase in the duration of the initial interview of over 17 minutes (offset by an overall decrease across all waves of 35 minutes)
  - a) Consistent with the addition of new questions (e.g., identifying households' housing, vehicle and medical attributes)
  - b) The increase was reduced after the interviewers had a period of time to become familiar with the new interview structure
  - c) Due to the removal of the bounding interview, overall interviewing time was reduced from 285 minutes to under 250 minutes
- 3) An increase in refusal between the first and second interview waves, but not a significantly larger increase than what was observed a year prior (consistent with general increases in survey non-response)

These findings suggest, but do not prove, the presence of telescoping errors. These errors appear in certain expenditure categories when there is no longer a bounding interview to flag expenses that fall outside of the reference period. These findings also suggest that adding questions to an interview, while adding time, may not automatically lead to greater attrition when households are contacted 3 months later for a subsequent interview.

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