

Analyzing the Impact of Survey Cost Reduction Measures on Data Quality in the Consumer Expenditure Surveys

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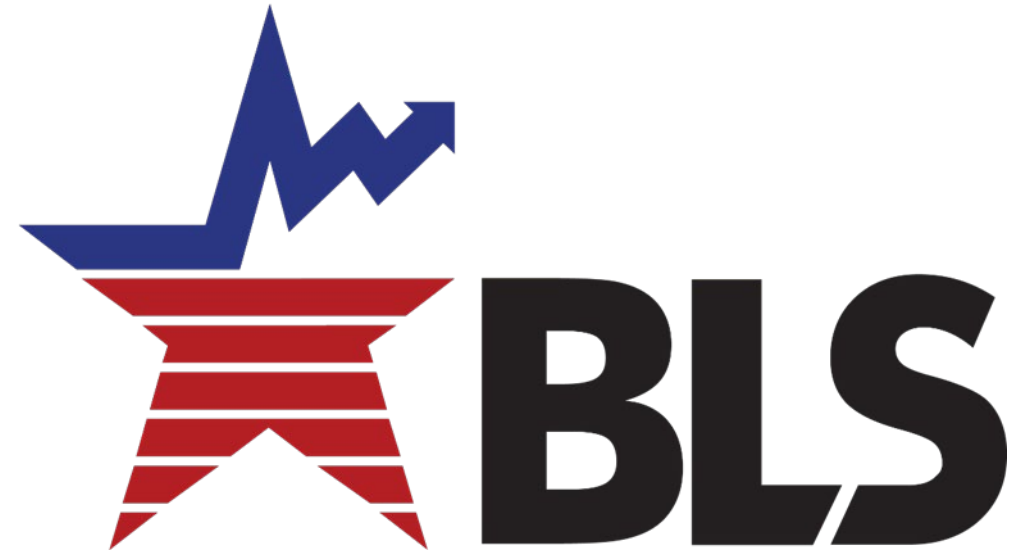
Disclaimer

- The information is being released for statistical purposes, to inform interested parties, and to encourage discussion of work in progress.



Presentation Agenda

- Background on the CE Surveys
- Cost-reduction background
- Impact of Cost-reduction
 - ▶ Overall response
 - ▶ Sample composition
 - ▶ CE Data Quality Indicators
 - ▶ Respondent reporting
- Conclusions
- Future work



Consumer Expenditure Surveys (CE) Background



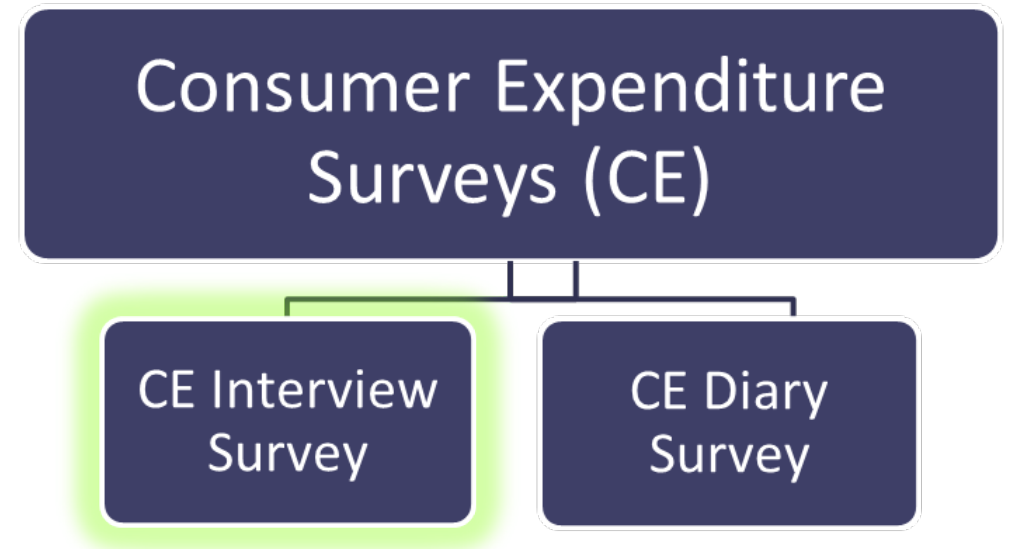
Consumer Expenditure Surveys (CE)

- Sponsored by the U.S. Bureau of Labor Statistics, fielded by the U.S. Census Bureau
- Collects spending data on the U.S. Population
- Provide expenditure weights for the U.S. Consumer Price Index (CPI)
- Expenditure estimates derived from two separate surveys
 - ▶ CE Interview Survey
 - ▶ CE Diary Survey



CE Interview Survey Background

- CE Interview Survey:
 - ▶ Interview wave every three months over four calendar quarters (4 Waves)
 - ▶ Focus on the recall of large and less frequent expenses



2022 CE Cost Reduction Measures



2022 CE Cost Reduction Background

- For Wave 2 - 4 Interviews, don't attempt cases that were eligible non-interviews in the prior wave.
- Only applied to the CE Interview Survey.
- Impact expected on overall survey response.
- But, what about data quality?



Research Question of Interest

- **What were the measurable impacts of the 2022 cost reduction strategy on CE Interview Survey data quality?**
 - ▶ **Sample composition**
 - ▶ **Data collection**
 - ▶ **Reporting quality**



Hypotheses

- For *unweighted sample composition*, we anticipated a higher level of older and more educated respondents.
- For **data collection**, we anticipated potentially higher rates of record use, information booklet use, and in-person interviews.
- For **reporting**, we expected potentially less frequent item nonresponse, more reported expenses, and higher total expenditure amounts.



Data Used in Analysis

- Data quality estimates from the **cost reduction period** will be compared to those from the pre-cost reduction and post-cost reduction periods.
- Only for Waves 2-4.
- Analyses are unweighted.

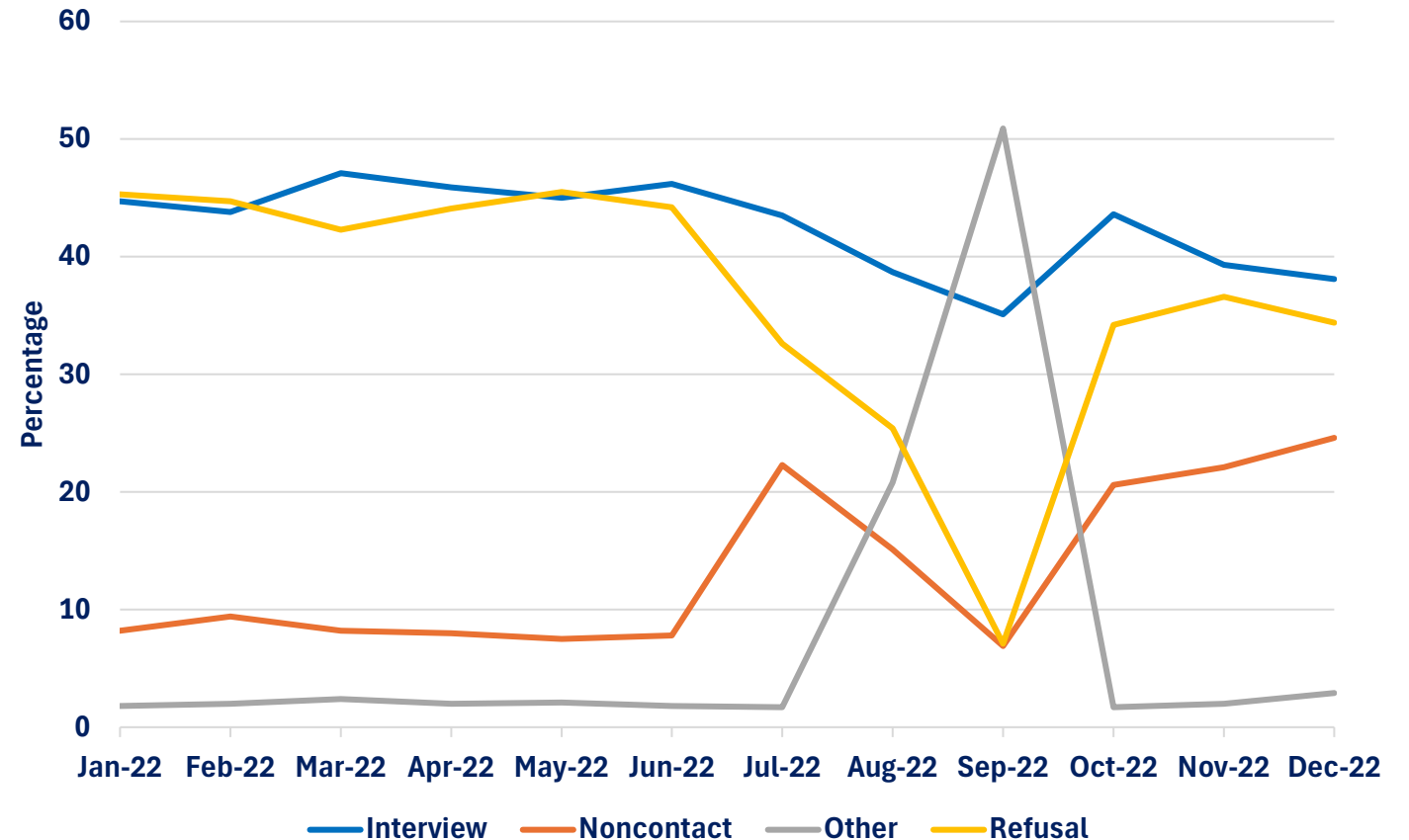


2022 CE Cost Reduction Impacts



Overall Survey Response (n=36,607)

- The rate of completed interviews dropped in the Cost-Reduction Period.
- While the rate of non-interviews for reasons “other” than refusal or noncontact rose dramatically.



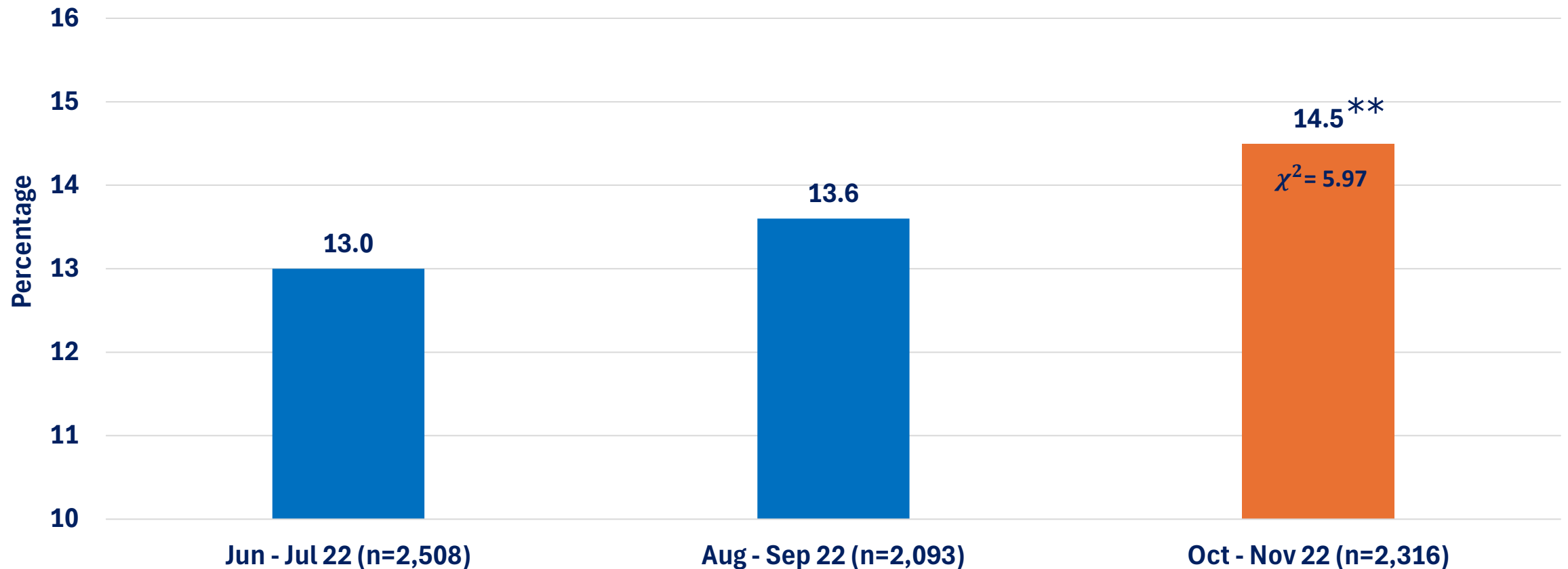
Sample Composition

- We can see that these measures impacted response rates, but did the lost interviews result in a sample composition change?
- To answer this, we considered the following demographic variables for primary respondents:
 - ▶ Age, Area Type, CU Size, Education, Gender, Hispanic Origin, Income, Marital Status, Race, and Renter Status.
- Compared estimates from the period before, during, and after the cost reduction measures.

Sample Composition Findings

- Generally, there were no significant differences in demographic composition across the entire period.
- Some exceptions when comparing to the pre-cost reduction period to the others:
 - ▶ ↑ share of Hispanic respondents in post-cost reduction period
 - ▶ ↑ share of respondents aged 65 and older in the cost-reduction period

Share of Hispanic Respondents

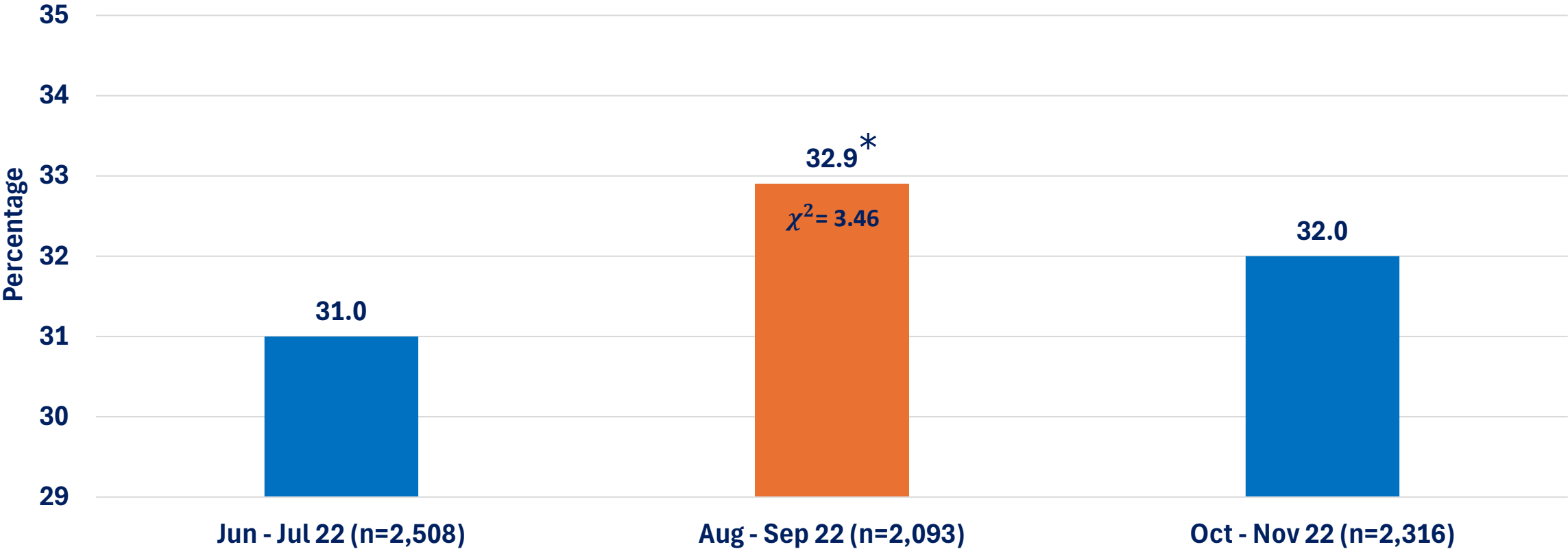


* - Significantly different at 90% level $p < 0.1$

** - Significantly different 95% level $p < 0.05$



Share of Respondents 65 years and Older



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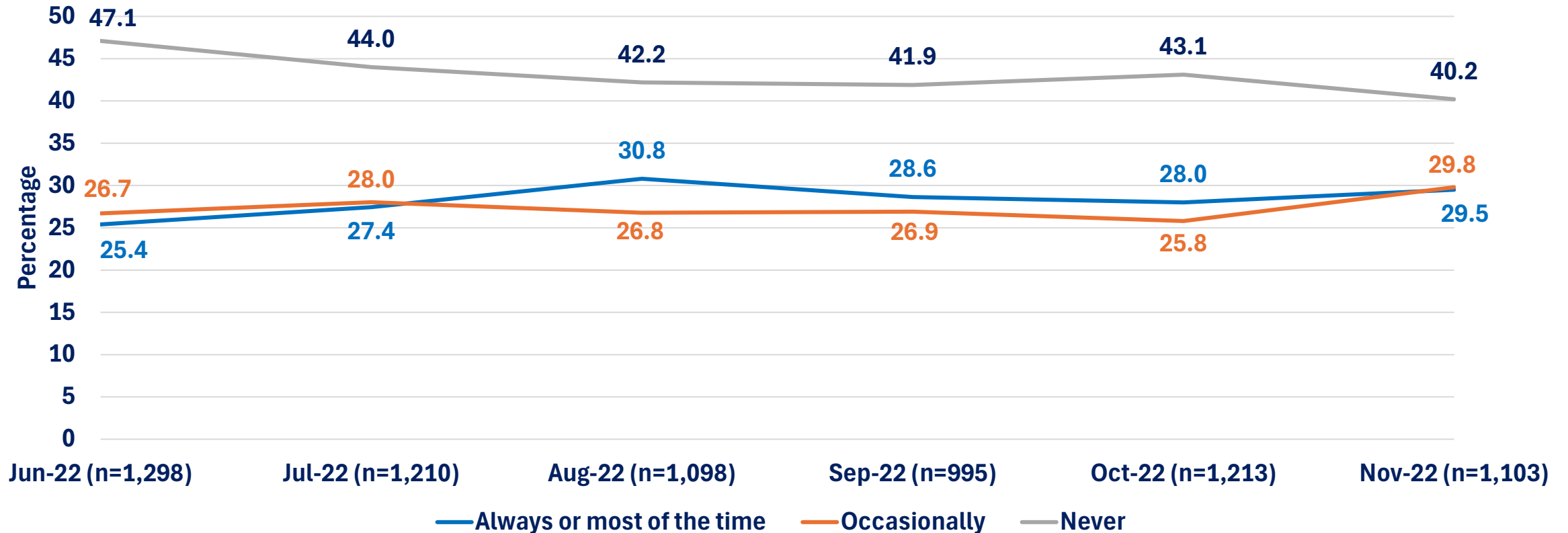


Data Collection Indicators

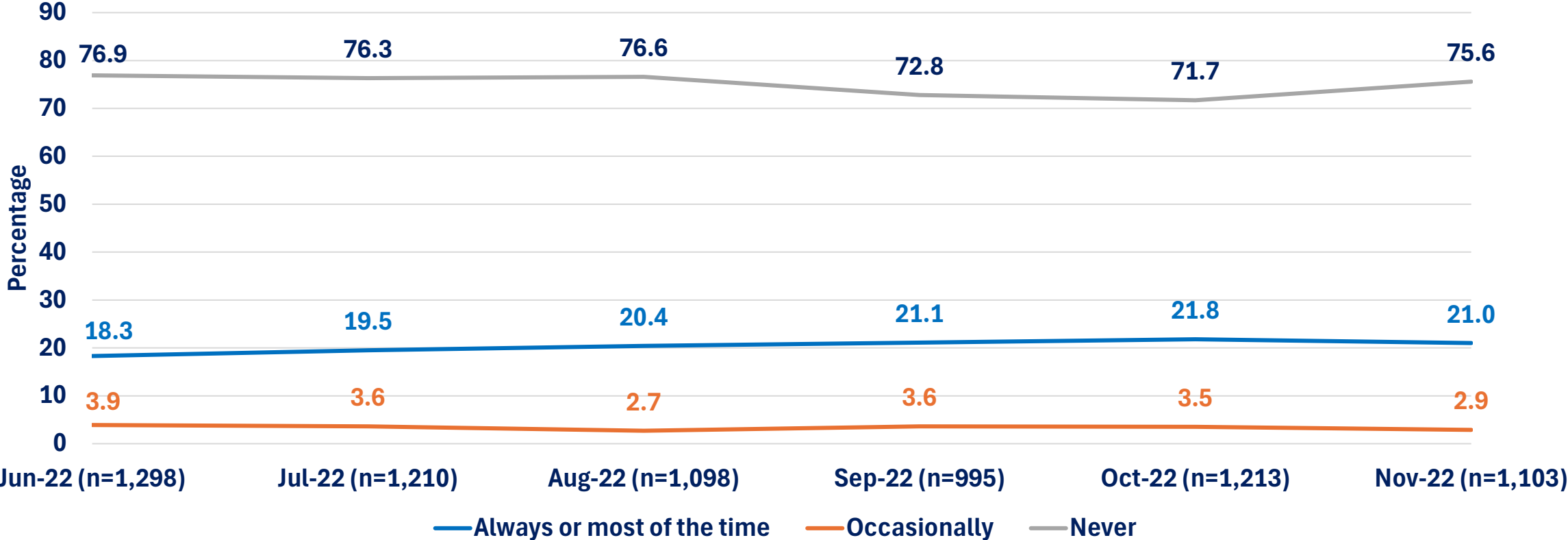
- Records Use, Information Booklet (Infobook) Use, and In-Person interviews are used as proxies for CE data quality.
 - ▶ Higher rates of each → reduced measurement error.
- No significant differences in quality indicator estimates found between time periods.



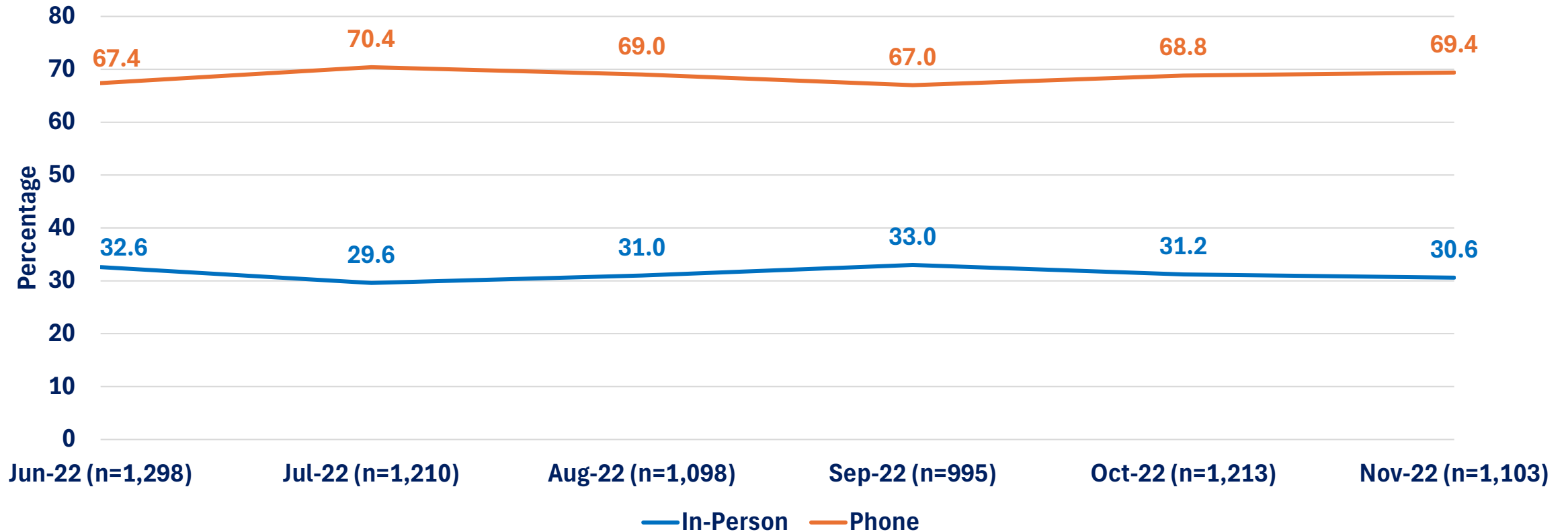
Data Collection Indicators: Records



Data Collection Indicators: Infobook Use



Data Collection Indicators: Mode



Reporting Quality

- What is reporting quality in CE?
 - ▶ Metrics that let us know how well respondents reported their expenses.
- We examine:
 - ▶ The number of expenses, broken out by valid entries and item nonresponse.
 - ▶ Total amount of expenditures reported in interview.

Reporting Quality Findings

	Overall Jun. - Nov. 2022 (n = 6,917)	Pre-Cost Reduction Jun. - Jul. 2022 (n = 2,508)	Cost Reduction Aug. - Sep. 2022 (n = 2,093)	Post-Cost Reduction Oct. - Nov. 2022 (n = 2,316)
Number of Expenses	38.1 (0.167)	37.4 (0.264)	38.4* (0.310)	38.6* (0.296)
<i># Expenses w/ a valid amount</i>	37.1 (0.167)	36.3 (0.266)	37.5* (0.311)	37.5* (0.296)
<i># Expenses w/ missing amount</i>	1.0 (0.030)	1.1 (0.052)	1.0 (0.049)	1.0 (0.052)
Total Expenditure Amount	\$18,015.48 (\$243.71)	\$17,865.33 (\$519.51)	\$18,078.48 (\$368.38)	\$18,121.13 (\$320.28)

All estimates are unweighted.

Using the Welch Two-Sample t-test:

*- significantly different from pre-cost reduction period at 95% level



Conclusions and Future Work



Conclusions

- This analysis found that the 2022 cost-reduction measures had little to no measurable impact on CE data quality.
 - ▶ Despite a drop in the overall rate of response.
- If anything, there was a slight positive increase across most indicators of data collection and reporting quality.



Future Work

- CE implemented another set of cost-reduction measures in FY24, which affected data collection efforts for **both** CE Surveys.
- BLS is currently researching the impact of these FY24 measures, and has chartered a team to...
 - ▶ Asses the effectiveness of these measures
 - ▶ Analyze their impacts on data quality
 - ▶ Conduct an in-depth nonresponse bias study



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