The Gemini Project to Redesign the CE Surveys

Gemini Design Team
Office of Prices and Living Conditions
Division of Consumer Expenditure Survey
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Outline

1. Gemini Project
   a. Background
   b. Redesign Proposal
   c. Current Design vs. Proposed Design
   d. Road Ahead
   e. Questions/Discussion
BACKGROUND
Motivation

- Evidence of measurement error
- Changes in technology and spending behaviors
- Need for greater operational flexibility
Objectives

- Verifiable reduction in measurement error, with a particular focus on underreporting
- Reduction in burden
OPLC Requirements

- Minimum set of expenditure/non-expenditure data elements from each Consumer Unit
- Annual expenditure estimates of total household spending
- Month of expenditure(s) for each expenditure category
- Data collected at a minimum of two points in time, one year apart
Key Proposal Inputs

CE relied on several sources for proposal inputs:
- Expert panels
- External discussion events
- Ongoing research on key topics
- National Academies’ Committee on National Statistics (CNSTAT)
- Westat independent proposal
- Census staff and Field Representative (FR) input
Design Features
Recommended by CNSTAT

- One sample design
- Flexible recall periods & interview structure
- Modular design with a core survey
- Increased use of technology, especially to encourage ‘in the moment’ reporting
- Increased use of records
- Reduced proxy reporting
- Mixed mode data collection
- Large incentives
Design Features
Recommended by Westat

- One sample design
- Two or three waves of data collection
- Individual diaries
- Use of a web-based diary to allow respondents to enter data via their Smartphone, tablet or home PC
- Monitoring of incoming diary data during reporting periods with potential interviewer interventions
- Increased use of records
- Use of respondent-level incentives
DESIGN PROPOSAL
Pending further research:
- When the experience package will be sent
- Amount of Token cash in advance mailing
WAVE 1
- Advance mailing with token cash incentive ($2, pending research)
- Personal interview, similar to current structure with reduced content
- Time Goal: 45 minute average
Visit 1 content:
- Household roster
- Demographics
- Recall-based expenditures (3-month reference period)
  - items easily recalled such as appliances, vehicles, and doctor’s visits
  - Infrequent purchases not likely collected in a one week diary
  - Items respondents would be able to report of other hh members (tuition, catered affairs)
- “Global” questions capturing at a more highly aggregated level what the Diary week will collect detail on
1) Train respondent (and other household members, if possible) to complete the web diary

2) Train respondent on what records/bills to collect for the following personal visit interview
At the conclusion of Visit 1, the respondent will receive a household based incentive of $20 debit card (despite picture)
- All HH members 15+ maintain individual electronic diary for 1 week
- Offer paper diary for those that prefer
- FR contacts as necessary based on centralized diary monitoring
Similar to current Diary: Open-ended to capture any expense during the week
Designed to best collect:
- smaller, more frequently purchased items
- Items more willing to report privately
- Items an proxy respondent would not know
$20 individual incentives for each eligible completed Diary.
- Personal interview, with assistance from records gathered (as trained in Visit 1)
- Review of Diary
- Time Goal: 45 minute average
Visit 1 content:
- Review of Diary week
- Records-based expenditures (3-month reference period)
- Items that respondents likely do not accurately know but could easily obtain from records
- Items that respondents may know but may be more accurately reported using records
At the conclusion of Visit 2, the respondent will receive a household based incentive of $20 debit card (despite picture) if no records are used, $30 if records are used.
WAVE 2
12 months later: repeat Wave 1
   Visit 1
   Diary Week
   Visit 2

Post-wave 2 CE “experience package” as non-monetary incentive, for example:
   Charts displaying HH wave 1 expenditures vs. national average
   Information sheet listing helpful government websites
   (future decision on whether to do this between waves or post-wave 2)
Design Overview: Major Issues Addressed

1. Incentives → addresses respondent motivation
2. Technology → encourages real-time data capture
3. Individual diaries → reduces proxy reporting
4. Shortened interview length, reduced survey content, and increased record use → improve data quality
- Mobile device application type – Whether to use a mobile-optimized web survey or a native application (app)
- Use of records as data input – capture and code information directly from records and input that information into the diary and/or interview
- Acceptance of annotated grocery receipts (in lieu of reporting in diary)
- Incentive amounts and structure – logistical issues, effectiveness of all planned incentives
- Exact survey content – Visit 1 vs. Visit 2 vs. Diary, Global questions, household diary
- Government provided technology – costs/risks, logistical issues
- Length of Wave 1 and Wave 2 visits – evaluate if goal of 45 minutes is realistic
- When the experience package will be sent
- Inclusion of TPOPS-supporting outlets questions – An option to add questions required to replace CPI’s Telephone point of purchase survey, includes store name, location, and price.
CURRENT DESIGN VS. PROPOSED DESIGN
Current vs. Proposed: Sample Design

<table>
<thead>
<tr>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two independent Samples (Diary and Interview)</td>
<td>One Integrated Sample (Interview, with Diary keeping component)</td>
</tr>
</tbody>
</table>

Advantage:
- Reduced costs of maintaining two samples
- Diary level detail for all CUs

Disadvantage:
- Potential burden for household completing both the Interviews and Diary
Current vs. Proposed: Interview

<table>
<thead>
<tr>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Interview for large, recurring</td>
<td>2 interviews: Recall based</td>
</tr>
<tr>
<td>expenditures</td>
<td>and Records based</td>
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</tbody>
</table>

Advantage:
- Ease respondent burden with half of typical content of the current interview
- Better quality data for records focus

Disadvantage:
- Rely on completion of 2\textsuperscript{nd} interview for complete spending from one household
<table>
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<tr>
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<tr>
<td>Two one-week open ended paper diaries</td>
<td>Electronic one week diary with paper back-up</td>
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</tbody>
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**Advantage:**
- Electronic diary – more flexible and easier for respondent
- Electronic diary – in the moment reporting
- Respondent uses mode most comfortable with (Electronic or Paper)

**Disadvantage:**
- Design of electronic diary does not meet respondent expectations
# Current vs. Proposed: Diary

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Single paper diary per household</td>
<td>Individual diaries for all households 15 and over.</td>
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**Advantage:**
- Reduce error due to proxy reporting
- Spreads burden across household members, instead of on an individual respondent
- Increased salience among participants

**Disadvantage:**
- Requiring all household members to complete diary could reduce response.
* The field test we did showed fewer contact attempts were needed which saves money,
* It also showed positive (but not significant) indications of improved data quality.
Current vs. Proposed: Expenditure Categories

<table>
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<tr>
<th>Current</th>
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</thead>
<tbody>
<tr>
<td>Detailed UCC level</td>
<td>More highly aggregated</td>
</tr>
</tbody>
</table>

Advantage:
- Fewer questions – reduced burden and interview length

Disadvantage:
- Less detailed expenditure data
- CPI will need to analyze their process to adjust to less detail
### Current vs. Proposed: Waves

<table>
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<th>Current</th>
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</thead>
<tbody>
<tr>
<td>4 waves - 12 consecutive months of expenditures per CU, each wave treated independently</td>
<td>2 waves - 3 months of expenditures, set 12 months apart, each wave treated independently</td>
</tr>
</tbody>
</table>

**Advantage:**
- Improvement of annual variance estimates
- Reduced measurement error resulting from conditioned underreporting
- Analysis of 12-month change in expenditures/income

**Disadvantage:**
- FR may lose rapport with respondent between waves set far apart
- Some users need one year of expenditures and income for consumption analysis
The end point of when the redesign will be complete depends on the availability of funding.

Next slides elaborate testing/evaluation/development/piloting steps.
Proof-of-concept test to determine if the main ideas behind the proposal are possible (one-sample design, etc)
Testing & Evaluation, cntd.

- Finalized Web and App Diary Test
  - Placement procedures, usability, and reporting for finalized web and app web diary
  - FR monitoring & respondent feedback procedures

- Pilot Test
  - Large sample size dress rehearsal of full design
  - Visit 1 recall interview, records training, diary placement
  - Diary keeping
  - Visit 2 records interview and diary pick-up

- Development, Training, & Implementation
Design Team (past and present)

- Kathy Downey, formerly Bureau of Labor Statistics
- Jennifer Edgar, Bureau of Labor Statistics
- John Gloster, U.S. Census Bureau
- Dawn V. Nelson, U.S. Census Bureau
- Laura Paszkiewicz, Bureau of Labor Statistics
- Adam Safir, Bureau of Labor Statistics
Questions/Discussion

- Positive impacts on research?
- Negative impacts on your research?
- Specific design changes:
  - 12-month change instead of 12 months consecutive data (assuming no attrition)
  - Fewer, more aggregated expenditure categories
  - Diary reference period not aligned with Visit 1 and Visit 2 reference periods
- Information/training you need prior to implementation
- Amount of lead time needed prior to implementation