Testing the Feasibility of Collecting Expenditure Data via Individual Mobile and Desktop Diaries

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II. Sample Performance & Characteristics
III. Feasibility
IV. Expenditure Reporting
V. Individual Web Mode Data Quality
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I. INDIVIDUAL DIARIES OVERVIEW
Consumer Expenditure Diary (CED) Overview

- The CED currently uses 1 paper diary to collect household expenditures for a week (x2)
- Interviewers “place” the diary in-person and conduct up to two more visits
- The CED gathers more detailed expenditures than the Consumer Expenditure Interview Survey
- The Diary is divided into four sections:
  - Food Away From Home
  - Food for Home Consumption
  - Clothing, Shoes, Jewelry and Accessories
  - All Other Products, Services and Expenses
Individual Diaries Background

- The Individual Dairies Feasibility Test (IDFT) was designed to inform the operational and data quality aspects of collecting expenditures from household members using personal electronic diaries.

- Since 2004, there have been various ongoing initiatives to test various forms of instruments to address the limitations of one paper diary for households with multiple members.

- Two modes of electronic diaries were tested:
  - Mobile internet (via smartphone)
  - Desktop internet
Individual Diaries Logistics

- Data Collection Period – Aug - Dec 2014
- Starting Sample Addresses – 1,200 (Philadelphia, Chicago, & Los Angeles Regional Offices)
- Targeted sampling on area mobile usage, internet penetration, multi-person households, and English speaking households
- Developed separate online mobile & desktop applications
- Diary placement occurs once across the 2-week recording period
- Interviewers provide username and password to Respondents
- No individual-level outcome codes for Ind. Diary (final disposition)
- New materials
  - Mobile User Guide
  - Desktop User Guide
  - YouTube Online Tutorials
Individual Diaries Eligible Cases & Assignment Protocol

- Eligible Individual Diaries Cases
  - English only
  - No Multi-CU HHs or Replacement HHs
  - Home internet access via PC, tablet, Smartphone

- Assignment Protocol
  - If a household screens in as eligible, household members are offered modes sequentially
    - Mobile mode first and, if they do not have a Smartphone, then
    - Desktop mode, including tablet
Individual Diaries Monitoring Protocol

- Individual Diaries did not provide interviewers the opportunity to monitor if diary entry occurred during the recording period (due to technical/resource limitations).

- Interviewer Follow-up Calls
  - Reminder Calls (or visits if necessary) on Day 3 and Day 8 were encouraged for all participating households.
  - Tailored follow-up calls were made to households that Census flagged for going three consecutive days without logging into the instrument.
Individual Diaries Training and Materials

- Training conducted in-person for one day and was a departure from standard CE training protocols - focused more heavily on protocol changes

- Respondent Materials
  - Mobile and Desktop User Guides – Focus on logging in and entering expenses
  - Three YouTube Online Tutorials
    - Getting Started
    - What to Enter in the CE Diary
    - Entering and Editing Expenses
II. SAMPLE PERFORMANCE & CHARACTERISTICS
Characteristics of Sampled Households versus Restricted Production

- Restricted Production (RP) – Production cases from the same time period and regions restricted to match IDFT test sample by only including English speaking HHs with internet access who had diaries double placed.

- IDFT vs. RP
  - More homeowners (70.7% vs. 63.2%)
  - Fewer single-person HHs (16.5% vs. 23.7%)
  - Lower prevalence of converted refusals (1.2% vs. 3.7%)
Characteristics of Individual Diarists by HH Assigned Diary Type

- **Diary Types** – Mobile, Desktop, Mix (Mobile & Desktop) & Paper

- Compared to desktop-only HH diarists, mobile diarists were more likely to be under the age of 50, college graduates, white, of Hispanic origin, and live in larger HHs.

- Younger members were particularly receptive to the mobile diary, as 41% of mobile diarists were between the ages of 16 & 34 compared to 27% of paper diarists.
Sample Performance

**Difference in Rates – (IDFT – RP)**

<table>
<thead>
<tr>
<th>Rate</th>
<th>ID</th>
<th>RP</th>
<th>Diff</th>
<th>% Diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen-out rate</td>
<td>25%</td>
<td>31%</td>
<td>-6%</td>
<td>-19.4%</td>
</tr>
<tr>
<td>Contact rate</td>
<td>96%</td>
<td>95%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>Cooperation rate</td>
<td>23%</td>
<td>28%</td>
<td>-5%</td>
<td>-17.9%</td>
</tr>
<tr>
<td>Response rate</td>
<td>22%</td>
<td>27%</td>
<td>-5%</td>
<td>-18.5%</td>
</tr>
<tr>
<td>‘Non-response’ rate</td>
<td>59%</td>
<td>64%</td>
<td>-6%</td>
<td>-7.8%</td>
</tr>
</tbody>
</table>

The higher non-response & screen-out rates in the RP sample may be attributed to the IDFT sample design.
III. FEASIBILITY
Adherence to Protocol

- Multi-member HHs – Interviewer reports of ‘central person’ diary recording
- Interviewer monitoring of diary logins

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>% with follow-up attempt</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHI</td>
<td>88</td>
<td>5%</td>
</tr>
<tr>
<td>CHI</td>
<td>152</td>
<td>31%</td>
</tr>
<tr>
<td>LA</td>
<td>175</td>
<td>4%</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>14%</td>
</tr>
</tbody>
</table>

- HHs that were contacted were significantly more likely to complete their diaries than those that were not (70% vs. 49%)
- HHs that were successfully contacted had a significantly higher average number of entries (52 vs. 25)
Obstacles to Accessing Web Dairies

- URL – https://respond.census.gov/ced
- Username & Password Requirements
IV. EXPENDITURE REPORTING
Contemporaneous Reporting

- 28% of mobile diary entries came between 6pm & 9pm versus just 19.7% for desktop diary entries.

![Chart showing time of day vs. device usage]

- Mobile (N=93)
- Desktop (N=149)
Expenditure Reporting: Individual vs. Household

- Mean and median number of HH entries by group –multiple diarists

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>57</td>
<td>70.4</td>
<td>59.0</td>
</tr>
<tr>
<td>RP</td>
<td>139</td>
<td>89.4</td>
<td>85.0</td>
</tr>
<tr>
<td>Diff (ID-RP)</td>
<td>-</td>
<td>-19.0</td>
<td>-26.0</td>
</tr>
<tr>
<td>% Difference</td>
<td>-</td>
<td>-21.3%</td>
<td>-30.6%</td>
</tr>
</tbody>
</table>

- Count of HH entries by size and group

<table>
<thead>
<tr>
<th></th>
<th>2 diarists/age-eligible members</th>
<th>3+ diarists/age-eligible members</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>ID</td>
<td>47</td>
<td>64.8</td>
</tr>
<tr>
<td>RP</td>
<td>98</td>
<td>82.1</td>
</tr>
<tr>
<td>Diff (ID-RP)</td>
<td>-</td>
<td>-17.3</td>
</tr>
<tr>
<td>% Difference</td>
<td>-</td>
<td>-21.1%</td>
</tr>
</tbody>
</table>
V. INDIVIDUAL WEB MODE DATA QUALITY
Number of Entries at the HH Level

- Mean & median number of HH entries by group – all diarists

<table>
<thead>
<tr>
<th></th>
<th>No. CUs</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>164</td>
<td>59.4</td>
<td>50.5</td>
</tr>
<tr>
<td>RP</td>
<td>190</td>
<td>79.5</td>
<td>72.0</td>
</tr>
<tr>
<td>Diff (ID-RP)</td>
<td>-</td>
<td>-20.1</td>
<td>-22.5</td>
</tr>
<tr>
<td>% Difference</td>
<td>-</td>
<td>-25.3%</td>
<td>-31.3%</td>
</tr>
</tbody>
</table>

- Mean & median entries per single-member HHs by group – all diarists

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>30</td>
<td>36.1</td>
<td>37.5</td>
</tr>
<tr>
<td>RP</td>
<td>51</td>
<td>52.3</td>
<td>47.0</td>
</tr>
<tr>
<td>Diff (ID-RP)</td>
<td>-</td>
<td>-16.2</td>
<td>-9.5</td>
</tr>
<tr>
<td>% Difference</td>
<td>-</td>
<td>-30.9%</td>
<td>-20.2%</td>
</tr>
</tbody>
</table>
Number of Entries at the HH Level

- Count of average HH entries per section by group

![Bar chart showing count of average HH entries per group]

- FDB
- MLS
- CLO
- OTH

ID Sample
RP Sample
Number of Entries by Diary Mode

- Descriptive statistics of entries by diary mode

<table>
<thead>
<tr>
<th>No. diarists</th>
<th>Mean</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile</td>
<td>87</td>
<td>33.5</td>
<td>21.0</td>
<td>133.0</td>
</tr>
<tr>
<td>Desktop</td>
<td>146</td>
<td>41.9</td>
<td>31.0</td>
<td>177.0</td>
</tr>
<tr>
<td>Recall</td>
<td>16</td>
<td>44.5</td>
<td>32.5</td>
<td>113.0</td>
</tr>
</tbody>
</table>
Prevalence of Entries by Recall/Receipts

- Percentage of HHs reporting expenses through recall/receipts by group.

<table>
<thead>
<tr>
<th></th>
<th>No. CUs</th>
<th>At least 1 entry by Recall/Receipts</th>
<th>Total Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>210</td>
<td>29.5%</td>
<td>21.9%</td>
</tr>
<tr>
<td>RP</td>
<td>200</td>
<td>NA</td>
<td>5.0%</td>
</tr>
<tr>
<td>Diff (ID-RP)</td>
<td>-</td>
<td>-</td>
<td>16.9%</td>
</tr>
<tr>
<td>% Difference</td>
<td>-</td>
<td>-</td>
<td>338%</td>
</tr>
</tbody>
</table>

- Few respondents who reported expenditures through recall reported technical difficulties, suggesting that busyness or burden played a part in how they reported.
VI. CONCLUSION
In Summary

- There were challenges implementing the test protocol as designed.
  - The data indicated a lower than expected prevalence of all eligible household members cooperating with the survey request in multi-member CUs. Other measures beyond offering individual diaries, such as the offering of incentives, may be needed to maximize within-CU participation.
  - The need to enter a long web site address and the complexity of password requirements made logging in to the web diaries a difficulty for many respondents.
  - The CE Program needs improvements in the infrastructure supporting web diary monitoring to be able to take advantage of the full functionalities of web diaries.
In Summary

- There was no improvement in household cooperation rates for the ID sample compared to the RP sample.
- The examination of contemporaneous reporting of expenses for respondents with web diaries was hampered by data limitations.
- Single proxy respondents using paper diaries reported more median entries than diarists assigned individual web diaries, among multi-member CUs.
In Summary

- There were fewer entries and lower reported expenditure totals among the ID sample CUs compared to the RP sample CUs.
- We identified characteristics that were associated with a larger number of entries and higher expenditure amounts among CUs given web diaries.
- Feedback from diarists in the ID sample who responded to debriefing questions was largely positive regarding the ease of recording expenses and the security of their data.
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