2020 Census
Program Management Review

2013 Census Test Report
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Center for Adaptive Design

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Outline

Review of Study Objectives and Design
Execution of Case Management Treatments
Operational Takeaways
Results
Lessons from Test Experience
Study Objectives

- An operational study of NRFU procedures
- Use administrative records to “enumerate” some housing units
- Try an adaptive design approach for cases not enumerated with records and compare with fixed approach
- Examine two telephone methods
- Reduced number of contact attempts from 2010
- Secondary objectives: Examine cost and data quality across treatments
Sample

- Two matched sets of block groups in the Philadelphia area
- Block groups randomly assigned to adaptive or fixed case management approaches
- 2000 sample housing units selected from a universe of 2010 NRFU HHs within these block groups
- 1000 housing units for adaptive and 1000 for fixed case management treatments
## 2013 Census Test Design

<table>
<thead>
<tr>
<th>ADRECs used for “enumeration”</th>
<th>Adaptive Design</th>
<th>Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=528</td>
<td>-Use administrative records to enumerate before field</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-CATI telephone</td>
<td>N=511</td>
</tr>
<tr>
<td></td>
<td>-Max in-person Contacts 3</td>
<td></td>
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<tr>
<td></td>
<td>-Model determines cases worked</td>
<td>-Use administrative records to enumerate before field</td>
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<td></td>
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<td>-Decentralized telephone</td>
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<td></td>
<td></td>
<td>-Max in-person Contacts 3</td>
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<td></td>
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<td>-FRs determine cases worked</td>
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<tr>
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<tr>
<td></td>
<td>-FRs determine cases worked</td>
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</table>

<table>
<thead>
<tr>
<th>ADRECs not used for “enumeration”</th>
<th>Adaptive Design</th>
<th>Fixed</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=528</td>
<td>-Use administrative records to inform business rules</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-CATI telephone</td>
<td>N=510</td>
</tr>
<tr>
<td></td>
<td>-1 or 3 contacts</td>
<td>-No use of administrative records</td>
</tr>
<tr>
<td></td>
<td>-Model determines cases worked</td>
<td>-Decentralized telephone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Max in-person Contacts 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-FRs determine cases worked</td>
</tr>
</tbody>
</table>
Operational Questions

- Can we determine vacant/demolished housing units and enumerate occupied sample units using administrative records?
- Alternatively, can we use records to determine the number of contacts for occupied sample units?
- Can we use response propensity models to score open cases?
- Can our systems use model outcomes to dynamically prioritize cases and communicate priorities to interviewers?
- Can we develop training and supervisory procedures that induce interviewers to adhere to study protocols?
- Can we link telephone numbers to sample lines?
- Can we use centralized and dispersed phone calls to enumerate sample units?
- How well can we enumerate households using these techniques with a reduced number of contact attempts?
Administrative Records
Operational Lessons

- Successfully used records and USPS information to remove cases from the workload
- Successfully used records to designate cases for one or three contacts
- Record information on occupancy shows strong relationship to interview data
- Pursuing further research on how best to identify vacant and occupied households with records
- Pursuing further investigation on how best to use USPS information
Adaptive Design
Operational Lessons

- Response propensity models, using 2010 data and Contact History Information can score open cases daily.
- Systems can then dynamically assign cases based on propensity scores.
- Automated daily case assignment is unprecedented.
- Issues identified during the Test:
  - Response propensity models need further scrutiny and testing to ensure effectiveness
  - Geographic location of cases needs to be integrated into prioritized case assignments
  - More research on models and rules for handling vacant households and “deletes” is needed
  - More research on models and rules for obtaining proxy responses is needed
  - More research on daily case assignments for enumerators is needed
CAPI Field Performance

Operational Lessons

- Interviewers generally were trained to follow novel procedures
- Daily transmission to transfer completed cases and obtain new workload was largely achieved
- Routine completion of contact history information was largely achieved
- Handling cases on the last contact was more problematic – “personal visit/proxy” rule
- Supervision must focus on interviewers following case procedures
- Incentivize interviewers to adhere to procedures
- Experienced Census interviewers pose challenges
Telephone Operational Lessons

- Appended up to 3 landline and cell numbers from seven commercial sources to sample units
- “Cleaned” landline numbers
- Matched at least 1 number to 70% of sample units
- CATI (Tucson) employed for up to two weeks prior to face-to-face attempts in adaptive design panels
- Individual interviewers instructed to call each number twice before face-to-face attempts in fixed panels
Results:
Use of Telephone to Enumerate Households

- CATI: completed 27 interviews before face-to-face attempts
- Individual FR calls: completed 15 interviews before face-to-face attempts
- Issues for further scrutiny:
  - Quality of phone numbers
  - CATI field period and calling protocol
  - Handling multiple numbers per sample unit
  - Individual FR phone call compliance and methods
### Results: Case Dispositions

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Total Cases</th>
<th>Cases w Adrec Info</th>
<th>Cases removed w Adrec Info</th>
<th>Cases Completed</th>
<th>Cases w Max Attempts</th>
<th>Max Attempt Cases w Adrec Info</th>
<th>Max Attempt Cases w No Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed – Records Used to Reduce Workload</td>
<td>511</td>
<td>200</td>
<td>200</td>
<td>253</td>
<td>58</td>
<td>N/A</td>
<td>58</td>
</tr>
<tr>
<td>Fixed</td>
<td>510</td>
<td>181</td>
<td>N/A</td>
<td>388</td>
<td>122</td>
<td>42</td>
<td>80</td>
</tr>
<tr>
<td>Adaptive – Records Used to Reduce Workload</td>
<td>528</td>
<td>208</td>
<td>208</td>
<td>266</td>
<td>54</td>
<td>N/A</td>
<td>54</td>
</tr>
<tr>
<td>Adaptive</td>
<td>528</td>
<td>223</td>
<td>N/A</td>
<td>417</td>
<td>111</td>
<td>58</td>
<td>53</td>
</tr>
<tr>
<td>Total</td>
<td>2077</td>
<td>812</td>
<td>408</td>
<td>1324</td>
<td>345</td>
<td>100</td>
<td>245</td>
</tr>
</tbody>
</table>

United States Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov
# A Closer Look at Cases with No Data

## Contact History Indicators

<table>
<thead>
<tr>
<th>Case Description</th>
<th># Stopped Cases with No Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only noncontacts with sample unit member</td>
<td>168</td>
</tr>
<tr>
<td>At least one contact with sample unit member</td>
<td>77</td>
</tr>
<tr>
<td>Refusal 1 or more times</td>
<td>71</td>
</tr>
<tr>
<td>Language barrier/Other</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>245</td>
</tr>
</tbody>
</table>

## UAA Reason Code

<table>
<thead>
<tr>
<th>Reason Code</th>
<th># Stopped Cases with No Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>No UAA</td>
<td>234</td>
</tr>
<tr>
<td>Attempted, not known</td>
<td>3</td>
</tr>
<tr>
<td>Not deliverable as addressed</td>
<td>3</td>
</tr>
<tr>
<td>Vacant</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>245</td>
</tr>
</tbody>
</table>

- Mail information (UAA) suggests 11 of the cases may be vacant
- Contact History data: interviewers made contact with 77 cases, of which 71 were refusals
Results: Productivity Using Adrecs to Reduce Workload

- Interviewers were approximately 20% less efficient when workload was reduced with records.
- Cases remaining after workload is reduced are more difficult.
- But interviewers spent approximately 22% fewer hours.
- Overall interviewer cost is reduced.
Results: Productivity Using Adaptive Case Management

- Interviewers were 22% more efficient in the adaptive design treatments.
- This pattern holds whether workload was reduced with records or not.
- Interviewers in the adaptive groups averaged approximately four more contacts per interviewer/day.
Results:
Productivity Using CATI before CAPI

- CATI implementation before CAPI led to 12-14% decrease in productivity
- Combines CATI and CAPI hours
- Productivity =
  \[(\text{CATI hours} + \text{CAPI hours})/\text{Number of cases}\]
Lessons from 2013 Test

- The test provided useful information on operation of new methods in difficult field conditions
- Suggests that some new methods are feasible and have promise
- Identified issues that need to be addressed to make methods more effective
- Provides a foundation for subsequent Census tests