



Adaptive Design for ABS in a National CATI Survey of Households with Children

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Motivation

- The Third National Survey of Children's Exposure to Violence (NatSCEV III)
- Contact HHs with children (33.4% nationally)
- Initial contact by mail (ABS)
- Topic interview by phone
- Optimize the mailout performance

Mail ABS design

- Would like to target HHs with children
- First mailout (n=40,000)
 - Consider as a pilot/experiment
 - Use Census data for stratification
 - Target high incidence areas to collect more returns for the incidence model
- Three subsequent mailouts
 - Census + field data for stratification

Census data for Mailout 1

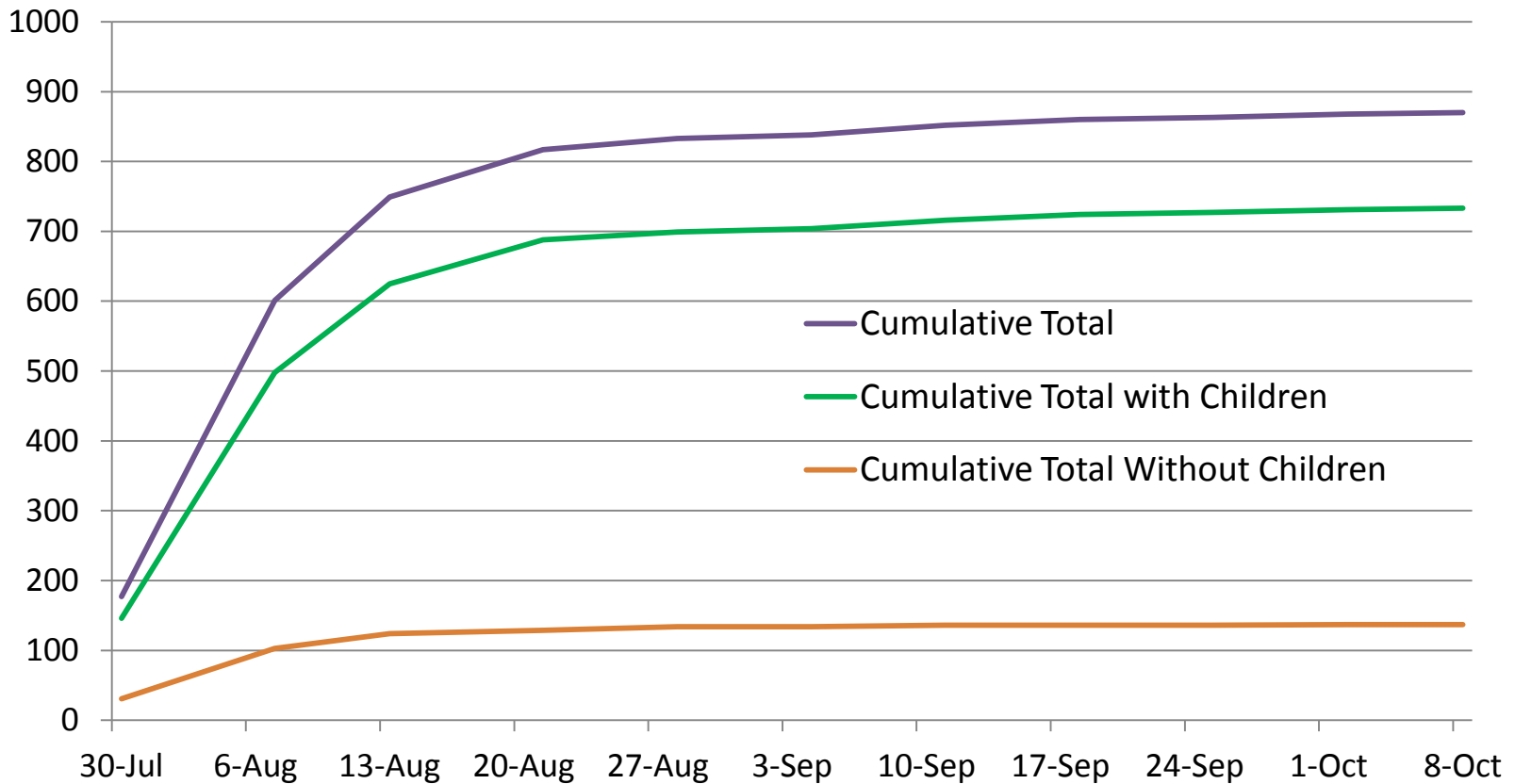
- Summary File 2 block group level data
 - P20i1 = # of HHs
 - P20i2 = # of HHs with people under 18
 - H1i1 = total # of HUs
 - H3i3 = # of vacant HUs
- Incidence = $P20i2 / H1i1$

Mailout 1 Stratification

	Stratum 1	Stratum 2	Stratum 3	Stratum 4	Stratum 5
Incidence	[0-25.4%]	[25.5-30.7%]	[30.8-36.0%]	[36.1-43.5%]	[43.6-100%]
# HHs w/kids	7.77M	7.77M	7.77M	7.77M	7.77M
# of HUs	45.2M	27.5M	23.3M	19.7M	15.2M
# of census block groups	68.7K	48.6K	40.0K	32.9K	25.0K
% frame	34.5%	21.0%	17.8%	15.0%	11.6%
% population	20%	20%	20%	20%	20%
# sampled	6037	7037	8140	8940	9846

Mailout 1 Field

Mailing done July 18th-24th and returns were scanned on a weekly basis.



Mailout 1 results: contact and in-scope data

- 870 total returns
- 90.1% (n=784) of returns provided a phone number
 - 73.5% (n=577) provided a cell phone number
- 84.2% (n=733) of returns indicated presence of children
 - Of these, 93.7% (n=687) provided a phone number

Mailout 1 results: field vs. vendor data

- 69.6% (n=39) of the 56 returns on Spanish side of form had an Hispanic MSG flag
- 53.8% (n=468) of returns did not have a matched phone on file
 - Of those, 91.7% (n=429) provided a phone number
 - Of those, 85.5% (n=367) provided a cell phone number
- 46.2% (n=402) of returns had a matched phone on file
 - Of those, 56.0% (n=225) provided a different phone number than matched phone number on file

Sample Provider Flags

Mailed out	No evidence of children in HH*	Children present in HH	No info about children in HH	Total
Stratum 1	4378	637	1022	6037
Stratum 2	4945	1099	993	7037
Stratum 3	5783	1352	1005	8140
Stratum 4	6392	1616	932	8940
Stratum 5	6813	2037	996	9846
Stratum 1	72.5%	10.6%	16.9%	100.0%
Stratum 2	70.3%	15.6%	14.1%	100.0%
Stratum 3	71.0%	16.6%	12.3%	100.0%
Stratum 4	71.5%	18.1%	10.4%	100.0%
Stratum 5	69.2%	20.7%	10.1%	100.0%
Overall	70.8%	16.9%	12.4%	100%

*Other flags may exist, but not the children flag

Mailout 1 Returns with Children

# screeners returned	No evidence of children in HH*	Children present in HH	No info about children in HH	Total
Stratum 1	39	25	9	73
Stratum 2	51	38	14	103
Stratum 3	85	46	8	139
Stratum 4	80	55	15	150
Stratum 5	105	68	12	185
Total				650

*Other flags may exist, but not the children flag

Productivity by Stratum and Match

% mailings returned with children	No evidence of children in HH*	Children present in HH	No information about the HH	Total
Stratum 1	0.89%	3.92%	0.88%	1.21%
Stratum 2	1.03%	3.46%	1.41%	1.46%
Stratum 3	1.47%	3.40%	0.80%	1.71%
Stratum 4	1.25%	3.40%	1.61%	1.68%
Stratum 5	1.54%	3.34%	1.20%	1.88%
Overall				1.63%

This reported productivity is a conflation of genuine incidence and response rate – these two components must be teased apart!

Other Factors Impacting Response (?)

- Logistic regression to predict mail return with children
 - % Hispanic HHs (SF1, quadratic)
 - % black HHs (SF1, quadratic)
 - Education (MSG flag)
 - Own/rent (MSG flag)
 - Marital status (MSG flag)

How Accurate is the Vendor Flag?

- HHs flagged as having children were notably more productive, but...
- HHs without this flag also produced a non-negligible number of returns with children
- Some HHs with no children mailed the screener back even though they were instructed not to

How Accurate is the Vendor Flag?

- National incidence = $\frac{[\% \text{ kids}]}{[\text{SF1 \# HH w/kids}] / [\text{SF1 \# occupied HUs}]} = 33.4\%$
- OR for mail return with kids = $\frac{[\text{OR kids}]}{[\# \text{ returns with kids}] / [\# \text{ returns w/o kids}]}$
 $\frac{[\% \text{ kids}]}{[\% \text{ kids}] / (1 - [\% \text{ kids}])} = 10.35$
- Incidence among the flagged HHs = $\frac{[\% \text{ kids} \mid \text{MSG flag kids} > 0]}{[\# \text{ returns with kids} \mid \text{flag}] / \{ [\# \text{ returns with kids} \mid \text{flag}] + \text{OR } [\# \text{ returns w/o kids} \mid \text{flag}] \}} = 69.2\%$

Cross-classified Incidence

Incidence of HHs with children	No evidence of children in HH	Children present in HH	No info about children in HH
Stratum 1	12.1%	69.2%	6.5%
Stratum 2	21.7%	69.2%	15.4%
Stratum 3	27.3%	69.2%	19.5%
Stratum 4	34.2%	69.2%	23.9%
Stratum 5	48.0%	69.2%	35.6%

Vacant households: split between the “no children” and “no info” sub-strata

Mailout 2 Design

Sampling rate $\times 10^4$	Mailout 1 sampling rate	No evidence of children in HH	Children present in HH	No info about children in HH
Stratum 1	1.3	2.7	4.2	2.1
Stratum 2	2.6	3.1	4.1	2.5
Stratum 3	3.5	3.0	3.9	2.8
Stratum 4	4.5	3.3	3.6	2.5
Stratum 5	6.5	3.3	3.2	2.9

Optimal design:

$$\# \text{ sampled} \propto \text{stratum size} \sqrt{\frac{\text{incidence}}{\text{screener cost} + \text{incidence} \times \text{main cost}}}$$

Current Status

- Mailout 2 is in the field
- Mailout 1 callbacks are in the field
 - Phone numbers from mail returns
 - Matched numbers from the sample provider



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References

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