

Adaptive Design Strategies

Who do you target?

And what do you do with them?

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Adaptive Design in Surveys

- Different data collection strategies have always been used in survey data collection
- However, these are often unplanned or unknown by the survey designers
 - For example prioritization of cases by interviewers
 - Scheduling of phone interviewers
 - Mode switching by field staff

The challenge:

- How do we strategically allocate resources to data collection?
- Decisions on allocating resources should be made to reduce TSE, not just serve local level objectives.

Two NASS examples

- Agricultural Resource Management Survey (ARMS)
- Crops/Stocks Quarterly Survey



Our examples...

ARMS

- Collects farm financial information and costs associated with producing agricultural commodities
- Estimates at US, regional, and state level (for 15 states)
- Lengthy annual survey with historically low response rates (in the 60% range)
- Sample sizes typically >30k
- Data collection primarily in person over approx. 3 months

Crops/Stocks

- Collects crop acreage, inventory and production and grain and oilseed stocks
- Conducted in June, September, December and March
- Estimates made for US and state (major commodities and specialty crops differ by state)
- Sample sizes large > 65k
- Data collection period is short (~2 weeks), RR near 80%
- Most data collection is central call center CATI with limited telephone, online, mail and in person interviews

How is nonresponse handled?

ARMS

- Estimates at US, regional, and state level
- Calibration weighting is used to compensate for nonresponse (including bias) and measurement error
- Multiple calibration targets used based on known external population totals
- ARMS records reweighted to meet targets

Crops/Stocks

- Estimates made at US and state level
- Nonresponse adjustments are made based on strata
- NR strata defined by size in acres, grain storage capacity, and some specialty crops

“Impact Operations”

- Like many establishment surveys, farms are highly skewed
- Often a small number of operations will dominate an estimate –
“impact operation”
- Or a small number of operations may be critical to nonresponse weighting



Managing data collection in ARMS

- Calibration targets are known in advance
- Must have minimum amount of target reported in order to use for weighting
- Operations large relative to calibration targets are “impact operations”
- Nonresponse propensity models available and can pre-identify likely “impact” nonrespondents



ARMS data collection strategies

- Target additional resources (\$\$\$) to these identified records (“impact” + likely NRs)
 - INITIAL in person contact by field office director or other senior level staff
 - Data collection by experienced or supervisory interviewers only
 - Interviewer incentives for hard cases
- Ideally, monitor during data collection



Crops/Stocks data collection strategies

- Also have nonresponse propensity models
- Some nonresponse strata can be used to identify impact operations
 - Strata with large operations (e.g. 5000+ acres)
 - Specialty crops (potatoes)
- Additional resources can be targeted at “impact” likely nonrespondents

Data Collection Strategies for Crops/Stocks “Impact Operations”

- For those impact operations likely to be nonrespondents:
 - Managed by local field office;
 - Field enumerator phoned
 - With in person follow up (\$\$\$)
- For those impact operations likely to be respondents:
 - Phoned by central phone center (¢)
 - At end of data collection, any of these “easy” cases still pending sent to field office for last attempts (\$)
- Compared offices asked to follow these procedures to all other offices



So how did it work?



Overall results – Crops/Stocks

Crops/Stocks			Difference (Actual – Predicted) %	
			Treatment	Comparison
Refusals	Likely REFUSAL	Other		
Sept All	21%	52-78%		
Dec All	15%	46-73%		
Sept Impact Operations	18%	53-79%	2.8	-4.6
Dec Impact Operations	12%	47-74%	0.2	-12.0
Inaccessible	Likely NONCONTACT			
Sept	39%	34-75%		
Dec	30%	29-71%		
Sept Impact Operations	38%	32-74%	9.4	14.7
Dec Impact Operations	29%	26-70%	-5.1	5.5

Overall Results -- ARMS

	Likely Nonrespondents	Others	Targeted Records	Control Records
Complete	55.6%	73.1%	55.3%	55.2%
Refusal	36.9%	21.8%	36.2%	37.5%
Noncontact	4.9%	4.2%	4.8%	5.2%
Office Hold	2.9%	0.9%	3.7%	2.1%

So what happened?

- ARMS:
 - Field staff only minimally adhered to HQ directions
 - “we don’t like rewarding only some interviewers”
 - “office staff were not available to contact in person”

And what happened here?

- Crops/Stocks:
 - Sending cases to field interviewers doesn't produce much improvement
 - Its hard to embed experimental procedures into operational surveys
 - No one wants to stick to “control” procedures that seem worse than current practice
 - No way to know what our treatment was being compared to
- Hard cases ARE hard!

Big lesson learned:

Hard to test in operational environments

- We need to do a better job:
 - Selling the tests,
 - Making procedures “doable”
 - Monitoring what actually happens in data collection
 - Deciding how we know if we’ve made improvements
- Future plans:
 - Consider whether to continue a focus on “hard” cases or move to those more likely to be converted
 - Bring on smaller set of test states with firmer commitment to testing
 - Work from the top and the bottom (convince field staff and HQ staff they report to)

Adaptive Design is Hard

We're trying as hard as we can already!

What's Left?

