

Technology: Further comments on the choice of tablets

Sarah Nusser

Department of Statistics

Center for Survey Statistics and Methodology

Iowa State University

Questions

- Why tablets?
- What other technologies were considered?
- Why not use the respondents' technology?
- Why focus on a device rather than an application?
- What is the impact of tablets on proxy reporting?

National Resources Inventory

- Remote sensing data collection
 - Every 5 years from 1982-1997
 - Annually 2000-2012 and forward
- Sources
 - Field visits → mylar overlays on borrowed 35 mm slides → contracted high quality aerial photos for sample segments
- Data collection tools
 - Paper forms → Newton handheld e-forms → integrated system with GIS tools for data collection and progress/quality monitoring
- Sample design
 - Simple repeated panel design → Panel observed every year + supplemental panels each year
 - Estimation changes accordingly
- Field studies: rugged handheld with GPS, iPads with GIS, GPS

Philosophical perspective

- A survey organization today must consider technology a moving target
 - We can't predict very accurately what's next
 - The leaps that are hardest to predict are paradigm shifts
 - Must constantly be working incrementally to advance systems that are used for production

Philosophical perspective

- A longitudinal survey needs a stable technology base and consistent software to support data collection
 - Leverage training that field staff and respondents receive for data collection to improve operational efficiency and data quality
 - Avoid changes in meaning of variables associated with new methods
 - Need to minimize risk of failure

How does this work?

- Develop a simple form of a system for initial production
- Evolve the system incrementally in ways that avoid issues with changing the data
- Anticipate the next change, do some research and prototyping, work out approach
- Design a study or overlap panel that can be used to evaluate and estimate any differences in old and new
- Use estimation to adjust as needed (avoid if possible)
- Full implementation of new system

Form factor

- Device choice is less about which device today vs 5 years from now, and more about whether the device will *support low burden, high data quality self-administered data collection, while containing data collection costs*

Form factor

- Key issue: need to facilitate easy entry of a multidimensional household data vector that gets entered by numerous people, whose reporting behavior varies in unpredictable ways
- Survey instrument software application will be complicated

Form factor

- Tablet form factor is far easier when the application gets complicated
 - Screen real estate
 - Ease of interacting with interface
 - Good models for creating usable software for complex applications



Why a dedicated device?

- Control over the appearance of the survey software
 - More consistency in data quality likely
- Coverage includes individuals who don't have a suitable personal device
- Lower cost
 - Simpler software and backend system
 - Simpler training for field staff
 - Cheaper support – 1 software, controlled device

Using a respondent's device

- Smart phone, or more broadly, web-based survey instrument
- Developing and supporting software for a handful of platforms (device or web browser) is expensive
 - Software must work well in each unique condition requires → complex development
 - Lack of control over device and network issues → technical support is challenging
 - Lack of control over the consistency over display of survey instrument and its usability
 - Form factor aside, this would be costly and potentially reduce data quality

Using a respondent's device

- Coverage
 - Do all members of the household have a suitable device?
 - Expect larger fraction of non-coverage relative to a dedicated device
- Smart phone
 - Application or web screen real estate is inadequate given complexity of survey instrument

Other technologies

- Scanners
 - Backend processing and quality checking would be expensive to get this to work for every situation
 - Should continue to be investigated
- Voice recognition
 - Not really considered
 - Would need to be investigated

Proxy reporting

- Design allows multiple respondents per household
- Anticipate better control of member's recording with a trained primary household respondent
- System offers a way to monitor compliance of members and provide feedback
- Fewer, but still some concerns about proxy reporting
 - Quality and cost improvements associated with a dedicated single device outweighed them
 - Warrants some investigation