Census Response to CNSTAT: Data Collection Issues

Federal Economic Statistics Advisory Committee (FESAC)

December 14, 2012



Data Collection Challenges for the Consumer Expenditure Survey

- Respondent Burden
- Proxy Reporting
- Detailed Expenditure Data
- Declining Response Rates



These Challenges Lead to Data Quality Concerns

- Underreporting of Expenditure Data
- Estimating Expenditures
- Relying on Proxy Data



Census Involvement and Support of the BLS Redesign Effort

- 2010 Measurement Study
- 2011 Records Study
- 2013 WEB Diary Test
- 2014 Individual Diary Test
- Participation in BLS/CENSUS Redesign Teams



Positioning for the Future

- Annual Sampling
- Headquarters Realignment
- Mobile Technology Initiatives
- Adaptive Survey Design



Annual Sampling

- Traditionally, samples were selected to cover the 10year redesign period
- Inflexible to changes in the population or technology
- 2010 Redesign will select annual samples
- Flexible for:
 - Adapting to changes
 - Adding new surveys



Headquarters Realignment

- Survey Director
 - Single point of contact for sponsor
 - Full authority for all survey decisions
- Team Structure
- Service Providers
- Benefits
 - Improve efficiency
 - Reduce costs
 - Improve data quality



Mobile Technology Initiative

- Incorporating mobile technology to improve operational efficiency
 - Mobile Applications Development in Support of Survey Data Collection Operations
 - Mobile Enablement of Data Dissemination
 - Mobile Architecture and Infrastructure
- Developing overall mobile strategy to guide future efforts to mobile-enable Census operations



Center for Applied Technology

- The Center for Applied Technology (CAT), a hub for technology innovation at the Census Bureau, is at the forefront of all mobile-related efforts for technology innovation at the Census Bureau
- CAT staff on Gemini Technology Team
- CAT staff participating in development of mobile application for the Individual Diary



Adaptive Survey Design

- What is the current data collection landscape?
- What is Adaptive Survey Design?
- What are the benefits?
- What is the Center for Adaptive Design?
- What is CAD's strategy?



Current Data Collection Landscape

- Collect data from respondents using:
 - Paper questionnaires through the mail
 - Internet through Centurion application
 - CATI from centralized telephone centers
 - CAPI in the field, face-to-face
- Generally move from lower-cost to higher-cost data collection modes on fixed schedule
- Stop data collection when:
 - Run out of time, or
 - Run out of money



Adaptive Survey Design

Adaptive Design is a method of managing survey and Census work to conduct data collection faster, cheaper and better. It supplants "fixed designs," which strive for the highest response rate until time or money runs out. -Dr. Peter Miller

The **Center for Adaptive Design** works to increase survey and census efficiency by researching, designing, and building tools and methods that enable the use of empirical data to facilitate intelligent business decisions prior to and during data collection. We also work to educate Census Bureau customers and stakeholders about the benefits of using these tools. -CAD Statement of Purpose



Benefits of Adaptive Design

Adaptive Design does this	to realize these benefits
Uses enhanced frame data	 To maximize contact opportunities To prioritize cases for interviewing To aid in imputation
 Collects continuous process data during data collection 	 To monitor survey efforts and costs To calculate response propensity To measure survey progress
Employs real time, automated business rules	To make case assignmentsTo direct mode switchingTo effect real time imputation and estimation
 Creates a centralized, data-driven system 	 To realize efficiencies in data collection To make knowledgeable tradeoffs between costs and errors To make better decisions on when to stop data collection efforts



Data Collection Using Adaptive Design





What is the Center for Adaptive Design?

- Organization:
 - Center Chief Michael Thieme
 - Chief Scientist Peter Miller
 - Chief Architect Anup Mather
- Representation from the following directorates:
 - Decennial
 - Demographic
 - Economic
 - Field
 - IT



Center for Adaptive Design's Strategy

Conduct Research

Through research, experimentation, and testing, prove that Adaptive Design principles can be effective at increasing survey and census efficiency and timeliness without negatively impacting quality.

• Educate and Evangelize

Using results from research and testing, demonstrate to survey sponsors and stakeholders that implementing cost–error trade-off decision rules based on empirical data updated daily can increase survey and census efficiency and timeliness without negatively impacting quality.

Design and Build

Develop a solution architecture, as well as a strategy, for operationalizing and deploying the systems that enable near-realtime cost–error trade-off decisions in data collection operations.

