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 10-year 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

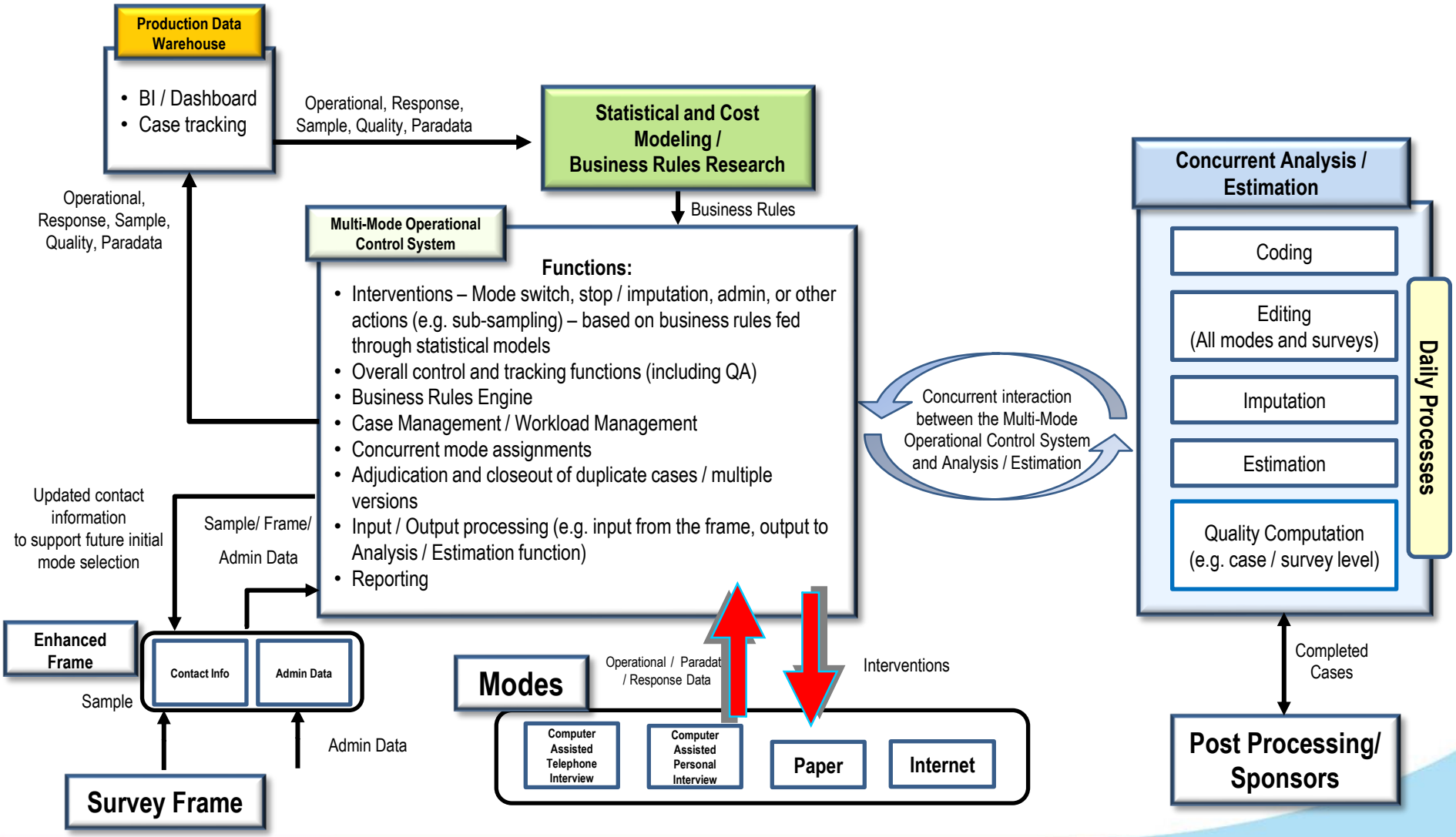
The ***Center for Adaptive Design*** *works to increase survey and census efficiency by researching, designing, and building tools and methods that enable the use of empirical data to facilitate intelligent business decisions prior to and during data collection. We also work to educate Census Bureau 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 assignments • To direct mode switching • To 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-real-time cost–error trade-off decisions in data collection operations.