

Developing and Implementing Standards for Surveys in the Federal Statistical System

Brian A. Harris-Kojetin, Ph.D.
Statistical and Science Policy
U.S. Office of Management and Budget

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The views expressed in this presentation are those of the author
and do not represent changes in OMB policy.



Overview

- The Federal Government Context
- Standards and the Role of OMB
- Development/Revision of Standards for Statistical Surveys
- Overview of OMB Standards and Guidelines
- Implementation of Standards



Overview of U.S. Federal Statistical System

- The US decentralized system includes about 100 agencies.
- A substantial portion of official statistics are produced by ten agencies.
 - account for approximately 40 percent of resources dedicated to Federal statistical work (or about \$2 billion annually).



Overview of U.S. Federal Statistical System

Chief Statistician's Office provides oversight, coordination, and guidance for Federal statistical activities.

- Identify priorities for improving programs.
- Establish statistical policies and standards.
- Evaluate statistical programs for compliance with OMB guidance.
- Review Budgets
- Approve Information Collections

44 USC 3504(e)

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Establishment and Enforcement of Standards

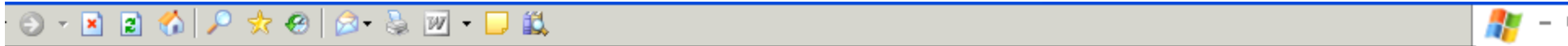
- Core standards for statistical surveys.
- Guidelines on protecting confidential information.
- Classification standards.
- Data release standards.



Standards and Guidelines for Statistical Surveys

- Revision and Update of Statistical Policy Directives 1 and 2, Standards for Statistical Surveys and Publication of Statistics
 - last updated in 1974
 - all surveys were paper & pencil
 - references to punch cards
- Issued in final in September 2006
- Available at www.whitehouse.gov/omb/
 - Go to *Information and Regulatory Affairs* and then *Statistical Programs and Standards*





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Statistical Programs and Standards

Some of the documents on this page were created as PDFs

Click [here](#) for PDF assistance

- [Statistical Programs of the United States Government](#)
- ["Strengthening Federal Statistics" from the Budget Analytical Perspectives Section 4](#)

Standards

- [Standards and Guidelines for Statistical Surveys](#)
- [Guidance on Agency Survey and Statistical Information Collections](#)
- [Statistical Confidentiality](#)
- [Statistical Policy Directive No. 3 – Compilation, Release, and Evaluation of Principal Federal Economic Indicators](#)
- [Statistical Policy Directive No. 4 – Release and Dissemination of Statistical Products Produced by Federal Statistical Agencies](#)
- [Schedule of Release Dates for Principal Federal Economic Indicators](#)
- [North American Industry Classification System \(NAICS\)/Standard Industrial Classification \(SIC\)](#)
- [Standard Occupational Classification \(SOC\)](#)
- [Metropolitan Statistical Areas](#)

Standards Development Process

- Federal Committee on Statistical Methodology (FCSM)
 - Interagency team of experts
 - Formed a subcommittee that was charged with reviewing and making recommendations to OMB on updates and revisions to standards
 - Solicited representatives from all major statistical agencies
- Subcommittee reviewed current standards as well as standards at statistical agencies
 - also some other National Statistical Institutes



Standards Development Process

- Draft Subcommittee recommendations were reviewed by FCSM
- Then reviewed by ICSP agencies
- Proposed standards submitted to OMB
- OMB issued Federal Register Notice
 - 60-day public comment period
- OMB reviewed and addressed the public comments



Standards and Guidelines for Statistical Surveys

- 20 Standards
- Supplemented with Guidelines or Best Practices
 - help agencies interpret and fulfill the goals of the Standard



Framework for Standards

- Development of Concepts, Methods, and Design
- Collection of Data
- Processing and Editing of Data
- Production of Estimates and Projections
- Data Analysis
- Review Procedures
- Dissemination of Information Products



Development of Concepts, Methods, and Design

- Survey Planning
- Survey Design
- Survey Response Rates
- Pretesting Survey Systems



Development of Concepts, Methods, and Design

Survey Design

- Agencies must develop a survey design, including defining the target population, designing the sampling plan, specifying the data collection instrument and methods, developing a realistic timetable and cost estimate, and selecting samples using generally accepted statistical methods (e.g., probabilistic methods that can provide estimates of sampling error). Any use of nonprobability sampling methods (e.g., cut-off or model-based samples) must be justified statistically and be able to measure estimation error. The size and design of the sample must reflect the level of detail needed in tabulations and other data products, and the precision required of key estimates. Documentation of each of these activities and resulting decisions must be maintained in the project files for use in documentation.



Development of Concepts, Methods, and Design

Standard 1.3 Survey Response Rates

- Agencies must design the survey to achieve the highest practical rates of response, commensurate with the importance of survey uses, respondent burden, and data collection costs, to ensure that survey results are representative of the target population so that they can be used with confidence to inform decisions. Nonresponse bias analyses must be conducted when unit or item response rates suggest the potential for bias to occur.



Survey Response Rates Guidelines

- **Guideline 1.3.3:** Prior to data collection, identify expected unit response rates at each stage of data collection, based on content, use, mode, and type of survey.
- **Guideline 1.3.4:** Plan for a nonresponse bias analysis if the expected unit response rate is below 80 percent.
- **Guideline 1.3.5:** Plan for a nonresponse bias analysis if the expected item response rate is below 70 percent for any items used in a report.



Collection of Data

- Developing Sampling Frames
- Required Notifications to Potential Survey Respondents
- Data Collection Methodology



Collection of Data

Data Collection Methodology

- Agencies must design and administer their data collection instruments and methods in a manner that achieves the best balance between maximizing data quality and controlling measurement error while minimizing respondent burden and cost.



Collection of Data

Data Collection Methodology

- **Guideline 2.3.3:** The way a data collection is designed and administered also contributes to data quality. The following issues are important to consider:
 - Given the characteristics of the target population, the objectives of the data collection, the resources available, and time constraints, determine the appropriateness of the method of data collection (e.g., mail, telephone, personal interview, Internet);
 - Collect data at the most appropriate time of year, where relevant;
 - Establish the data collection protocol to be followed by the field staff;
 - Provide training for field staff on new protocols, with refresher training on a routine, recurring cycle;
 - Establish best practice mechanisms to minimize interviewer falsification such as protocols for monitoring interviewers and reinterviewing respondents;



Collection of Data

Data Collection Methodology

- **Guideline 2.3.3:**
 - Conduct response analysis surveys or other validation studies for new data collection efforts that have not been validated;
 - Establish protocols that minimize measurement error, such as conducting response analysis surveys to ensure records exist for data elements requested for business surveys, establishing recall periods that are reasonable for demographic surveys, and developing computer systems to ensure Internet data collections function properly; and
 - Quantify nonsampling errors to the extent possible.



Processing and Editing of Data

- Data Editing
- Nonresponse Analysis and Response Rate Calculation
- Coding
- Data Protection
- Evaluation



Standards for Statistical Surveys

Standard 3.2 Nonresponse Analysis and Response Rate Calculation

- Agencies must appropriately measure, adjust for, report, and analyze unit and item nonresponse to assess their effects on data quality and to inform users. Response rates must be computed using standard formulas to measure the proportion of the eligible sample that is represented by the responding units in each study, as an indicator of potential nonresponse bias.



Nonresponse Analysis

- **Guideline 3.2.9:** Given a survey with an overall unit response rate of less than 80 percent using unit response rates as defined above, conduct an analysis of nonresponse bias with an assessment of whether the data are missing completely at random.



Nonresponse Analysis

- For a sample mean, an estimate of the bias of the sample respondent mean is given by:

$$B(\bar{y}_r) = \bar{y}_r - \bar{y}_t = \left(\frac{n_{nr}}{n} \right) (\bar{y}_r - \bar{y}_{nr})$$

Where:

- \bar{y}_t = the mean based on all sample cases;
- \bar{y}_r = the mean based only on respondent cases;
- \bar{y}_{nr} = the mean based only on the nonrespondent cases;
- n = the number of cases in the sample;
- n_{nr} = the number of nonrespondent cases.



Nonresponse Analysis

- For a multistage (or wave) survey, focus the nonresponse bias analysis on each stage, with particular attention to the “problem” stages.
- A variety of methods can be used to examine nonresponse bias, for example, make comparisons between respondents and nonrespondents across subgroups using available sample frame variables.
- Comparison of the respondents to known characteristics of the population from an external source can provide an indication of possible bias, especially if the characteristics in question are related to the survey’s key variables.



Processing and Editing of Data

Evaluation

- Agencies must evaluate the quality of the data and make the evaluation public (through technical notes and documentation included in reports of results or through a separate report) to allow users to interpret results of analyses, and to help designers of recurring surveys focus improvement efforts.



Processing and Editing of Data

Evaluation

- **Guideline 3.5.1:** Include an evaluation component in the survey plan that evaluates survey procedures, results, and measurement error (see Section 1.1). Review past surveys similar to the one being planned to determine likely sources of error, appropriate evaluation methods, and problems that are likely to be encountered. Address the following areas:
 - **Potential sources of error, including**
 - Coverage error (including frame errors);
 - Nonresponse error; and
 - Measurement error, including sources from the instrument, interviewers, and collection process;
 - Data processing error (e.g., keying, coding, editing, and imputation error);



Processing and Editing of Data

Evaluation

- **Guideline 3.5.1:**
 - How sampling and nonsampling error will be measured, including variance estimation and studies to isolate error components;
 - How total mean square error will be assessed;
 - Methods used to reduce nonsampling error in the collected data;
 - Methods used to mitigate nonsampling error after collection;
 - Post-collection analyses of the quality of final estimates (include a comparison of the data and estimates derived from the survey to other independent collections of similar data, if available); and
 - Make evaluation studies public to inform data users.



Review Procedures

Review of Information Products

- Agencies are responsible for the quality of information that they disseminate and must institute appropriate content/subject matter, statistical, and methodological review procedures to comply with OMB and agency Information Quality Guidelines.



Dissemination of Information Products

- Releasing Information
- Data Protection and Disclosure Avoidance for Dissemination
- Survey Documentation
- Documentation and Release of Public-Use Microdata



Dissemination of Information Products

Survey Documentation

- Agencies must produce survey documentation that includes those materials necessary to understand how to properly analyze data from each survey, as well as the information necessary to replicate and evaluate each survey's results (See also Standard 1.2). Survey documentation must be readily accessible to users, unless it is necessary to restrict access to protect confidentiality.



Implementation of Standards

- Application of standards requires judgment balancing use of the information and resources
- Agencies need to provide sufficient information in their Information Collection Requests to OMB to demonstrate whether they are meeting the standards.
 - uses of the information will be considered
 - agency should provide reasons why a standards could not be met and actions taken to address potential issues



OMB must review and approve all Federal Information Collections

- **Statutory Requirement:** Paperwork Reduction Act, 1995 (Public Law 104-13)
- **Purpose:** To improve the quality and practical utility of information required by the Federal government, and reduce reporting burden on the public.
- OMB reviews agency requests to collect information to ensure that activities minimize burden, have practical utility, reduce duplication, and meet a specific agency need



What is covered?

All Collections of Information

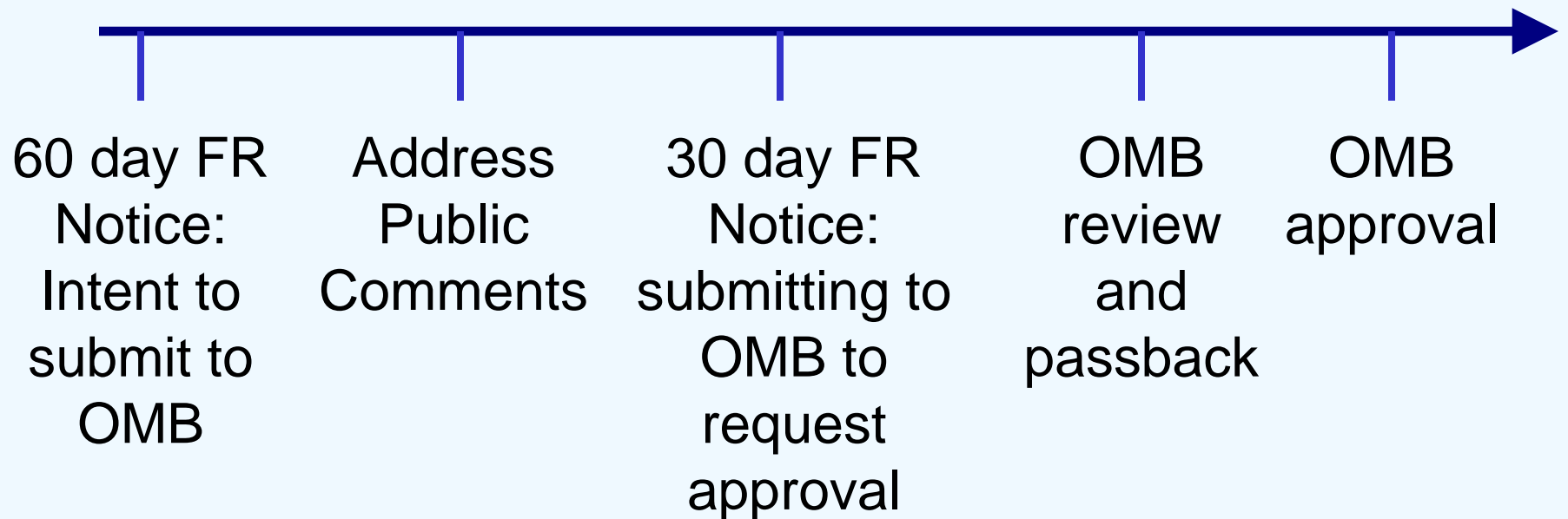
- Any action by a Federal agency that obtains, causes obtainment, solicits, or requires disclosure to third parties or the public, of facts or opinions by or for an agency calling for answers to identical questions posed to, or identical reporting or recordkeeping requirements imposed on, ten or more persons.

This includes

- All Surveys; voluntary or mandatory
- All Government forms
- Information collected by contractors or under cooperative agreements
 - Grants are typically not included



The PRA Process



What information should be submitted to OMB?

- Supporting Statement
 - Part A: Justification
 - Part B: Statistical Methods
- Data Collection Instruments
- Any letters, brochures or other materials provided to respondents
- Public Comments and Agency Response



Implementation of Standards

- OMB review occurs prior to collection
 - OMB does not approve information products prior to dissemination
 - However, agencies can only receive approval to **collect** information for up to three years
- Other mechanisms
 - Information Quality Guidelines
 - Peer Review Bulletin



For Further Information

- Standards and Guidelines for Statistical Surveys available at:
 - www.whitehouse.gov/omb
 - Go to “Statistical Programs and Standards”
- Federal Committee on Statistical Methodology
 - www.fcsm.gov
 - See working paper #31: *Measuring and Reporting Sources of Error in Surveys*
- Contact Brian Harris-Kojetin at
 - bharrisk@omb.eop.gov

