

## **Revision and Implementation of Standards for Statistical Surveys for the U.S. Federal Statistical System**

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The United States has what is frequently referred to as a “decentralized” statistical system with a total of some 80 agencies spread across every ministry of government; however, a substantial portion of our official statistics is produced by ten agencies that have statistical work as their principal mission, such as the Census Bureau and Bureau of Labor Statistics. The primary role of the Statistical and Science Policy staff in the Office of Management and Budget (OMB) is to provide oversight, coordination, and guidance for Federal statistical activities. Statistical policy staff members ensure the quality, integrity, and accessibility of Federal Government statistical methodologies, activities, and products through the issuance of government-wide policies, guidelines, standards, and classifications that are developed in collaboration with the Federal statistical agencies.

A key tool for monitoring and enforcing the government-wide use of the standards and classifications is the information collection review process. Under the Paperwork Reduction Act, all information that will be collected from 10 or more members of the public, whether from individuals, households, establishments, institutions, or other levels of government, must be approved by OMB. Surveys and other data collections are reviewed to ensure that they conform to the proper statistical methodology, standards, and practices.

This paper will focus on the recent revision and implementation of OMB’s Standards and Guidelines for Statistical Surveys. These core standards had not been updated or revised in over three decades, and a comprehensive review and revision occurred over several years, with the revised standards issued in fall 2006. The process of revising the standards as well as ongoing implementation activities and issues are described.

*Key words: statistical standards*

### **1. Overview of the U.S. Federal Statistical System**

The United States, with a total population of over 308 million people,<sup>3</sup> has what is frequently referred to as a “decentralized” statistical system. While we are a country of 50 states and some 87,000 units of local government, we want to be clear that our use of the word “decentralized” in describing our system generally refers to horizontal sharing of responsibilities across ministries at the Federal, or national level, rather than vertical sharing of data production with state and local governments. (We do of course work with

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<sup>3</sup> As of December 1, 2009.

these other governmental levels, and they are in some cases part of the formal system that produces our official statistics – for example, in Agriculture, Labor, and Education.)

Our decentralized system includes a total of some 80 agencies spread across every department (or ministry) of government. A substantial portion of our official statistics is produced by ten agencies that have statistical work as their principal mission – we refer here to agencies that may be familiar to you, including our Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics, along with our National Centers for Education and Health Statistics, our National Agricultural Statistics Service and Economic Research Service, our Bureaus of Justice and Transportation Statistics, and our Energy Information Administration. The heads of some of these agencies are appointed by the President with Senate confirmation (some with fixed, some without fixed, terms), while others are career civil servants. These agencies operate on the basis of separate statutes that authorize, or in some cases require, the departments to collect and publish statistical data on particular subjects. Approximately 40 percent of resources dedicated to statistical work in the United States (or about \$2.7 billion annually) are expended by these principal statistical agencies. The remaining work is carried out by some 70 agencies that conduct statistical activities in conjunction with another program mission, such as providing services (for example, medical care benefits for the elderly and the poor) or enforcing regulations (for example, with respect to the environment, transportation, or occupational safety).

### **1.1 Role of the Office and Management and Budget and Chief Statistician**

With our decentralized system, we have had for more than 70 years a Chief Statistician located in the Executive Office of the President – who has a number of key statistical policy and coordination responsibilities. The Office of Management and Budget (OMB) in the Executive Office of the President has the statutory authority and responsibility for coordinating the policies, standards, budgets, and activities of the decentralized Federal statistical system. These statutory authorities currently derive from the Paperwork Reduction Act of 1995, the Budget and Accounting Procedures Act of 1950, and Executive Orders as described below. (In accordance with previous laws, as well as Executive Orders, these functions essentially have resided in OMB since the late 1930's.)

- ! Sec. 3504(e) of the Paperwork Reduction Act of 1995 (44 U.S.C. 3504) assigns to the Director of OMB nine "statistical policy and coordination" functions. These are to:

- “(1) coordinate the activities of the Federal statistical system to ensure --
  - “(A) the efficiency and effectiveness of the system; and
  - “(B) the integrity, objectivity, impartiality, utility, and confidentiality of information collected for statistical purposes;
- “(2) ensure that budget proposals of agencies are consistent with system-wide priorities for maintaining and improving the quality of Federal statistics and prepare an annual report on statistical program funding;
- “(3) develop and oversee the implementation of Government-wide policies, principles, standards, and guidelines concerning --

- “(A) statistical collection procedures and methods;
- “(B) statistical data classification;
- “(C) statistical information presentation and dissemination;
- “(D) timely release of statistical data; and
- “(E) such statistical data sources as may be required for the administration of Federal programs;
- “(4) evaluate statistical program performance and agency compliance with Government-wide policies, principles, standards and guidelines;
- “(5) promote the sharing of information collected for statistical purposes consistent with privacy rights and confidentiality pledges;
- “(6) coordinate the participation of the United States in international statistical activities, including the development of comparable statistics;
- “(7) appoint a chief statistician who is a trained and experienced professional statistician to carry out the functions described under this subsection;
- “(8) establish an Interagency Council on Statistical Policy to advise and assist the Director in carrying out the functions under this subsection that shall --
  - “(A) be headed by the chief statistician; and
  - “(B) consist of -
    - “(i) the heads of the major statistical programs; and
    - “(ii) representatives of other statistical agencies under rotating membership; and
- “(9) provide opportunities for training in statistical policy functions to employees of the Federal Government under which --
  - “(A) each trainee shall be selected at the discretion of the Director based on agency requests and shall serve under the chief statistician for at least 6 months and not more than 1 year; and
  - “(B) all costs of the training shall be paid by the agency requesting training.

! Section 103 of the Budget and Accounting Procedures Act of 1950 (31 U.S.C. 1104(d)) directs the President to develop programs and prescribe regulations to improve the compilation, analysis, publication, and dissemination of statistical information by executive agencies. Executive Order No. 10253, as amended, delegates these functions to the Director of OMB, to be redelegated to the Administrator of the Office of Information and Regulatory Affairs.

! Executive Order No. 10033 of February 6, 1949, as amended, assigns the Director of OMB responsibility for determining, with the concurrence of the Secretary of State, what statistical information shall be provided in response to official requests received by the United States Government from any international organization of which the United States is a member, and what agency is to provide the information.

It is important to note that these authorities initially were established administratively in the late 1930's, and were subsequently mandated in legislation dating essentially from the 1940's. In addition, government-wide protections for the confidentiality of data collected

for statistical purposes were set forth in the *Confidential Information Protection and Statistical Efficiency Act of 2002*.

In light of our highly decentralized system, the U.S. has essentially had a “culture of collaboration” among the statistical agencies for many decades. The primary role of the Office of Information and Regulatory Affairs= Statistical and Science Policy staff is to provide oversight, coordination, and guidance for Federal statistical activities. Staff members identify priorities for improving Federal statistical programs, establish government-wide statistical policies and standards, and evaluate statistical programs for compliance with OMB guidance.

## **1.2 Key Tools for Coordination and Collaboration**

Of course, the Chief Statistician has certain tools to enhance coordination, collaboration, and comparability. In particular, locating the statistical policy coordination function in OMB means that the Chief Statistician is directly involved in the budget development, legislative review, and information collection review processes. The statistical policy office formulates long range plans to improve the performance of Federal statistical programs so that robust measures are available for use by public and private decision makers. While we tend to consider resources for statistical activities within the context of the responsibilities of the individual departments (ministries) – we do not have an overall “statistics budget” – we do have the opportunity to recommend funding levels, for each area of statistical activity, and to advocate for improvements that may cut across agency boundaries (e.g., components of GDP produced by various agencies across the system).

Statistical policy staff members ensure the quality, integrity, and accessibility of Federal Government statistical methodologies, activities, and products through the issuance of government-wide policies, guidelines, standards, and classifications that are developed in collaboration with the Federal statistical agencies.

Standards are of various types: **core** standards and guidelines for statistical surveys; **guidelines** on protection of confidential statistical information; **classification** standards, such as industry and occupational classifications; and **data release standards**, e.g., most notably, standards governing release of principal economic indicators and strict rules that reinforce separation of data release by statistical agencies from policy interpretation of the information.

A key tool for monitoring and enforcing the government-wide use of the standards and classifications is the information collection review process. Under the Paperwork Reduction Act (PRA), all information that will be collected from ten or more members of the public, whether from individuals, households, establishments, educational institutions, organizations, or other levels of government, must be approved by OMB. Surveys and other data collections are reviewed to ensure that they conform to the proper statistical methodology, standards, and practices. This review is not limited to surveys, or to “statistical” agency data collections; rather, the reviews extend to all collections of data, whether they originate for statistical, administrative or regulatory uses.

All departments must submit **all** proposed information collections to OMB (about 8000 are currently active). All collections are subject to public comment as part of this process. Furthermore, collections are approved for a maximum of three years, and must be approved again if the department plans to continue use. The approval process provides the mechanism to ensure that statistical methods are appropriate to intended uses, to monitor use of classification standards, to coordinate collections carried out by various departments, to prevent duplicative requests, and to reduce respondent burden.

The PRA also provides us with the authority to designate a central collection agency to obtain information needed by two or more agencies, and to direct an agency to make the information it collects available to another agency.

## **2. Revision and Update of the Standards and Guidelines for Statistical Surveys**

OMB updates and revises standards on different schedules. Some classification standards are updated on a routine basis to correspond with the decennial census of the population or the quinquennial economic and agricultural censuses. For example, standards for Metropolitan Statistical Areas and the Standard Occupational Classification are updated every ten years, prior to each decennial census, while the North American Industry Classification System is updated every five years for use in the economic census. Other standards may be updated on a more ad hoc schedule as needs arise.

In the case of the standards and guidelines for statistical surveys, these were last revised in 1974 when they were issued as OMB Circular No. A-46, Exhibits A and B. They were reissued (without any changes) in 1978 as Statistical Policy Directives 1 and 2 on Standards for Statistical Surveys, and Standards for Publishing Statistics, respectively, when the statistical policy function was temporarily relocated to the Department of Commerce, and their designation as Statistical Policy Directives remained when the statistical policy function was returned to OMB in 1981 under the Paperwork Reduction Act of 1980.

Clearly much has changed since 1974 in how statistical surveys are conducted. At that time, all surveys were paper and pencil. These standards actually made references to interviewers printing clearly, as well as to punch cards.

The revised Standards and Guidelines for Statistical Surveys provide guidance for designing, conducting, and disseminating statistical surveys and studies sponsored by Federal agencies. The standards and guidelines are intended to ensure that such surveys and studies are designed to produce reliable data as efficiently as possible and that methods are documented and results presented in a manner that makes the data as accessible and useful as possible.

### **2.1 Review and Updating of Existing Standards**

As part of ongoing efforts to improve the quality of information collected by the Federal Government and to update statistical standards and guidance, OMB requested in 2003

that agencies who were members of the Interagency Council on Statistical Policy (ICSP) nominate representatives to a new subcommittee formed under the aegis of the Federal Committee on Statistical Methodology (FCSM). This subcommittee was asked to review Statistical Policy Directives Nos. 1 and 2 and to make recommendations for updating or revising these standards to reflect current best practices in Federal statistical agencies.

The subcommittee was chaired by a senior statistician from the Census Bureau, who was a member of the FCSM. Other subcommittee members were experts from different agencies with extensive experience in establishment and/or household surveys.

The subcommittee reviewed the existing OMB directives, standards currently used by Federal statistical agencies, and standards and guidelines produced and disseminated by national statistical institutes in a number of other countries.

## **2.2 Framework for the Standards**

One of the first decisions the subcommittee made was to use the same common organizational framework that the principal statistical agencies had recently developed for their activities in response to OMB's issuance of its Information Quality Guidelines. More specifically, in 2002, OMB, in response to Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554), popularly known as the Information Quality Act, issued government-wide guidelines that "provide policy and procedural guidance to Federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information (including statistical information) disseminated by Federal agencies" (67 FR 8452-8460; February 22, 2002).

An interagency committee consisting of representatives of the principal Federal statistical agencies worked together for a year to draft a common framework to use in developing their individual Information Quality Guidelines. That framework was published in the June 4, 2002, *Federal Register* Notice, "Federal Statistical Organizations' Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Disseminated Information" (67 FR 38467-38470),

This framework, which was adapted for the standards and guidelines for statistical surveys, includes:<sup>4</sup>

- Development of concepts, methods, and design
- Collection of data
- Processing and editing of data
- Production of estimates and projections

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<sup>4</sup> The *Federal Register* notice included eight areas where statistical organizations set standards for performance. The framework utilized here combines "Development of concepts and methods" with "Planning and design of surveys and other means of collecting data" into the single section on "Development of concepts, methods, and design." Because the standards for these activities were closely linked, attempting to separate them into two distinct sections would have resulted in some duplication of standards between sections. The only other change is the title of Section 7, which was shortened to "Dissemination of Information Products" for convenience rather than "Dissemination of data by published reports, electronic files, and other media requested by users" as it originally appeared in the *Federal Register* notice.

- Data analysis
- Review procedures
- Dissemination of Information Products.

Within this framework, the subcommittee developed 20 standards and related guidelines for Federal statistical surveys focused on ensuring high quality statistical surveys; the standards address all key aspects of planning, conducting, processing, and disseminating Federal statistical surveys. Following these standards will result in information products satisfying an agency's and OMB's Information Quality Guidelines' requirements for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by the Federal Government.

### **2.3 Standards versus Guidelines**

Each standard was the product of a careful and deliberate process of drafting and discussion and revision until general consensus was reached within the subcommittee. Standards were drafted to reflect broader principles and were considered to be necessary to be followed by all agencies. For each standard a number of guidelines were also written to reflect best practices by statistical agencies and to provide information on how agencies should implement the standard.

Because OMB standards and guidelines must cover a broad range of applications, agencies are encouraged to develop their own more specific standards for the statistical surveys and studies they conduct or sponsor.

### **2.4 Review Process for Proposed Standards and Guidelines**

The subcommittee provided initial draft standards and guidelines for review by the FCSM and then by the ICSP in 2004. The subcommittee addressed the comments it received at each stage and provided its recommendations to OMB in 2005.

OMB reviewed and issued the proposed standards and guidelines for public comment in July 2005 (70 FR 40746-40747). Six public comments were received in response to OMB's request. OMB reviewed the standards and guidelines and made some modifications in response to the public comments. The final standards and guidelines, the public comments, and OMB's summary of and response to the public comments are available on the OMB website at <http://www.whitehouse.gov/omb/inforeg/statpolicy.html>.

## **3. Standards and Guidelines for Statistical Surveys**

For purposes of the present paper, we will provide a few examples from the Standards and Guidelines for Statistical Surveys to illustrate how they are structured and highlight a few areas. The complete set of standards is provided in the appendix, and the full document with all the standards and guidelines is available on our website: [http://www.whitehouse.gov/omb/inforeg\\_statpolicy/](http://www.whitehouse.gov/omb/inforeg_statpolicy/).

Our standards and guidelines associated with survey nonresponse have received the greatest amount of attention from the agencies, partly because gaining respondent cooperation is becoming ever more expensive and difficult, and partly because of the new requirements to focus on potential bias due to nonresponse. The standards and some of the guidelines for survey response rates are shown below.

### **Survey Response Rates**

**Standard 1.3:** 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 or other factors suggest the potential for bias to occur.

- **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.

Although meta-analyses by Groves (2006) have shown that response rates are not very good indicators for the presence of nonresponse bias, we wanted to convey to agencies that the expectation is still that they will (and often do) attain high response rates for their surveys. However, they should consider the response rate as an indicator of potential risk for nonresponse bias and, at a minimum, plan to investigate potential bias if their unit response rates drop below 80 percent.

The standards are in the section on development because it is key that the agency make adequate plans in advance for conducting these analyses in order to ensure that necessary data will be available. We have a parallel set of standards and guidelines in the section on data collection that call for nonresponse bias analyses if the achieved response rates are below 80 percent.

More generally, the standards are structured as principles, with the guidelines providing more details that illustrate best practices and help agencies interpret how to implement the standard. This can be seen clearly in one of the standards and an associated guideline for data collection shown below.

### **Data Collection Methodology**

**Standard 2.3:** 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.



- **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;
  - 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.

One other area that has evolved considerably since the standards were last revised in 1974 is the influence of cognitive psychology on the development and pretesting of surveys. A standard now specifically addresses this:

#### **Pretesting Survey Systems**

**Standard 1.4:** Agencies must ensure that all components of a survey function as intended when implemented in the full-scale survey and that measurement error is controlled by conducting a pretest of the survey components or by having successfully fielded the survey components on a previous occasion.

As a final illustration, another key standard relates to evaluation of the quality of the information that is obtained and transparency of that evaluation.

#### **Evaluation**

**Standard 3.5:** 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.

- **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);
- 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.

### **3.1 Relation of these Standards to Agency Standards and Research Literature**

It is important to note that the standards and guidelines are not designed to be completely exhaustive of all efforts that an agency may undertake to ensure the quality of its statistical information. Agencies are encouraged to develop additional, more detailed standards focused on their specific statistical activities.

Although the standards and guidelines were intended to cover the entire lifecycle of a survey, they are not intended to substitute for the extensive existing literature on statistical and survey theory, methods, and operations. Additional information relevant to the standards can be found in other more specialized publications, and references to other Federal guidance documents or resources and the work of the Federal Committee on Statistical Methodology.

## **4. Implementation of the Standards**

The application of standards to the wide range of U.S. Federal statistical activities and uses requires judgment that balances such factors as the uses of the resulting information and the efficient allocation of resources; this should not be a mechanical process. Some surveys are extremely large undertakings requiring millions of dollars, and the resulting general-purpose statistics have significant, far-reaching effects. (Examples of major Federal information programs, many based on statistical surveys, are the Principal Federal Economic Indicators.<sup>5</sup>) Other statistical activities may be more limited and

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<sup>5</sup> For the list of principal economic indicators and their release dates see <http://www.whitehouse.gov/omb/inforeg/statpolicy.html#sr>

focused on specific program areas (e.g., customer satisfaction surveys, program evaluations, or research).

#### **4.1 Agency Responsibilities**

For each statistical survey in existence when these standards were issued and for each new survey, the sponsoring and/or releasing agency should evaluate compliance with applicable standards. The agency should establish compliance goals for applicable standards if a survey is not in compliance. An agency should use major survey revisions or other significant survey events as opportunities to address areas in which a survey is not in compliance with applicable standards.

Federal agencies are required to adhere to all standards for every statistical survey, even those that have already received OMB approval. Agencies should provide sufficient information in their Information Collection Requests (ICR) to OMB under the Paperwork Reduction Act to demonstrate whether they are meeting the standards. OMB recognizes that these standards cannot be applied uniformly or precisely in every situation. Consideration will be given to the importance of the uses of the information as well as the quality required to support those uses. If funding or other contingencies make it infeasible for all standards to be met, agencies should discuss in their ICR submissions the options that were considered and why the final design was selected.

The agency should also include in the standard documentation for the survey, or in an easily accessible public venue, such as on its web site, the reasons why the standard could not be met and what actions the agency has taken or will take to address any resulting issues.<sup>6</sup>

#### **4.2 OMB Review**

As noted earlier, OMB's primary means to enforce the standards is through its review and approval of all agency information collections. Agencies must obtain OMB approval prior to initiating data collection for any new surveys. Approval is given for a maximum of three years. Thus, for ongoing surveys, agencies are required to resubmit their surveys to OMB for review every three years.

#### **4.3 Next Steps**

In their Information Collection Requests to OMB, agencies submit supporting statements that provide answers to standardized questions about the purpose of the collection, the response burden, confidentiality, and statistical design. However, the current questions on statistical methodology and design are rather general and were not crafted with the standards in mind.

The FCSM subcommittee that drafted the standards and guidelines also proposed some new questions to better elicit sufficient information to assess whether the standards were being met. OMB has not yet implemented or fully vetted those questions but will likely do so in the future. If and when the PRA is reauthorized, it may make sense to

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<sup>6</sup> In cases where the agency determines that ongoing surveys are not in compliance with the standards, the documentation should be updated at the earliest possible time.

incorporate changes to the supporting statement questions with other changes in the implementing regulations that may flow from any updates or alterations to the law.

## **References**

Groves, R. M. (2006). Nonresponse Rates and Nonresponse Bias in Household Surveys. *Public Opinion Quarterly*, Vol. 70, No. 5, pp. 646–675.

## **Exhibit 1. List of Topics of the Standards For Statistical Surveys**

### **SECTION 1 DEVELOPMENT OF CONCEPTS, METHODS, AND DESIGN**

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

### **SECTION 2 COLLECTION OF DATA**

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

### **SECTION 3 PROCESSING AND EDITING OF DATA**

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

### **SECTION 4 PRODUCTION OF ESTIMATES AND PROJECTIONS**

- Developing Estimates and Projections

### **SECTION 5 DATA ANALYSIS**

- Analysis and Report Planning
- Inference and Comparisons

### **SECTION 6 REVIEW PROCEDURES**

- Review of Information Products

### **SECTION 7 DISSEMINATION OF INFORMATION PRODUCTS**

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

## **Appendix. STANDARDS FOR STATISTICAL SURVEYS**

### **SECTION 1 DEVELOPMENT OF CONCEPTS, METHODS, AND DESIGN**

#### **Survey Planning**

**Standard 1.1:** Agencies initiating a new survey or major revision of an existing survey must develop a written plan that sets forth a justification, including: goals and objectives; potential users; the decisions the survey is designed to inform; key survey estimates; the precision required of the estimates (e.g., the size of differences that need to be detected); the tabulations and analytic results that will inform decisions and other uses; related and previous surveys; steps taken to prevent unnecessary duplication with other sources of information; when and how frequently users need the data; and the level of detail needed in tabulations, confidential microdata, and public-use data files.

#### **Survey Design**

**Standard 1.2:** 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 (see Standards 7.3 and 7.4).

#### **Survey Response Rates**

**Standard 1.3:** 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 or other factors suggest the potential for bias to occur.

#### **Pretesting Survey Systems**

**Standard 1.4:** Agencies must ensure that all components of a survey function as intended when implemented in the full-scale survey and that measurement error is controlled by conducting a pretest of the survey components or by having successfully fielded the survey components on a previous occasion.

### **SECTION 2 COLLECTION OF DATA**

#### **Developing Sampling Frames**

**Standard 2.1:** Agencies must ensure that the frames for the planned sample survey or census are appropriate for the study design and are evaluated against the target population for quality.

### **Required Notifications to Potential Survey Respondents**

**Standard 2.2:** Agencies must ensure that each collection of information instrument clearly states the reasons the information is planned to be collected; the way such information is planned to be used to further the proper performance of the functions of the agency; whether responses to the collection of information are voluntary or mandatory (citing authority); the nature and extent of confidentiality to be provided, if any, citing authority; an estimate of the average respondent burden together with a request that the public direct to the agency any comments concerning the accuracy of this burden estimate and any suggestions for reducing this burden; the OMB control number; and a statement that an agency may not conduct and a person is not required to respond to an information collection request unless it displays a currently valid OMB control number.

### **Data Collection Methodology**

**Standard 2.3:** 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.

## **SECTION 3 PROCESSING AND EDITING OF DATA**

### **Data Editing**

**Standard 3.1:** Agencies must edit data appropriately, based on available information, to mitigate or correct detectable errors.

### **Nonresponse Analysis and Response Rate Calculation**

**Standard 3.2:** 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.

### **Coding**

**Standard 3.3:** Agencies must add codes to collected data to identify aspects of data quality from the collection (e.g., missing data) in order to allow users to appropriately analyze the data. Codes added to convert information collected as text into a form that permits immediate analysis must use standardized codes, when available, to enhance comparability.

### **Data Protection**

**Standard 3.4:** Agencies must implement safeguards throughout the production process to ensure that survey data are handled to avoid disclosure.

### **Evaluation**

**Standard 3.5:** 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.

## **SECTION 4 PRODUCTION OF ESTIMATES AND PROJECTIONS**

### **Developing Estimates and Projections**

**Standard 4.1:** Agencies must use accepted theory and methods when deriving direct survey-based estimates, as well as model-based estimates and projections that use survey data. Error estimates must be calculated and disseminated to support assessment of the appropriateness of the uses of the estimates or projections. Agencies must plan and implement evaluations to assess the quality of the estimates and projections.

## **SECTION 5 DATA ANALYSIS**

### **Analysis and Report Planning**

**Standard 5.1:** Agencies must develop a plan for the analysis of survey data prior to the start of a specific analysis to ensure that statistical tests are used appropriately and that adequate resources are available to complete the analysis.

### **Inference and Comparisons**

**Standard 5.2:** Agencies must base statements of comparisons and other statistical conclusions derived from survey data on acceptable statistical practice.

## **SECTION 6 REVIEW PROCEDURES**

### **Review of Information Products**

**Standard 6.1:** 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.

## **SECTION 7 DISSEMINATION OF INFORMATION PRODUCTS**

### **Releasing Information**

**Standard 7.1:** Agencies must release information intended for the general public according to a dissemination plan that provides for equivalent, timely access to all users and provides information to the public about the agencies' dissemination policies and procedures including those related to any planned or unanticipated data revisions.

### **Data Protection and Disclosure Avoidance for Dissemination**

**Standard 7.2:** When releasing information products, agencies must ensure strict compliance with any confidentiality pledge to the respondents and all applicable Federal legislation and regulations.

**Survey Documentation**

**Standard 7.3:** 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.

**Documentation and Release of Public-Use Microdata**

**Standard 7.4:** Agencies that release microdata to the public must include documentation clearly describing how the information is constructed and provide the metadata necessary for users to access and manipulate the data (See also Standard 1.2). Public-use microdata documentation and metadata must be readily accessible to users.