Integrity, Independence, and Innovation: The Future of NCES

REPORT BY A NATIONAL INSTITUTE OF STATISTICAL SCIENCES TECHNICAL EXPERT PANEL

20 DECEMBER 2016

CONTENTS

PREFACE

The National Center for Education Statistics (NCES) charged this Expert Panel to review NCES progress and changes over the decades since the National Academy of Sciences (NAS) issued its report on NCES, "Creating a center for education statistics: A time for action," in 1986, and to consider challenges and priorities for the future.

The National Institute of Statistical Sciences (NISS) assembled a panel consisting of academic, government, and private-sector experts from the fields of statistics and of education. Panelists were chosen because of their experience as both users and providers of education data, and their understanding of federal statistical operations, purposes, policies, and constraints.

The Expert Panel drew on materials assembled from public sources, including federal directives, NCES documentation, presentations by NCES administrators and senior staff, and summaries of interviews NISS conducted with NCES personnel from the level of team leader to Commissioner.

With these materials in hand, the Expert Panel convened via teleconference to create an agenda and list of specific queries for NCES to address during a two-day meeting in December 2015. Acting Commissioner Peggy Carr and her staff presented responses to the specific queries, and discussions followed of the issues identified by Dr. Carr and the Expert Panel.

Additional materials were prepared by NCES to address further questions raised by the Expert Panel. The Expert Panel's report was drafted, reviewed, and revised following further panel teleconferences. The draft report was presented to Acting Commissioner Carr in a two-day meeting in May 2016. Final revision incorporated clarifications and additions from the May meeting.

This report is divided into two parts: the first outlines the context within which NCES functions today; the second looks to the future and presents foci for attention as NCES moves forward. Footnotes indicate where the content of this report aligns with specific federal

SUMMARY

The NCES has progressed since the NAS report, advancing well beyond the challenges articulated in that report. However, we are in a time of rapid technological change, and every facet of education is evolving. NCES needs to remain current in documenting *what* is being taught/learned, *how* it is being learned, *how* it is being assessed, *what* are the obstacles, *who* is being educated, *where* education is taking place, *how* it is being administered and delivered, and *what* its impact is on students and on society as a whole. At this time, NCES is in a position to examine what is important and at the core of its future mission; which of its activities should be retained, streamlined, or expanded; and which activities should be suspended as being less relevant for the future.

“NCES needs to remain current in documenting what is being taught/learned, how it is being learned, how it is being assessed, what are the obstacles, who is being educated, where education is taking place, how it is being administered and delivered, and what its impact is on students and on society as a whole.

For NCES to move forward and attain these goals, five areas need particular attention:

1. An articulated vision of NCES's role in the national conversation on education and education policy, and an agile decision process to enable the Center to adapt to the rapid evolution in education.
2. Expanded dialogues with NCES constituencies and education policy and technical experts.
3. The need to assure professional independence, which is crucial for a federal statistical agency.
4. Innovation and forward thinking in data acquisition, dissemination, and publication to meet the needs of diverse NCES customers, including policymakers and public- and private-sector data users.
5. Attracting and retaining high-quality staff with an appropriate range and balance of skill sets. Staff should have professional expectations and opportunities to ensure the scientific stature and credibility of NCES.

These areas are described in depth in the sections that follow.

OVERVIEW

Mission and Purpose

According to its Mission Statement:

The National Center for Education Statistics (NCES) is the primary federal entity for collecting and analyzing data related to education in the United States and other nations. It provides statistical services for educators and education officials at the federal, State, and local levels; Congress; researchers; students; parents; and the media and the general public. . . The mission of NCES is to collect, analyze, report, and disseminate education information and statistics . . .[1]

The rationale behind NCES is at least as cogent in 2016 as when the Mission Statement first was written. Evidence-based decision-making demands high-quality data that are free of bias, and often requires data that are gathered in a consistent way over time. Many contemporaneous decisions are national or international in scale, necessitating comparability of data across states or countries. High-quality, large-scale education data requires the collaboration of professionals in education, statistics, survey methodology, psychometrics, and information technology.

[1] http://www.ed.gov/open/plan/nces

Brief History

In 1986 the report of the National Academy of Sciences[2] (NAS) critiqued NCES and challenged the agency to become more timely, accurate, efficient, and relevant. Since that time, NCES has responded to those charges and emerged as a federal statistical agency respected for the quality of its data.

As evidenced in presentations, reports, and personal interviews, NCES sees itself in the forefront of innovations in application of computer technology and in statistical survey design and analysis. The agency is taking advantage of linkages with other federal agencies to field new surveys and studies, and to integrate administrative information across databases. Specific examples include use of adaptive sampling to combat declining response rates, partnering to conduct the survey on crime in public schools, working to incorporate administrative data, and making NCES summary data available in formats suited to mobile devices.

Following the focus of the 1986 NAS report on accuracy of information, NCES has developed a comprehensive, if time-consuming, approach to ensuring (and monitoring) the quality of their data products.

Timeliness is a continuing challenge. NCES has made serious improvements. For "First Look" data, for example, the time from data acquisition in the field to publication has been reduced from 18 months to 6 to 12 months, depending on the survey or assessment. For half of NCES surveys, detailed data are available within another month. Data processing has been speeded up by the conversion from paper to computer-based data acquisition.

Efficiency has been addressed in multiple ways. Computer-based data capture has streamlined the process of building the database for each study, survey, or assessment. Data summary tools for users of data have been developed for the computing cloud, reducing the need for special summaries to be prepared by NCES staff upon request. Barriers between NAEP and other NCES staff have been removed, resulting in increased efficiency, transfer of NAEP methods work to other NCES projects, and improvement in the staff environment. Staff with similar work foci can now share ideas and skills, and provide common solutions to problems encountered in multiple settings.

[2]Levine, D.B. (Ed.). (1986). Creating a center for education statistics: A time for action. Washington, DC: National Academy Press.

Current Context

The world is changing rapidly, and the need for clear, accurate, comparable, unbiased, and relevant data on education is growing in importance. NCES has the mandate, expertise, and authority to assemble and disseminate these data for use in decision-making at every level, from local to federal. The clientele for NCES data, once largely limited to specialized governmental agencies and academia, has expanded to include educators, administrators, and education policymakers at all levels across the country. For each of these groups, "relevance" has a different meaning depending on their goals; and for each group, the questions of interest change over time.

NCES is not immune from major changes that are affecting virtually all federal statistical agencies. The demands for more specific and detailed data come with a decreased willingness among sampled individuals to provide data, and reduced tolerance to the burden of responding to requests for information. These trends are reflected in pervasive declines in response rates over time. Old paradigms are not going to be sufficient for the future.

Another challenge is that seasoned senior staff members in federal statistical agencies are retiring in high numbers without enough statisticians and other technical staff to replace them. Institutional memory is being lost, and with it the capability for mentoring new and junior staff.

Faced with these challenges, there is an urgent need for NCES to reassess goals for the future and to develop strategies to achieve these goals. NCES needs to be agile to meet unforeseen contingencies that call for rapid shifts of resources and efforts.

"The world is changing rapidly, and the need for clear, accurate, comparable, unbiased, and relevant data on education is growing in importance.

OBSERVATIONS AND FINDINGS OF THE EXPERT PANEL

The Panel has nine specific proposals for NCES future attention, divided into five domain areas: *Strategic Prioritization, Expanded Dialogue with Constituencies and with Experts, Autonomy, Information: Data and Dissemination, Critical Staff*

Strategic Prioritization[3]

1

Articulate the role of NCES and its value in the national conversation on education; explain the elements that uniquely position NCES to fulfill this role

First and foremost, NCES needs to articulate its unique role in providing evidence and context for decision-making into the future. NCES needs to be flexible operationally in this era of rapid change, yet needs to maintain a clear vision in terms of how it wants to be perceived—as an agency with great data integrity, and as a unique source of data that are comparable over time for states and schools. NCES needs to evaluate its investment and its effectiveness in the international group of leaders who make decisions on assessment and collection of education data on an international scale.

> *"NCES…needs to maintain a clear vision in terms of how it wants to be perceived—as an agency with great data integrity, and as a unique source of data that are comparable over time for states and schools.*

[3]NAS Principles and Practices: See Appendix 3, Citations from NAS Principles and Practices: Principle #1, Practice #1.

Strategic Prioritization[3]

2

Develop a strategy and a decision process based upon the NCES role and value

At present, decision-making lacks a well-formulated basis in strategic prioritization, which takes an integrated view of:

- goals;
- which studies to undertake and at what frequency, and consequently which studies to decline or to retire;
- operations (both internal and contracted);
- staffing (both assembly of appropriate skill sets and succession planning); and
- supporting technology.

This process requires a commitment of NCES time and staffing resources to ensure that strategic decisions reflect the unique role for NCES. It also needs to engage the broader communities that utilize NCES data and products.

The Panel suggests that four areas of activity deserve particular attention over the next five years, as they will require time to develop as well as to operationalize:

2.1 Creating an agile organization and culture that allows for rapid adaptation as new opportunities and demands for data arise from

policymakers and educators. Adaptations are likely to include new—and new kinds of—surveys and assessments, new technologies for data collection and dissemination of results, and reallocation of staff resources to meet technical skill requirements, particularly in specific areas of expertise (such as statistics).

2.2 Continuing attention and development of methods to preserve privacy of the respondents and confidentiality of data in the face of new information technology and breadth of emerging data demands and requests.

2.3 Use and integration of data from multiple sources, including administrative data, other surveys, and data from other agencies. NCES has a head start, but the demand for expansion is already high.

2.4 Small area statistics: NCES has already made some important inroads, such as the NCES website with widely used county-level estimates of adult literacy levels, using small area estimation (SAE) methods.

> *"Strategic prioritization "requires a commitment of NCES time and staffing resources to ensure that strategic decisions reflect the unique role of NCES."*

Expanded Dialogue with Constituencies and with Experts[4]

3

Increase engagement with constituencies

To determine future data needs, access, and summary, NCES needs to be more visible to its multiple constituencies, namely the American public, Congress, educators (from state-level administrators to teachers), and education researchers. Visibility should be coupled with increased two-way communication, in the form of listening as well as providing information. Closer dialogue with stakeholders, beyond responses about usage of current products, will provide NCES with a more comprehensive understanding of needs, priorities, and respondent mechanisms. To prioritize its objectives for dissemination, NCES needs more than measures of current usage of data products, although that information is important. NCES needs to assess the *unmet* needs that fall within the unique role that NCES plays with respect to its very diverse constituencies.

“To prioritize its objectives for dissemination, NCES needs more than measures of current usage of data products, although that information is important. NCES needs to assess the unmet needs that fall within the unique role that NCES plays with respect to its very diverse constituencies.

[4]OMB Directive: See Appendix 2, Citations from OMB Directive No. 1: Responsibility #1 and Responsibility #3; NAS Principles and Practices: See Appendix 3, Citations from NAS Principles and Practices: Principle #X, Practice #Y.

Expanded Dialogue with Constituencies and with Experts[4]

4

Establish a committee of outside experts to engage in dialogues on these critical issues

NCES needs to establish a group of outside experts to help to realize the objectives described above. This group would be charged with providing expertise and wisdom to attain the vision of a dynamic statistical agency as envisaged under Strategic Prioritization above, and the innovation in goals and processes expressed in OMB Statistical Policy Directive No. 1. We suggest a committee of experts with 3-year rotating terms who meet with NCES staff at least twice each year. Experts should be included with varied perspectives on education and policy priorities and knowledge of technical issues of data collection, computing, and statistical analysis.

“Experts should be included with varied perspectives on education and policy priorities and knowledge of technical; issues of data collection, computing, and statistical analysis.

Autonomy[5]

5

Assure NCES the autonomy of function called for by OMB for all federal statistical agencies

The OMB Statistical Policy Directive No.1 (2014) statement of Authority and Purpose calls for federal statistical agencies to "function in an environment that is clearly separate and autonomous from other administrative, regulatory, law enforcement or policy-making activities within their respective Departments," and specifically to "conduct statistical activities autonomously when determining what information to collect and process. . . when and how to store and disseminate their statistical products."

This is elaborated in *Principles and Practices for a Federal Statistical Agency* issued by the National

> *"It is a challenge for any statistical agency to balance the provision of statistical information that is both timely and high quality.*

[5]OMB Directive: Authority and Purpose; OMB Directive: See Appendix 2, Citations from OMB Directive No. 1: Responsibility #3.

Research Council of the National Academy of Sciences and cited within the OMB Directive.[6] In particular Practice #2 states:

"Protection from political or other undue outside influence requires that a statistical agency have the necessary authority for professional decisions on the scope, content, and frequency of data compiled, analyzed, and disseminated within the limits of budgetary resources, departmental requirements, review by OMB, and congressional mandates. It should also have authority over selection and promotion of professional, technical, and operational staff; processing, storage, and maintenance of the data that it collects; and the timing and content of data releases, including accompanying public announcements and documentation, without prior external clearance."

Publication review was identified to the panel as being burdensome and of questionable value by a number of NCES staff. NCES provided some evidence that the IES Standards and Review Office (SRO) review process, both internal and external, currently takes a very long time (as of March 29, 2016 one report had been under internal review by IES with no feedback to NCES for 223 days). It is a challenge for any statistical agency to balance the provision of statistical information that is both timely and of high quality. That is why OMB's Peer Review Standards exempt statistical agencies from part of the requirement for peer reviews: "Routine statistical information released by federal statistical agencies (e.g., periodic demographic and economic statistics) and analyses of these data to compute standard indicators and trends (e.g., unemployment and poverty rates) is excluded from this Bulletin."

The Panel reviewed the IES Process for peer review.[7] It states, "The Education Sciences Reform Act requires that 'all research, statistics, and evaluation reports conducted by, or supported through, the Institute shall be subjected to rigorous peer review before being published or otherwise made available to the public.' In addition, the Act requires that Institute products be 'objective, secular, neutral, and nonideological and are free of

[6]NAS Principles and Practices: See Appendix 3, Citations from NAS Principles and Practices: Principle #4 and Practice #2.
[7]http://www.ies.ed.gov/director/sro/peer_review/report_review.asp

partisan political influence and racial, cultural, gender, or regional bias.'"

There may be an ambiguity between "routine statistical information" that does not require peer review and "statistics reports" that may require peer review. There is, however, an additional ambiguity. The IES process requires an "internal review" by IES for indicator reports that are described as "basic tabulations that do not present new data analyses but draw from other reports or present the results of analyses in tabular form with limited text and virtually no information on the study (such as descriptions of samples, methods, or analyses)." It is unclear to the panel why an added level of review by IES is needed for these seemingly routine publications. Timeliness is a key component of the quality of statistical data. Unnecessary reviews adversely affect timeliness.

The OMB Peer Review Bulletin cites the NAS Peer Review process as a gold standard for obtaining outside expert assessments. In the NAS process, in addition to soliciting reviews from external experts, the Review Committee appoints review monitor and/or coordinator (also outside experts) to assess the reviews

and provide a summary of the most important recommendations to the author. The author prepares a response to review that must be approved by the review monitor/coordinator. The IES process does not appear to involve this second level of external coordination of the review process. Instead, the review summary is prepared by IES staff, and the response to review is also approved by IES staff. This level of staff involvement in the review process is not as objective, secular, neutral, and nonideological as the NAS review process.

The Panel suggests that IES and NCES engage in a careful analysis and negotiation concerning the requirements for information quality, timeliness, and statistical autonomy. Based on this review, a system for efficient review should be put in place that meets these goals and provides needed safeguards to preserve objectivity and policy neutrality.

Information: Data and Dissemination[8]

6

Data acquisition and data utilization

NCES and other federal statistical agencies face challenges in reducing respondent and participant burden, leveraging administrative records, and developing an integrated approach to planning that encompasses IT, statistical and survey methodologies, and the substantive discipline (education, in this case).

Unfunded mandates are a fact of life in a federal agency. It is incumbent on NCES to plan ahead for the flexibility to handle unforeseen mandates within the flow of ongoing work without serious disruption and without needing to reprioritize with each new mandate or to sacrifice staff development. Declining response rates and

“NCES and other federal statistical agencies face challenges in reducing respondent and participant burden, leveraging administrative records, and developing an integrated approach to planning that encompasses IT, statistical and survey methodologies, and the substantive discipline (education, in this case).

[8]OMB Directive: See Appendix 2, Citations from OMB Directive No. 1: Responsibility #1 and Responsibility #3.
[9]OMB Directive: See Appendix 2, Citations from OMB Directive No. 1: Responsibility #2.

resistance to increased burden (for both responders and NCES staff) call for removing barriers where possible (e.g., NCES is currently prohibited from using certain national student level administrative data) as well as expanding data sources to include administrative records, shared federal data from other agencies, and state data. NCES already is leveraging strengths internally by sharing tools developed by/for NAEP with other NCES surveys/assessments, a practice which warrants expansion wherever feasible.[9]

Information: Data and Dissemination[8]

7

Dissemination and Publication

There are two aspects to address in regard to dissemination. The first is that the difficulties in publication, most particularly the dual review processes, are weighing NCES down because of the staff time expended and the negative impact on staff morale. An even greater impact is the delay in making data (beyond First Look data) available. When seriously delayed, data become irrelevant for pressing policy questions and useful only for academic research. Replacing the current dual review process with a single effectual process for review would reduce some of the delay.

> *"NCES needs to determine the types of information most needed by its various constituencies, prioritized by impact and by uniqueness of NCES as the source, and then consider the most effective mode of dissemination.*

NCES needs to determine the types of information most needed by its various constituencies, prioritized by impact and by uniqueness of NCES as the source, and then consider the most effective mode of dissemination. NCES data are valued both for summary descriptive information, and the more detailed information needed to cast light on complex multifaceted issues in education. Setting the balance between dissemination in abbreviated and in *extenso* forms requires careful thought and also attention to appropriate modes of dissemination.

Critical Staff[10]

8 *Staffing Issues*

The NCES ratio of staff to budget is extremely low compared to other federal statistical agencies.[11] In part, this reflects differences in business models among agencies, but the fact that the NCES ratio also appears to have declined more rapidly over time than other agencies raises a question about the adequacy of current staffing levels. After establishing strategic priorities and a consequent decision process, it should be possible to evaluate the adequacy of staffing with regard to each of the areas of expertise

> *"NCES needs to meet the OMB Directive to maintain and develop in-house staff who are trained in statistical methodology in order to plan, design, and implement data collection and accurately present and summarize the data.*

[10]OMB Directive: See Appendix 2, Citations from OMB Directive No. 1: Responsibility #3.
[11]See Figure in Appendix.

and collection of tasks within NCES. From this base, adequacy of current staffing can be assessed and new hires can be planned to build the needed range and balance of staff expertise in education, survey methodology, psychometrics, statistics, and quantitative methodology. NCES needs to meet the OMB Directive to maintain and develop in-house staff who are trained in statistical methodology in order to plan, design, and implement data collection and accurately present and summarize the data.

Critical Staff[10]

9

Crucial Role of Staff Development[12]

"It's all about the people" was a comment in one of the confidential administrative-level interviews. This means attending to individual career paths, avoiding the potential for "creeping isolation" from professional communities, and modernizing where knowledge is out-of-date. Staff development is crucial for recruitment and retention of high-quality staff. It depends on the balance within NCES of expertise across disciplines, the allocation of staff time among duties, and the expectations for technical staff to maintain recognition within their professions. In particular, it is important for technical staff to be able to present work at professional conferences and

> *"Staff development is crucial for recruitment and retention of high quality staff. It depends on the balance within NCES of expertise across disciplines, the allocation of staff time among duties, and the expectations for technical staff to maintain recognition within their professions.*

[12]NAS Principles and Practices: See Appendix 3, Citations from NAS Principles and Practices: Practice #11.

to publish in refereed journals in their fields, either as sole author(s) or as co-author(s) with others (including contractors). The Expert Panel viewed favorably the efforts toward within-Center support for professional development that are already being made at NCES with in-house tutorials and seminars.

Professional development of staff may be neglected when faced with the pressure of production demands, so attention to staff technical goals must be made part of strategic prioritizing and decision-making. In particular, this requires determination of what is necessary for the scientific credibility and recognition of NCES staff within their professional communities and their continuing currency with advances in their fields. In consequence, technical staff workloads and the balance of activities may need reevaluation. Mentoring of early-career technical staff could also set expectations for continuing to advance professional stature.

APPENDIX

FEDERAL AGENCIES

BEA / Bureau of Economic Analysis, Department of Commerce

BJS / Bureau of Justice Statistics, Department of Justice

BLS / Bureau of Labor Statistics, Department of Labor

BTS / Bureau of Transportation Statistics, Department of Transportation

CENSUS / Census Bureau, Department of Commerce

ERS / Economic Research Service, Department of Agriculture

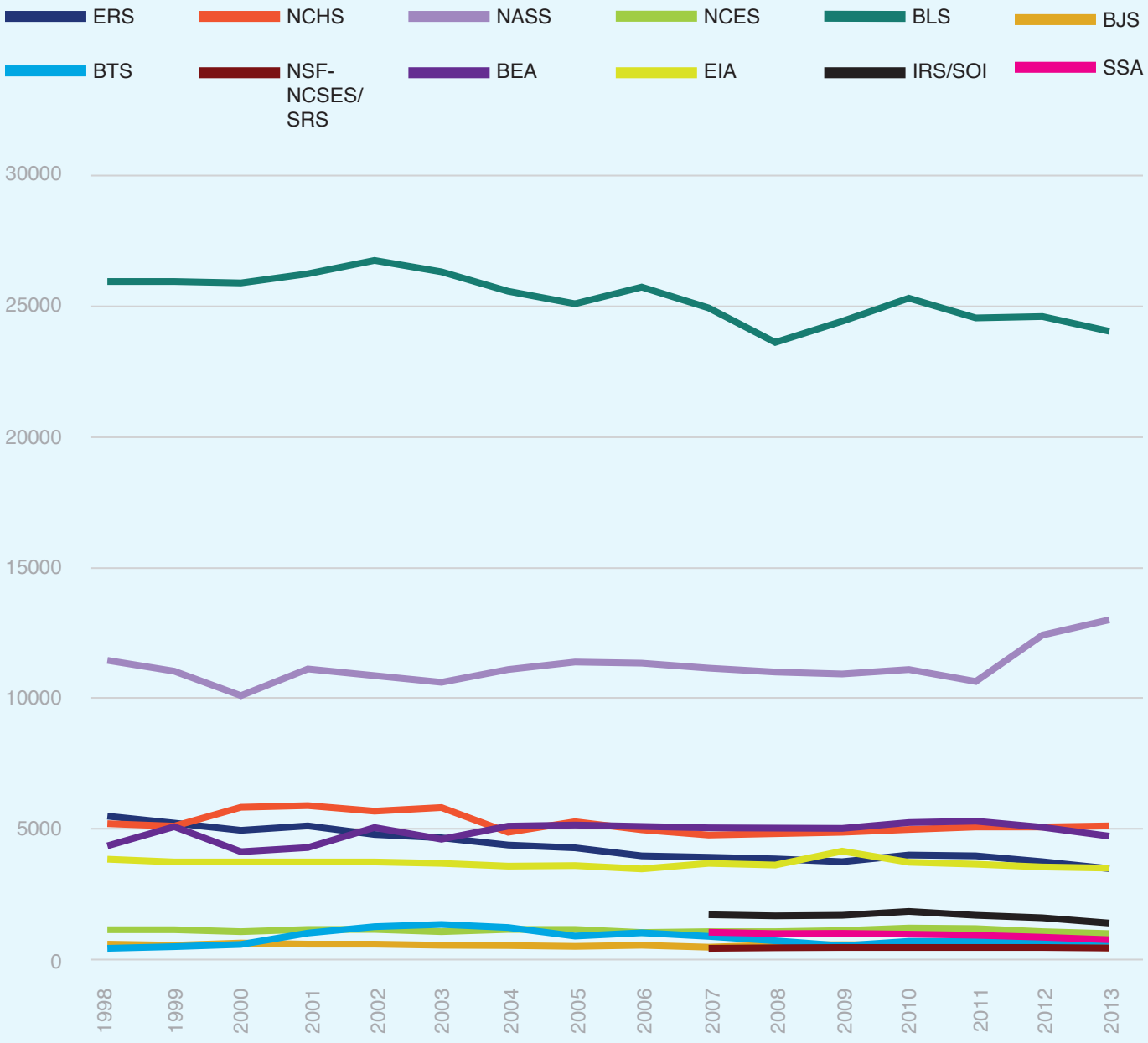
EIA	Energy Information Administration, Department of Energy
NASS	National Agricultural Statistics Service, Department of Agriculture
NCES	National Center for Education Statistics, Department of Education
NCHS	National Center for Health Statistics (NCHS), Department of Health and Human Services
NSF-NCSES/SRS	National Center for Science and Engineering Statistics, National Science Foundation
SSA	Office of Research, Evaluation, and Statistics, Social Security Administration
IRS/SOI	Statistics of Income Division (SOI), Internal Revenue Service, Department of the Treasury

APPENDIX 1

Federal Statistical Agencies* – Staffing Levels

Fiscal Years 1998-2013

Figure 1.

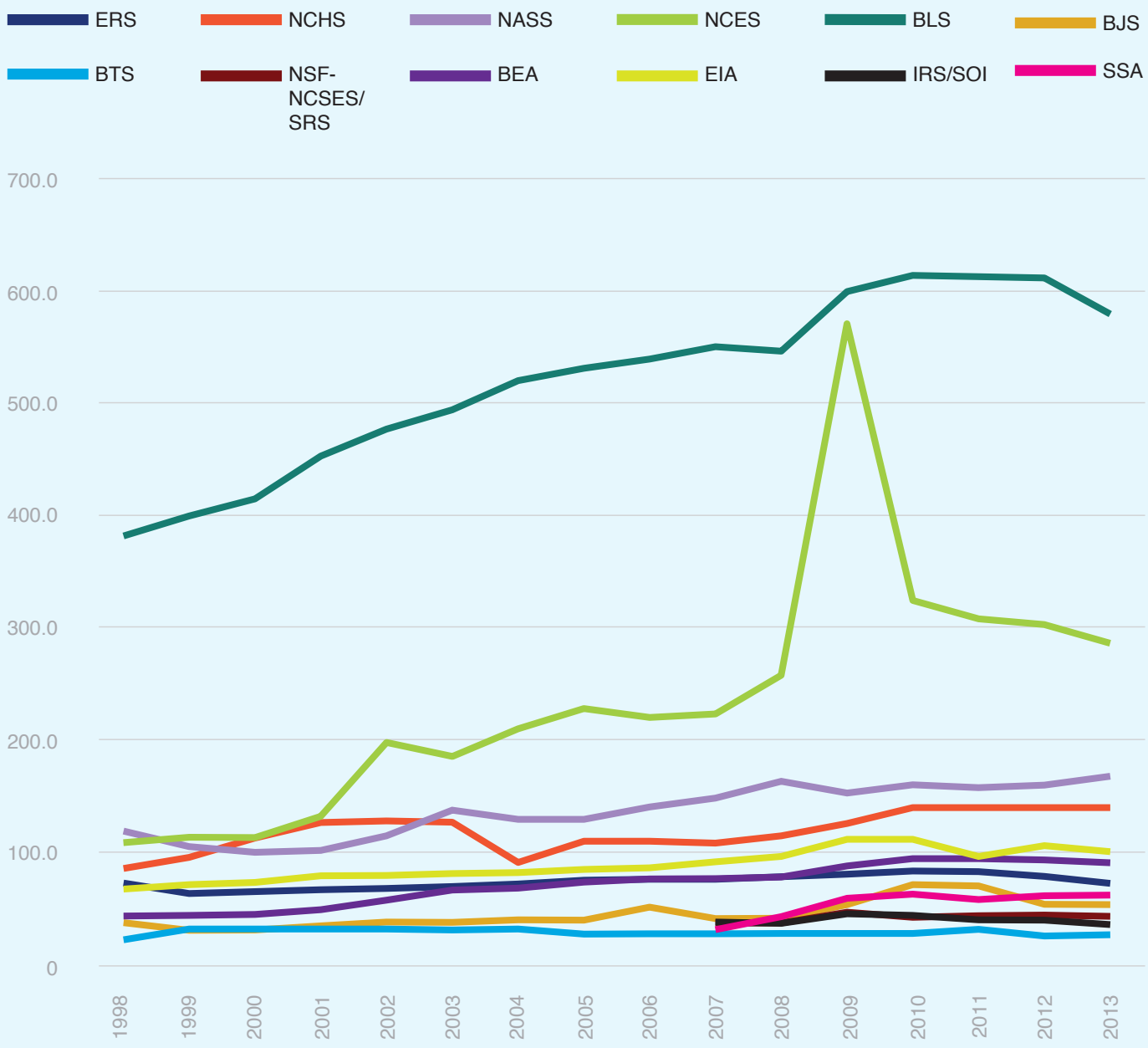


*FY 2007 is Actual from FY 2009 budget; FY 2008 is Actual from FY 2010 budget, etc.; No information available for NSF-SRS/NCSES, for IRS, or for SSA for the years 1998-2006. Census staffing figures are omitted from this graph because they are on a much larger scale than any other federal statistical agency. SOURCE: https://www.whitehouse.gov/omb/regulatory_affairs/reports_previous_yrs/ (FY 1998 - FY 2015)

Federal Statistical Agencies* - Direct Funding

Fiscal Years 1998-2013
(dollars in millions)

Figure 2.



*FY 2007 is Actual from FY 2008 document; FY 2008 is Actual from FY 2009 document, etc. NSF-SRS/NCSES: 2007-2010: reported as (SRS/NCSES) NSF; 2011-2013: reported as SRS/NCSES. Census funding figures are omitted due to scale. The 2009 peak for NCES direct funds includes ARRA (2009) funding to $250M (distributed to states). Funding in 2008, 2009 and 2010 includes $48M, $65M and $65M specific funding for SLDS (distributed to the states). S: https://www.whitehouse.gov/omb/regulatory_affairs/reports_previous_yrs/ (FY 1998 - FY 2015)

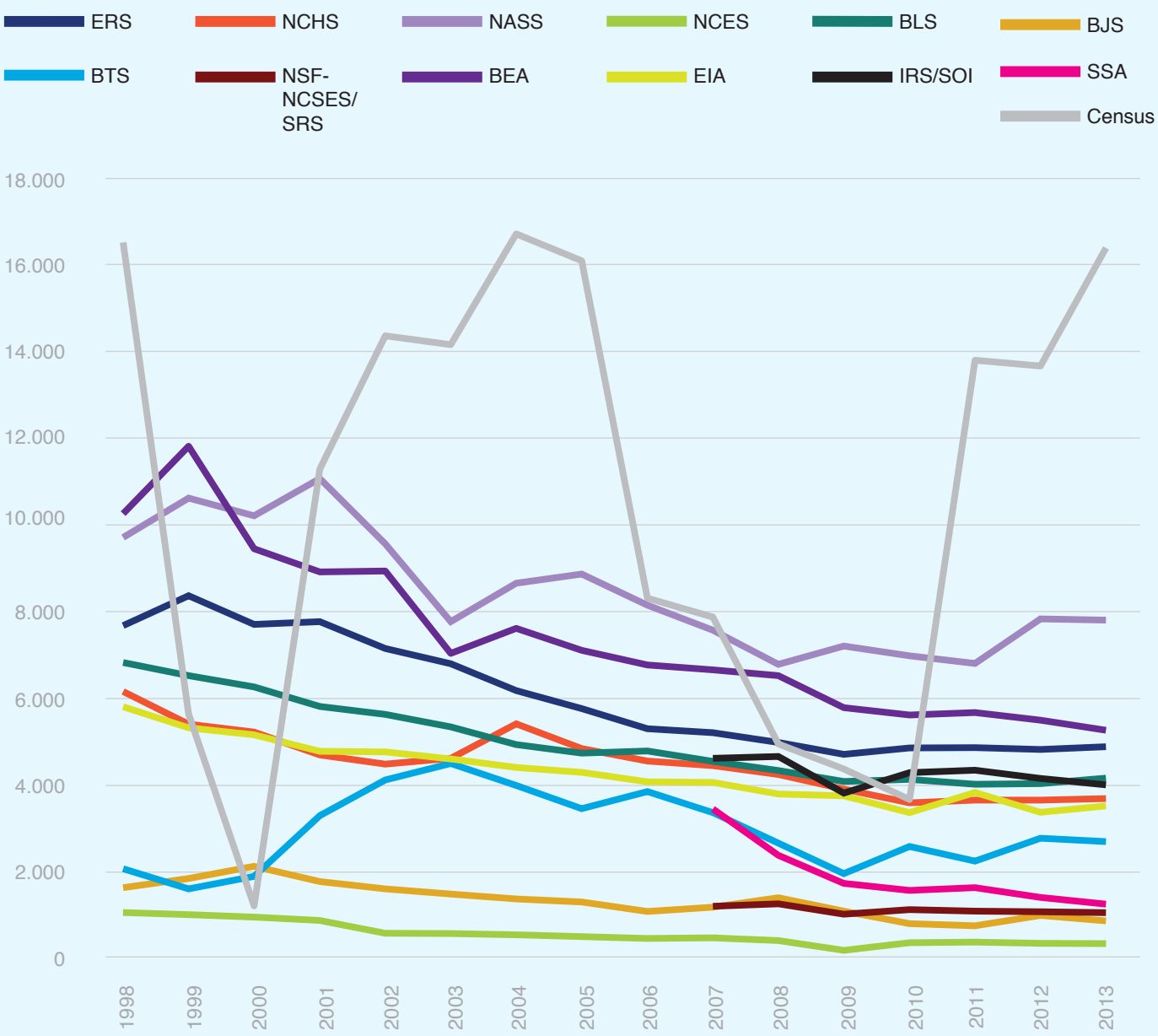
APPENDIX 1

3 4

Federal Statistical Agencies* - Staff to Direct Funding Ratios

Fiscal Years 1998-2013
(number of staff per million dollars in direct funding)

Figure 3.

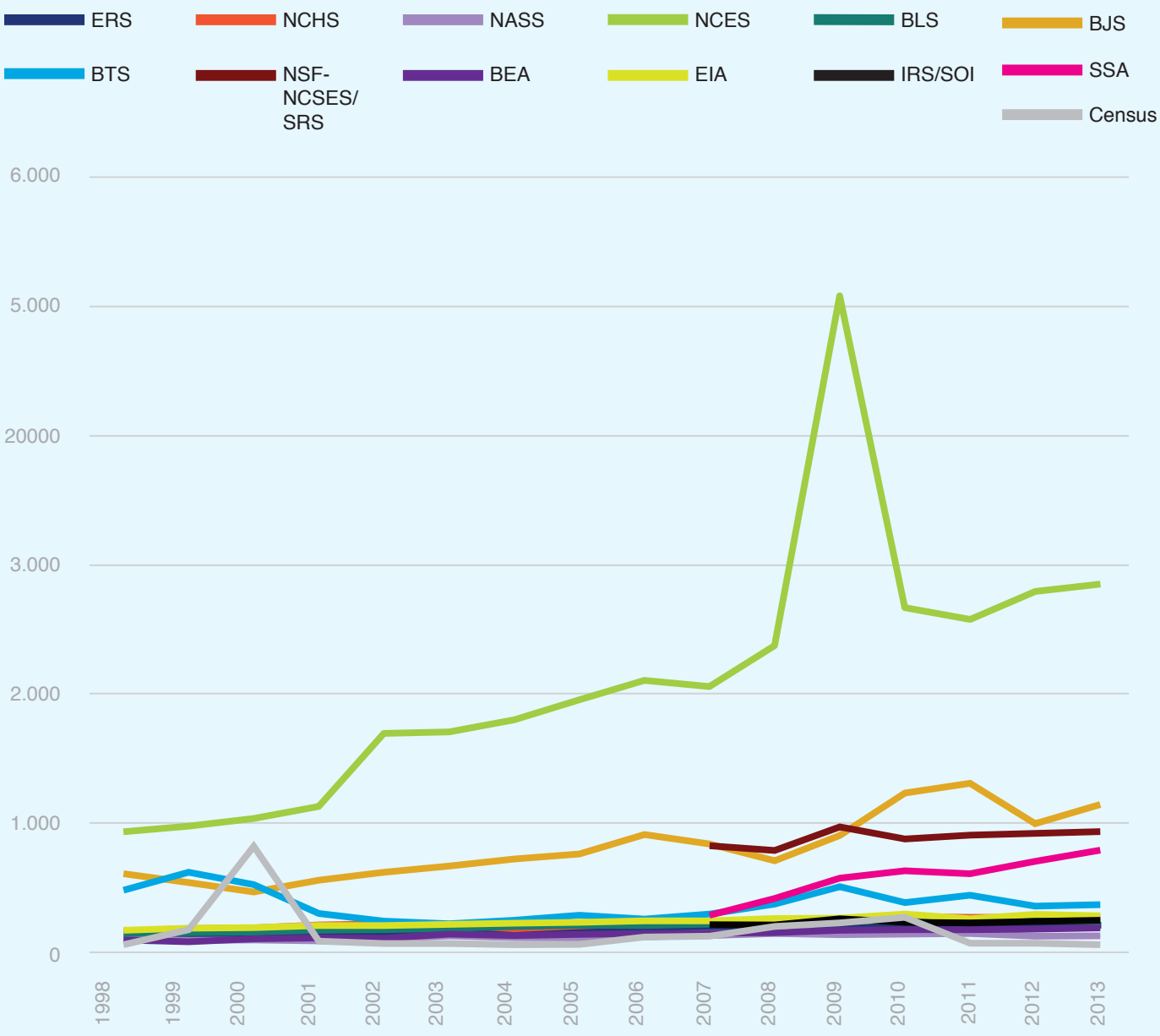


*SOURCE: https://www.whitehouse.gov/omb/regulatory_affairs/reports_previous_yrs/ (FY 1998 - FY 2015)

Federal Statistical Agencies* - Direct Funding per Staff

Fiscal Years 1998-2013
(dollars in millions per individual staff member)

Figure 4.



*The 2009 peak for NCES direct funds includes American Recovery and Reinvestment Act (2009) funding ot $250M to be distributed to states. Funding In 2008, 2009 and 2010 includes $48M, $65M and $65M specific funding for State Longitudinal Data Systems (also distributed to the states). SOURCE: https://www.whitehouse.gov/omb/regulatory_affairs/reports_previous_yrs/ (FY 1998 - FY 2015)

APPENDIX 2

CITATIONS FROM OMB DIRECTIVE NO. 1

2 DECEMBER 2014 VOL 79 #231 PAGES 71611 - 71616

Office of Management and Budget. (2014). Directive no. 1: Fundamental responsibilities of federal statistical agencies. Federal Register, 79(231), 71611-71616.

Page 71611

The President's Memorandum on the Preservation and Promotion of Scientific Integrity (March 9, 2009) articulates six principles central to the preservation and promotion of scientific integrity. A central theme of the President's memorandum is that the public must be able to trust the science and scientific processes informing public policy decisions. The Memorandum for the Heads of Executive Departments and Agencies (December 17, 2010) issued by the Director of the Office of Science and Technology Policy provides guidance for implementing the President's policy on scientific integrity. That memorandum directs Executive departments and agencies to develop policies that ensure a culture of scientific integrity, strengthen the actual and perceived credibility of Government research, facilitate the free flow of scientific and technologic information, and establish principles for conveying scientific and technologic information to the public.

Principles and Practices for a Federal Statistical Agency (Principles and Practices), issued by the National Research Council of the National Academy of Sciences, has guided managerial and technical decisions made by national and international statistical agencies for decades.

Page 71613
(Boldface type added below for reference)

Statistical Policy Directive No. 1: Fundamental Responsibilities of Federal Statistical Agencies and Recognized Statistical Units

Authority and Purpose:

This Directive affirms the fundamental responsibilities of Federal statistical agencies and recognized statistical units and defines the requirements governing the design, collection, processing, editing, compilation, storage, analysis, release, and dissemination of statistical information by Federal statistical agencies and recognized statistical units.

Page 71614 - 71416

The responsibilities delineated in this Directive provide a framework that supports Federal statistical policy and serves as a foundation for Federal statistical activities, promoting trust among statistical agencies, data providers, and data users. Data users rely upon an agency's reputation as an objective source of relevant, accurate, and objective statistics, and data providers rely upon an agency's authority and reputation to honor its pledge to protect the confidentiality of their responses and to use them exclusively for statistical purposes. **Federal statistical agencies and recognized statistical units must adhere to these responsibilities and adopt policies, best practices, and appropriate procedures to implement them. Federal departments must enable, support, and facilitate Federal statistical agencies and recognized statistical units as they implement these responsibilities.**

Responsibilities:

It is the responsibility of Federal statistical agencies and recognized statistical units to *produce and disseminate relevant and timely information; conduct credible, accurate, and objective statistical activities; and protect the trust of information providers by ensuring confidentiality and exclusive statistical use of their responses* as described below.6 The benefits to Federal statistical data users and the Nation of maintaining and enhancing the quality of official Federal statistics envisioned by this Directive become fully realized when Federal statistical agencies and recognized statistical units, with enabling support and facilitation from their Departments, achieve these mutually-reinforcing responsibilities concurrently.

APPENDIX 2

Responsibility 1: Produce and disseminate relevant and timely information.

The core mission of Federal statistical agencies and recognized statistical units is to produce relevant and timely statistical information to inform decision-makers in governments, businesses, institutions, and households. Federal statistical agencies and recognized statistical units must be knowledgeable about the issues and requirements of programs and policies relating to their subject domains. **This requires communication and coordination among agencies and within and across Departments when planning information collection and dissemination activities. In addition, Federal statistical agencies and recognized statistical units must seek input regularly from the broadest range of private- and public-sector data users, including analysts and policy makers within Federal, State, local, tribal, and territorial government agencies; academic researchers; private sector businesses and constituent groups; and non-profit organizations.** Program and policy-relevant information may be directly collected from individuals, organizations, or establishments through surveys; administrative records collected and maintained by the agency, or other government agencies; datasets available from the private sector; or publicly available information released on Internet Web sites that meets an agency's quality standards. **Statistical agencies should be innovative in applying new technologies in their methods for designing, collecting, processing, editing, compiling, storing, analyzing, releasing, and disseminating data to improve the accuracy and timeliness of their information and the efficiency of their operations.** (*Principles and Practices, pp. 17 and 53*)

Responsibility 2: Conduct credible and accurate statistical activities.

Federal statistical agencies and recognized statistical units apply sound statistical methods to ensure statistical products are accurate. Federal statistical agencies and recognized statistical units achieve this by regularly evaluating the data and information products they publicly release against the OMB Government-wide *Information Quality Guidelines*

as well as their individual agency's information quality guidelines. Where appropriate, information about how the data were collected and any known or potential data limitations or sources of error (such as population or market coverage, or sampling, measurement, processing, or modeling errors) should be described to data users so they can evaluate the suitability of the data for a particular purpose. Errata identified after data release should be described to data users on an ongoing basis as verified. **Federal statistical agencies and recognized statistical units must be vigilant in seeking new methods and adopting new technologies to ensure the quality and efficiency of the information they collect and produce.** (*Principles and Practices*, pp. 42–43) Data derived from outside sources must be described in information products and communication materials so that users can employ exogenous information appropriately. Federal statistical agencies and recognized statistical units must provide complete documentation of their dissemination policies and ensure that all users have equitable access to data disseminated to the public (*Statistical Policy Directive* No. 4 73 FR 12622 at 12625).

Additionally, Federal statistical agencies and recognized statistical units must periodically review the techniques and procedures used to implement their information quality guidelines to keep pace with changes in best practices and technology.

Responsibility 3: Conduct objective statistical activities.

It is paramount that Federal statistical agencies and recognized statistical units produce data that are impartial, clear, and complete and are readily perceived as such by the public. **The objectivity of the information released to the public is maximized by making information available on an equitable, policyneutral, transparent, timely, and punctual basis. Accordingly, Federal statistical agencies and recognized statistical units must function in an environment that is clearly separate and autonomous from the other administrative, regulatory, law enforcement, or policy-making activities within their respective Departments. Specifically, Federal statistical agencies and recognized statistical units must be able to conduct statistical activities**

APPENDIX 2

autonomously when determining what information to collect and process, the physical security and information systems security employed to protect confidential data, which methods to apply in their estimation procedures and data analysis, when and how to store and disseminate their statistical products, and which staff to select to join their agencies. In order to maintain credibility with data providers and users as well as the public, Federal statistical agencies and recognized statistical units must seek to avoid even the appearance that agency design, collection, processing, editing, compilation, storage, analysis, release, and dissemination processes may be manipulated. The actual and perceived credibility of Federal statistics requires assurance that the selection of candidates for statistical positions is based primarily on their scientific and technical knowledge, credentials, experience, and integrity. Moreover, **Federal statistical agencies and recognized statistical units must maintain and develop in-house staff who are trained in statistical methodology to properly plan, design, and implement core data collection operations and to accurately analyze their data.** (*OMB Government-wide Information Quality Guidelines; CIPSEA Implementation Guidance*, 33362 at 33371; *OSTP Memorandum of December 17, 2010; Principles and Practices,* p. 70)

Responsibility 4: Protect the trust of information providers by ensuring the confidentiality and exclusive statistical use of their responses.

Maintaining and enhancing the public's trust in a Federal statistical agency's or recognized statistical unit's ability to protect the integrity of the information provided under a pledge of confidentiality is essential for the completeness and accuracy of statistical information as well as the efficiency and burden of its production. Providers of information, such as survey respondents, must be able to trust and rely upon the information and confidentiality pledges that Federal statistical agencies and recognized statistical units provide about the need to collect information and its intended use for exclusively statistical purposes. Maintaining consistent and effective protection reduces public confusion, uncertainty, and concern about the treatment and

use of reported information. (*Order Providing for the Confidentiality of Statistical Information*, 62 FR 35044 (June 27, 1997)) In addition, adopting this protection reduces the cost and reporting burden imposed by programs of Federal statistical agencies and recognized statistical units. Fostering trust among data providers about a statistical agency's authority and ability to protect the confidentiality and exclusive statistical use of responses promotes higher participation in surveys and accurate reporting of information from respondents. Federal statistical agencies and recognized statistical units build and sustain trust with data providers by maintaining a strong organizational climate that safeguards and protects the integrity and confidentiality of the data collected, processed, and analyzed to ensure that the information is secure against unauthorized access, editing, deletion, or use. Federal statistical agencies and recognized statistical units must fully adhere to legal requirements and follow best practices for protecting the confidentiality of data, including training their staffs and agents, and ensuring the physical and information system security of confidential information. (*CIPSEA Implementation Guidance*, 33362 at 33374) These responsibilities provide a framework for Federal statistical policy and the foundation upon which core functions of Federal statistical agencies and recognized statistical units are grounded. Adherence to these responsibilities ensures that the Federal statistical system continues to provide relevant, accurate, objective statistics in a manner that honors and maintains the public's trust.

APPENDIX 3

42

CITATIONS FROM PRINCIPLES AND PRACTICES FOR A FEDERAL STATISTICAL AGENCY: 5TH EDITION

Straf, M. L. & Citro, C. F. (Eds.). (2013). Principles and practices for a federal statistical agency. National Academies Press.

Pages 2-3

Principle 1: Relevance to Policy Issues

A statistical agency must provide information that is relevant to issues of public policy and useful to a broad range of public- and private-sector users as well as the general public. To establish priorities for its programs, **a statistical agency must not only work closely with the executive branch, Congress, and interested nongovernmental groups, but also engage a broad spectrum of users in the business sector, academia, state and local governments, and elsewhere. Interaction with stakeholders is essential to enable a statistical agency to continually reassess the needs of its users for information.**

Principle 4: Independence from Political and Other Undue External Influence

To be credible and unhindered in its mission, a statistical agency must maintain a widely acknowledged position of independence from undue external influences. It must avoid even the appearance that its collection, analysis, or reporting processes might be manipulated for political purposes or that individually identifiable data collected under a pledge of confidentiality might be turned over for administrative, regulatory, or law enforcement uses. **Protection from undue outside influences requires that a statistical agency have authority for professional decisions on its programs, including authority over the selection and promotion of staff, the processing, secure storage,**

and maintenance of data, and the timing and content of data releases, accompanying press releases, and documentation. The credibility that comes from independence is essential for users to maintain confidence in the accuracy and objectivity of a statistical agency's data and for data providers to be willing to cooperate with agency requests.

Pages 15-24

The effective operation of a federal statistical agency must begin with a clearly defined and well-accepted mission. With this prerequisite, effective operation involves a wide range of practices: necessary authority to protect independence, continual development of more useful data, openness about sources and limitations of the data provided, wide dissemination with ample documentation of data, cooperation with data users, respect for privacy and autonomy of data providers, protection of confidentiality of providers' information, **commitment to quality and professional standards of practice, an active research program, professional advancement of staff,** a strong internal and external evaluation program, and **coordination and collaboration with other statistical agencies.**

Practice 1: A Clearly Defined and Well-Accepted Mission

An agency's mission should include responsibility for all elements of its programs for providing statistical information—determining sources of data, measurement methods, efficient methods of data collection and processing, and appropriate methods of analysis—and ensuring the public availability not only of the data, but also of documentation and explanation of the methods used to obtain and process the data and their quality. **The mission should include the responsibility for continually assessing information needs and priorities through proactive engagement with policy makers and other users of its data.** The mission should also include the responsibility for identifying, evaluating, implementing, documenting, and explaining new ways to meet user needs, such as by the establishment, modification, or discontinuance of a survey or census or by the implementation of another method of data collection, such as extracting information from administrative records, private-sector data, or selected relevant Internet sources that meet quality standards.

APPENDIX 3

Practice 2: Necessary Authority to Protect Independence

Protection from political or other undue outside influence requires that a statistical agency have the necessary authority for professional decisions on the scope, content, and frequency of data compiled, analyzed, and disseminated within the limits of budgetary resources, departmental requirements, review by OMB, and congressional mandates. It should also have authority over selection and promotion of professional, technical, and operational staff; processing, storage, and maintenance of the data that it collects; and the timing and content of data releases, including accompanying public announcements and documentation, without prior external clearance. An agency's leaders and qualified technical staff should have authority to speak about the agency's statistics before Congress, with congressional staff, and before public bodies. Such authority may come from legislation, OMB directives (which carry over from one administration to another), or policies and practices that are communicated by agency leadership to political appointees.4 An agency's independence is enhanced by adhering to fixed schedules that are announced in advance for the public release of important statistical indicators to prevent even the appearance of manipulation of release dates for political purposes.5 Independence is also fostered by an agency's maintaining a clear distinction between statistical information and policy interpretations of such information by executive branch officials and having dissemination policies that foster regular, frequent release of statistical findings and any data limitations to the public through the traditional media, the Internet, and other appropriate means. To bolster public credibility with regard to an agency's independence, an agency's website should include a clear description of the procedures it follows to protect against undue external influence in such matters as data dissemination.

Practice 6: Cooperation with Data Users

A statistical agency shows cooperation with data users by facilitating their

access to and ability to use data through well-designed websites and other dissemination vehicles, careful and complete documentation, and user training adapted to varying skills and needs. In addition, **a statistical agency should seek input from users on every aspect of its programs. The goal is to make its data as relevant, accurate, timely, and accessible as possible to a broad range of users.** It should:

- **seek advice on data concepts, content processing, estimation products, and documentation from a wide spectrum of data users, as well as from professional and technical subject-matter and methodological experts**, using a variety of formal and informal means of communication that are appropriate to the types of input sought;
- **seek advice on its statistical programs and priorities from external groups, including those with relevant subject-matter and technical expertise;** and
- widely disseminate its responses to those who have provided input.

In developing and implementing new methods or data sources to produce statistical information, it is particularly important to reach out to policy makers and other key data users so that they understand an agency's criteria and decision process for the new methods or data. Statistics that are based on models (for example, for small geographic areas) or that use nontraditional data sources will likely require an explanation of their benefits and limitations that is more extensive than is usually provided. Reaching out to policy makers and other key data users when new data sources or methods are in a developmental stage can help in identifying and responding to users' concerns and earning their acceptance of the resulting data products.

Practice 9: Commitment to Quality and Professional Standards of Practice

A statistical agency should:

- **keep abreast of and use modern statistical theory and sound statistical practice in all technical work;**
- document concepts, definitions, data collection methodologies,

APPENDIX 3

and measures of uncertainty and discuss possible sources of error in reports and other data releases to the public;

- **develop strong staff expertise in the disciplines relevant to its mission, in the theory and practice of statistics, and in data collection, processing, analysis, and dissemination techniques;**
- develop an understanding of the validity and accuracy of its data and convey the resulting measures of quality to users in ways that are comprehensible to nonexperts;
- maintain quality assurance programs to improve data quality and to improve the processes of compiling, editing, and analyzing data; and
- develop a strong and continuous relationship with appropriate professional organizations in the fields of statistics and relevant subject-matter areas.

Practice 10: An Active Research Program

A statistical agency should have a research program that is relevant to its activities. Because a small agency may not be able to afford an appropriate research program, agencies should collaborate and share research results and methods. Agencies can also augment their staff resources for research by using outside experts through consulting or other arrangements as appropriate. Several elements should be part of a statistical agency's research program:

- **Research should be conducted on the substantive issues for which the agency's data are compiled.** Such research should be conducted not only to provide useful objective analytical results, but also as a means to identify potential improvements to the content of the data, suggest improvements in the design and operation of the data collection, and provide fuller understanding of the limitations of the data.
- **An agency's program should include research to evaluate and improve statistical methods**, including the identification and creation of new statistical measures; improved methods for analyzing reporting and other errors in the data; ways to reduce the time and effort requested

of respondents; and means to improve the timeliness, accuracy, and efficiency of data collection, analysis, and dissemination procedures.

- Research should be conducted to understand and estimate new sources of risk to confidentiality protection and to enhance mechanisms for access to data in ways that guard against disclosure.
- **Research should be conducted to understand how agency's information is used, in order to make the data more relevant to policy concerns and more useful for policy research and decision making.**

Practice 11: Professional Advancement of Staff

A statistical agency should recruit, develop, and support professional staff who are committed to the highest standards of quality work, professional practice, and professional ethics. To develop and maintain a high- caliber staff, a statistical agency must recruit qualified people with relevant skills for efficient and effective operations, including analysts in fields relevant to its mission (e.g., demographers, economists), statistical methodologists who specialize in data collection and analysis, and other skilled staff (e.g., computer specialists). To retain and make the most effective use of its staff, an agency should provide opportunities for work on challenging projects in addition to more routine, production-oriented assignments. An agency's personnel policies, supported with significant resources, should enable staff to extend their technical capabilities through appropriate professional and developmental activities, such as attendance and participation in professional meetings, participation in relevant training programs, rotation of assignments, and involvement in collaborative activities with other statistical agencies. An agency should also seek opportunities to reinforce the commitment of its staff to ethical standards of practice. Such standards are the foundation of an agency's credibility as a source of relevant, accurate, and timely information obtained through fair treatment of data providers and data users.

APPENDIX 3

Practice 13: Coordination and Collaboration with Other Statistical Agencies

A statistical agency should actively seek opportunities to collaborate with other statistical agencies to enhance the value of its own information and that of other agencies in the federal statistical system. Although agencies differ in their subject-matter focus, there is overlap in their missions and a common interest in serving the public need for credible, relevant, accurate, and timely statistics gathered as efficiently and fairly as possible.

When possible and appropriate, federal statistical agencies should collaborate not only with each other, but also with state and local statistical agencies in providing data for subnational areas. Federal statistical agencies should also collaborate with foreign and international statistical agencies to exchange information on both data and methods and to develop appropriate common classifications and procedures to promote international comparability of information. Such collaborative activities as integrating data compiled by different statistical agencies, standardizing concepts and measures, sharing data among agencies, and identifying ways to reduce unneeded duplication invariably require effort to overcome differences in agency missions and operations. Yet with constrained budgets and increasing demand for more relevant, accurate, and timely statistical information, the importance of proactive collaboration and coordination among statistical agencies cannot be overstated. To achieve the most effective integration of their work for the public good, agencies must be willing to take a long view and to strive to accommodate other agencies. The rewards can be data that are more efficiently obtained and more relevant to policy concerns. Another reward can be a stronger, more effective statistical system as a whole. To achieve these rewards, statistical agencies need to act as partners, not only in the development of statistical information for public use, but also for the entire panoply of statistical activities,

including the definition and updating of concepts and classifications and the continual improvement of measurement methods, analytical tools, means for confidentiality protection, and modes of data dissemination. Statistical agencies, working with OMB, also need to be continually vigilant to refine, disseminate, and inculcate the highest standards of professional practice and policies in such areas as privacy and confidentiality protection, data release schedules, and scientific integrity—standards that are critical for credibility with the providers and users of their information.

APPENDIX 4

EXPERT PANEL BIOSKETCHES

Sandy Baum *Ph.D., Columbia University*
Title: Senior Fellow, Urban Institute

Dr. Sandy Baum has written and spoken extensively on issues relating to college access, college pricing, student aid policy, student debt, affordability, and other aspects of higher education finance. Dr. Baum regularly teaches higher education finance and policy courses for the Higher Education Administration Program.

Susan Dynarski *Ph.D., Economics, Massachusetts Institute of Technology*
Title: Professor of Public Policy; Professor of Education; Professor of Economics, University of Michigan

Dr. Susan Dynarski, in addition to her professorship at the University of Michigan, is a Faculty Research Associate at the National Bureau of Economic Research and the Center for Analysis of Postsecondary Education and Employment and a Nonresident Senior Fellow in the Economic Studies Program at the Brookings Institution. Dr. Dynarski has served as an editor of The Journal of Labor Economics and Education Finance and Policy and is currently on the board of Educational Evaluation and Policy Analysis. She has been elected to the boards of the Association for Public Policy and Management and the Association for Education Finance and Policy. The National Association of Student Financial Aid Administrators awarded her the Robert P. Huff Golden Quill Award for excellence in research on student aid. Dr. Dynarski has testified about education and tax policy before the US Senate Finance Committee, the US House Ways and Means Committee and the President's Commission on Tax Reform.

Jeremy Finn *Ph.D., University of Chicago*
Title: SUNY Distinguished Professor and Chair of the Department of Counseling, School, and Educational Psychology, Graduate School of Education, University at Buffalo, SUNY

Dr. Jeremy Finn is an internationally known scholar, especially due to his extensive work on quantitative research methods and issues of class size, student engagement, and dropping out. He has taught at the Ontario Institute for Studies in Education and Stanford University, and has held research fellowships at the National Research Council, Educational Testing Service, and the International Association for the Evaluation of Educational Achievement. He also previously served as an ASA-NSF Fellow at NCES.

Hermann Habermann *Ph.D., University of Wisconsin-Madison*
Title: Senior Program Officer, the Committee on National Statistics (CNSTAT)

Dr. Hermann Habermann joined the CNSTAT staff in September 2009 as a senior program officer, working part-time to organize a workshop on enhancing research and development for the federal statistical system. He has held several positions in his career, including deputy director of the U.S. Census Bureau, director of the United Nations Statistics Division, and chief of statistical policy at the Office of Management and Budget. He is a fellow of the American Statistical Association and the National Academy of Public Administration and a past member of CNSTAT. At present he consults for various international organizations including the United Nations and the World Bank.

APPENDIX 4

Frederick M. Hess

Ph.D., Government, Harvard University.
Title: Resident Scholar and Director of Education Policy Studies, American Enterprise Institute

An educator, political scientist and author, Dr. Frederick M. Hess studies K-12 and higher education issues. Dr. Hess's work has appeared in both scholarly and popular outlets. He is the author of nine books on schooling and on education reform and has edited multiple volumes on topics in education including the Common Core and the impact of education research. He is also the author of the popular Education Week blog, "Rick Hess Straight Up," and is a regular contributor to The Hill. Dr. Hess serves as executive editor of Education Next, as lead faculty member for the Rice Education Entrepreneurship Program, and is on the review board for the Broad Prize for Public Charter Schools. He also serves on the boards of directors of the National Association of Charter School Authorizers and 4.0 SCHOOLS. A former high school social studies teacher, he teaches or has taught at the University of Virginia, the University of Pennsylvania, Georgetown University, Rice University and Harvard University.

Graham Kalton

Ph.D., Survey Methodology, University of Southampton
Title: Senior Vice President and Chairman of the Board of Directors of Westat

Dr. Graham Kalton has had a distinguished career as a researcher and teacher in the area of survey statistics and methodology. He is a co-founder of the Joint Program in Survey Methodology at the University of Maryland, where he holds the title of research professor. Prior to joining Westat in 1992, he was a research scientist in the Survey Research Center, a professor of biostatistics, and a professor of statistics at the University of Michigan, where he served a term as chairman of the Department of Biostatistics. Dr. Kalton is co-author with Claus Moser of the second edition of Survey Methods in Social Investigation, published in 1971, a widely-acclaimed text that covers all aspects of survey research. He has published many papers on survey research, particularly in the areas of sampling methods for rare populations, weighting and imputation, and panel surveys. He served on the Committee for National Statistics (CNSTAT) of the U.S. National Academy of Sciences for 6 years and chaired or participated in several CNSTAT panels. He has also served on the Board of Scientific Counselors of the U.S. National Center for Health Statistics, the Federal Economic Statistics Advisory Committee, and Statistics Canada's Advisory Committee on Statistical Methods, which he now chairs. He has served as president of the International Association of Survey Statisticians. Dr. Kalton is a Fellow of the American Statistical Association, a Fellow of the American Association for the Advancement of Science, an elected member of the International Statistical Institute, and a National Associate of the National Academies, National Research Council.

APPENDIX 4

David Kaplan *Ph.D., Education, Quantitative Methods,*
University of California-Los Angeles
Title: Professor, Educational Psychology, School of Education,
University of Wisconsin, Madison

Dr. David Kaplan is the Patricia Busk Professor of Quantitative Methods in the Department of Educational Psychology at the University of Wisconsin – Madison. Dr. Kaplan holds affiliate appointments in the University of Wisconsin's Department of Population Health Sciences and the Center for Demography and Ecology, and is also an Honorary Research Fellow in the Department of Education at the University of Oxford. He is an elected member of the National Academy of Education, a recipient of the Humboldt Research Award, a Fellow of the American Psychological Association (Division 5) and was a Jeanne Griffith Fellow at the National Center for Education Statistics.

Alan Karr *Ph.D., Applied Mathematics, Northwestern University*
Title: Director of the Center of Excellence for Complex Data Analysis (CoDA) and Director of the Social Statistics Program at RTI International

Dr. Alan Karr is the former Director of the National Institute of Statistical Sciences (2000-2014) where he was previously Associate Director. He also held the position of Professor, Statistics & Operations Research and Biostatistics, University of North Carolina at Chapel Hill (UNC). Currently he holds adjunct faculty appointments at UNC and Carnegie Mellon University. Dr. Karr has published over 150 scientific papers and written two books. He has also served on the Army Science Board and has been an associate editor for the Operations Research Letters, Mathematics of Operations Research and the SIAM Journal on Applied Mathematics. He is a Fellow of the American Statistical Association, a Fellow of the Institute of Mathematical Sciences, and a Fellow of the American Association for the Advancement of Science, and an elected member of the International Statistical Institute and the Johns Hopkins Society of Scholars.

APPENDIX 4

Nancy Kirkendall

Ph.D., Mathematical Statistics, George Washington University
Title: Senior Program Officer, the Committee on National Statistics (CNSTAT)

Dr. Nancy Kirkendall is study director for the panel on Methods for Integrating Multiple Data Sources to Improve Crop Estimates, the workshop on Model Based Methods for Agricultural Estimates of Livestock, and the workshop on Rural Classifications. In 2008, she retired from the Energy Information Administration (EIA), where she was director of the Statistics and Methods Group. She spent three years as part of the Statistical Policy Branch, Office of Information and Regulatory Affairs, Office of Management and Budget where she served as the desk officer for the U.S. Census Bureau, the chair of the Federal Committee on Statistical Methodology, and led a variety of interagency activities. For almost 25 years, she taught part-time at the George Washington University in both the statistics department and the engineering management and systems engineering department. She is a past vice president of the American Statistical Association and a past president of the Washington Statistical Society. She is a fellow of the American Statistical Association and a recipient of the American Statistical Association's Founder's Award and the Roger Herriot Award for Innovation in Federal Statistics.

Roderick J.A. Little

Ph.D., Statistics, London University
Title: Richard D. Remington Distinguished University Professor, Biostatistics Department; Professor, Statistics Department; Research Professor, Institute for Social Research, University of Michigan

Dr. Rod Little's research interests include incomplete data, sample surveys, Bayesian statistics, applied and statistics. A primary research interest is the analysis of data sets with missing values; another interest is the analysis of data collected by complex sampling designs involving stratification and clustering of units. Dr. Little's inferential philosophy is model-based and Bayesian, which he applies to the development of model-based methods for survey analysis that are robust to misspecification, reasonably efficient, and capable of implementation in applied settings. His applied interests are broad, including mental health, demography, environmental statistics, biology, economics and the social sciences as well as biostatistics.

APPENDIX 4

Nancy Potok *Ph.D., George Washington University*
Title: Deputy Director and Chief Operating Officer, U.S. Census Bureau

Dr. Nancy Potok has more than 30 years of public, private, and nonprofit senior management experience. She previously served at the U.S. Department of Commerce as Deputy Under Secretary for Economic Affairs, the Census Bureau's Associate Director for Demographic Programs, and the Principal Associate Director and Chief Financial Officer in charge of Field Operations, Information Technology, and Administration during the 2000 Census. She was the Chief Operating Officer of McManis & Monsalve Associates, a small business specializing in helping Fortune 500 companies and government agencies manage change and innovation. She was also the Senior Vice President and Director of the Economic, Labor and Population Studies Department at the University of Chicago National Opinion Research Center (NORC), a social science survey research organization. Her public service includes working in the Judicial and Legislative Branches, as well as at the U.S. Department of Transportation and the U.S. Office of Management and Budget. Dr. Potok is an adjunct professor at The George Washington University, an elected Fellow of the National Academy of Public Administration (NAPA), and a recipient of numerous awards, including The George Washington University Trachtenberg School Distinguished Alumni Award and the Arthur S. Flemming Award. She has published numerous articles on governmental management topics, and has presented papers, lectures, workshops, and classes in both national and international forums.

Panel convened by National Institute of Statistical Sciences

Nell Sedransk

Ph.D., Iowa State University
Title: Director, National Institute of Statistical Sciences; Statistics Professor, North Carolina State University

Dr. Nell Sedransk is the Director of the National Institute of Statistical Sciences and Professor of Statistics at North Carolina State University. She is an Elected Member of the International Statistical Institute, also Elected Fellow of the American Statistical Association. She is coauthor of three technical books; and her research in both statistical theory and application appears in more than 60 scientific papers in refereed journals. The areas of her technical expertise include: design of complex experiments, Bayesian inference, spatial statistics and topological foundations for statistical theory. She has applied her expertise in statistical design and analysis of complex experiments and observational studies to a wide range of applications from physiology and medicine to engineering and sensors to social science applications in multi-observer scoring to ethical designs for clinical trials.

APPENDIX 4

Joy Edington *Ph.D., Quantitative Research, Evaluation and Measurement, The Ohio State University*
Title: Research Fellow, National Institute of Statistical Sciences

Dr. Joy Edington is an experienced research analyst in both the public and private sectors. Having a master's and a doctorate in quantitative research, evaluation and measurement in Education Policy and Leadership, Dr. Edington has over five years of mixed methods and evaluation expertise in the field of education, additional evaluation experience in the field of preventive health, and applied analytical experience in business applications. She has conducted research in education data including analysis and international comparisons based on TIMMS assessments.