



SUBJECT: NCSES Statistical Standards

DATE: January 10, 2025

Scope

The National Center for Science and Engineering Statistics (NCSES) Statistical Standards apply to all publicly available information products from NCSES, and the activities related to the development of those products including, but not limited to, data collection, analysis, interpretation, and dissemination. All NCSES staff and NCSES contractors must comply with these standards, which apply to all information products, regardless of the data source.

For the purposes of these standards, publicly available information products include any statistical information produced by NCSES or NCSES contractors that contains communications or representations of information or knowledge such as data or analysis in any medium or form that is disseminated to the public, sponsors, partners, or other stakeholders. This includes Infobriefs, InfoCharts, and Infobytes, reports, working papers and other statistical and methodological research papers, data tables, e-tables, and detailed statistical tables, microdata, data tools, data dashboards, data visualizations, graphics, survey descriptions, methodology reports, promotional brochures, responses to media or public queries, social media posts, and all other summarized presentations of data.

These standards do not apply to:

- Information products intended for internal NCSES use that are not intended for public dissemination.
- Documents intended for communication between NCSES staff and colleagues in other organizations that include no data and do not discuss analyses or methodological information.
- Informal communications between NCSES staff and colleagues in other organizations where the communications do not disseminate data and do not discuss analyses or methodological information.
- Items released in response to a Freedom of Information Act request.

Purpose

This document specifies the statistical standards for NCSES. NCSES is legislatively mandated to serve as a central federal clearinghouse for the collection, interpretation,

analysis, and dissemination of objective data on science, engineering, technology, and research and development.¹ NCSES, as a federal statistical agency, must comply with the Office of Management and Budget Statistical Policy Directives and other related regulations.² These standards ensure quality compliance in NCSES's efforts to meet its mandate in the development and dissemination of information products. These standards ensure consistency in the statistical activities conducted across staff working in different NCSES areas. Implementation of these standards by NCSES staff and NCSES contractors ensures and maximizes the quality, objectivity, utility, and integrity of the statistical information provided by NCSES to policymakers, researchers, practitioners, and the public.

These standards:

- Provide guidance for NCSES staff and NCSES contractors in conducting the activities related to the development of information products;
- Promote transparency in the quality of the information products provided to the policymakers, researchers, practitioners, and the public;
- Codify requirements for statistical reviews of information products;
- Meet statistical reporting requirements as established by OMB; and
- Ensure consistency in how data and associated statistical conclusions are presented.

Background

The [Information Quality Act \(IQA\)](#) and OMB's corresponding [Information Quality Guidelines \(IQG\)](#) require all federal agencies to "issue their own information quality guidelines ensuring and maximizing the quality, objectivity, utility, and integrity of information, including statistical information" and to ensure that the presentation of information is comprehensive, informative, and understandable. In response to this OMB requirement, the National Science Foundation (NSF) issued its [Information Quality Guidelines](#) to describe the basic standard of quality the agency will adopt for information it disseminates, including statistical information, studies, reports and summaries.

In addition to OMB's IQG requirements for all federal agencies, the OMB [Statistical Policy Directives](#) identify requirements for federal statistical agencies when they engage in statistical activities to ensure the quality and coordination of federal official statistics. [Statistical Policy Directive #1 \(SPD1\): Fundamental Responsibilities of Federal Statistical Agencies and Recognized Statistical Units](#) and [Statistical Policy Directive #2 \(SPD2\): Standards and Guidelines for Statistical Surveys](#) document the professional principles and practices to which federal agencies are required to adhere and the level of quality and effort expected in all statistical activities. All NCSES statistical activities should be conducted in adherence to the OMB standards and guidelines, which "ensures that users of

¹ America COMPETES Reauthorization Act of 2010 (<https://nces.nsf.gov/122/assets/0/files/bills-111hr5116enr.pdf>)

² Office of Management and Budget. *Statistical Programs & Standards*. (<https://www.whitehouse.gov/omb/information-regulatory-affairs/statistical-programs-standards/>)

federal statistical information products are provided with details on the principles and methods employed in the development, collection, processing, analysis, dissemination, and preservation of federal statistical information.” The OMB standards were not intended to describe all the efforts that a statistical agency may undertake to ensure the quality of its information. As a result, these standards provide additional and supplemental guidance that focuses on NCSES’s statistical activities and NCSES’s unique methodological and operational issues.

In alignment with these standards, NCSES information products must be policy relevant, policy neutral, timely, technically sound, error free, and clearly written.

- *Policy relevant* means the information products provide information that is useful to policymakers and public and private sector data users.
- *Policy neutral* means the information products are objective, do not contain policy pronouncements, and do not take a position on policy issue.
- *Timely* refers to the dissemination of the information products as close to the event being measured as possible.
- *Technically sound* means the information products use statistical analyses, comparative tests, and inferences that are based on appropriate statistical procedures and that results follow from the data and analysis.³
- *Error free* means that the information product adheres to NCSES’s quality assurance and quality control procedures and does not contain any mathematical or typographical errors.
- *Clearly written* means the information product is grammatically and syntactically correct and the organization and presentation of ideas is clear and logical.

In addition to these statistical standards, NCSES information products are also subject to confidentiality protection requirements as well as compliance with Section 508 of the Rehabilitation Act of 1973. Both topics are addressed in separate NCSES documentation.

³ To help ensure information products are technically sound, NCSES staff should consult with the Office of the NCSES Chief Statistician in the planning of activities related to the development of information products.

NCSES Statistical Standards

1. Activities Related to the Development of Information Products

Standard 1.1: NCSES staff must consult with the Office of the NCSES Chief Statistician in the design, development, collection, acquisition, and use of data for producing NCSES information products to ensure adherence to the requirements of the OMB Statistical Policy Directives, NSF IQG, and the NCSES Statistical Standards.

Guideline 1.1a: NCSES staff consultations with the Office of the NCSES Chief Statistician should begin during the planning phase for any activity related to the development of information products and continue, as appropriate, through the completion of the activity.

Guideline 1.1b: NCSES staff should consult with the Office of the NCSES Chief Statistician on behalf of NCSES contractors for contractor-supported activities related to the development of information products and continue, as appropriate, through the completion of the activity.

Standard 1.2: NCSES staff proposing a survey, data collection, or analysis product or a major revision of an existing survey, data collection, or analysis product must develop a written plan for review by the Office of the NCSES Director that describes the motivation and relevance, proposed statistical, methodological, or analytical approach and justification, objectives and goals, benefits, risks, limitations, and planned stakeholder engagement. The initiation of the proposed effort is subject to approval by the Office of the NCSES Director.

Guideline 1.2a: For the purposes of these standards, “major revision” refers to the use of new methods, additional data sources, or improved methodology that has the potential to change key estimates or introduce estimates for previously unmeasured constructs or groups. Revisions may include, but are not limited to, changes in statistical methods, questionnaire content, data collection methodology, or data editing and processing, or changes in concepts, definitions, or classifications.

Guideline 1.2b: The written plan should discuss potential users; the decisions the activities are designed to inform; key 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 sources of information; steps taken to prevent unnecessary duplication with other sources of information; discussion of potential misuse and associated adverse impact; when and how frequently users need the data; and the level of detail needed in tabulations, confidential microdata, and public-use data files.

2. Statistical Review

Standard 2.1: Statistics in NCSES publications must be generated using verified data (i.e., data that have been checked for accuracy) and must also undergo internal review for accuracy in calculations, analytic conclusions, and presentation of information.

Standard 2.2: Authors must provide to their reviewers all the necessary information (e.g., metadata information on data sources, data quality analysis of data source, underlying data tables, standard errors, and price deflators) to conduct a satisfactory review.

Guideline 2.2a: Authors must provide to their reviewers detailed citation for each data source used in the publication. Data citations for review should include the data provider, title, year of publication, publisher or distributor, URL, identifier, or other access location.

Guideline 2.2b: Authors must save and make available to their reviewers any copies of downloaded data, metadata, and associated documentation that was used for the publication.

Guideline 2.2c: Authors must save codes, output, and spreadsheets containing interim analyses performed to produce the statistics, associated sampling errors, and statistical testing reported in the publication.

Guideline 2.2d: Authors must fill and submit the attached checklist (see Appendix 1) with all other supporting documentation to the reviewer to facilitate an efficient statistical review.

Guideline 2.2e: Authors must provide a summary of data checking procedures that have been or will be conducted on the product. Data checking includes independent data replication and internal to the product correlation checks.

Standard 2.3: In rare occasions, if an author cannot meet one of these statistical review standards, they must provide to all reviewers the rationale for not doing so along with an approved waiver from the program director and NCSES Chief Statistician.

3. Data Sources and Limitations

Standard 3.1: Any subject matter or methodological literature referred to within the publication (e.g., references to pertinent theories or statistical techniques) must be cited in the product and be made available to the statistical reviewer, if requested.

Standard 3.2: For publications that include NCSES survey data, a link to the survey webpage and associated reference period (if applicable) must be included in the product.

Standard 3.3: For publications that use different data sources, check for consistency in definitions and note any definitional differences (e.g., which disciplines are included in science and engineering, calendar versus fiscal versus academic year) between the sources and how they might affect conclusions.

Standard 3.4: The limitations of the data and an explanation of how the methodology and the data limitations may affect the results must be addressed.

Standard 3.5: Include general statements in the data sources and limitations section discussing sampling error (if applicable) and nonsampling error. Examples of nonsampling error sources include nonresponse, errors in processing, false information provided by respondents, errors in the questionnaire, coverage or frame errors, measurement errors, and other nonsampling errors suspected to be associated with a particular survey.

Guideline 3.5a: If the author finds that detailing the errors associated with a publication creates an overly lengthy data limitations section, the author may refer readers to the survey webpage for more details.

Standard 3.6: Errors that could influence the results of the analysis must be explicitly addressed (e.g., high imputation rate or editing rate for a variable used in the analysis).

Standard 3.7: Sources of error specific to the publication must also be addressed.

4. Statistical Inference

Standard 4.1: The minimum significance level for statistical testing is 0.10.

Guideline 4.1a: Deviations that exceed the minimum level must be justified and approved by the program director with concurrence from the NCSES Chief Statistician.

Standard 4.2: Significance levels must be stated in the methodology (or comparable) section of the publication.

Guideline 4.2a: Blanket statements about the significance level are acceptable: “All statistical tests were conducted at the 10% significance level unless specifically noted.”

Guideline 4.2b: Within the same publication, the author can switch to a different significance level, but this must be explicitly stated in the text.

Standard 4.3: All inferences based on sample surveys should consider sampling error associated with reported estimates. Comparisons of estimates must be supported by statistical testing. Comparison statements include, but are not limited to, equal to, higher, lower, bigger, smaller than, greater than, and exceeds.

Standard 4.3a: Text must clearly state whether each comparison is statistically significant.

Guideline 4.3a: Where possible, use a blanket statement, indicating the significance level for all comparisons made in the text. Please see standard 8.3 for instructions on tabular data.

- For example: “All comparative statements in this report have undergone statistical testing, and unless otherwise noted, all comparisons are statistically significant at the 0.10 significance level”.
- If the blanket statement is used, authors must note any comparative statements that do not meet the significance criteria established in the blanket statement directly in the text.

Standard 4.3b: Results that are not statistically significant cannot be discussed in a way that indicates statistical significance.

- For example, the following statement is not acceptable for a non-statistically significant result: “Among employed SEH doctorate holders in 2008, there were higher percentages of Blacks (58%) and Asians (55%) than other racial groups (34%–47%) employed in education.
- An accurate way to write the above statement would be: “The percentages for doctorate holders employed in education in 2008 were 58% Black, 55% Asian, and other race groups ranged from 34% to 47%.”

Standard 4.3c: For comparisons where the point estimate is statistically the same, it is acceptable to say that the estimates are “statistically unchanged” or “statistically the same.”

- For example, “The percent of Hispanic doctoral recipients is statistically the same as the percent of Black doctoral recipients.”

Standard 4.3d: For comparisons where the point estimates are different, but not statistically significant, avoid making statements about the equality of population estimates that are based on sampling. It is not acceptable to say, “The poverty rate remained unchanged.” It is acceptable to say, “not statistically different.” Similarly, presenting a list of items ranked on sample-based point estimates (i.e., ranked) represents a set of statistical comparisons. All comparisons among the ranked items must be statistically significant to allow publication.

5. Assumptions and Methodology

Standard 5.1: A discussion of any assumptions used in conducting the analysis must be included within the text or as a footnote.

Standard 5.2: A description of any statistics that differs from our standard measures—means, medians, totals, ranking, percentages, ratios, percentiles (25th, 75th, etc.)—must be included within the text or as a footnote.

Standard 5.3: Any methodology that differs from our standard methodology with respect to weighting procedures or to handling of nonresponse must be investigated and justified. A description of the methodology must be included within the text or as a footnote.

6. Constant vs. Current Dollars

Standard 6.1: If dollar amounts are presented in a time-series table or graph, specify whether the amounts are in current or constant dollars. Include a note defining how the dollars were adjusted to reflect constant dollars.

Guideline 6.1a: The decision to use current or constant dollars is made on a case-by-case basis. Some factors to consider when making this decision are (1) the duration of the analysis, (2) the inflation rate across the duration of the analysis, and (3) the country of interest for the analysis.

Standard 6.2: A sentence explaining the differences in making comparisons between current and constant dollars should be included as well (e.g., comparisons in constant dollars are adjusted for inflation and deflation and provide a more accurate picture of expenditure trends).

Standard 6.3: If the author switches between current and constant dollars in the same product, then it must be made clear which metric is being used.

Standard 6.4: The price deflator used to convert current to constant dollars should be explicitly stated either in the text or as an endnote.

7. Consistency of Reporting within a Publication

Standard 7.1: Calculations in data products performed to produce summary statistics (e.g., percentages or percent changes between values) must be calculated using numbers reported in the publication.

Guideline 7.1a: Data products where rounding is used to prevent disclosure must adhere to the above standard.

Guideline 7.1b: If the author chooses to report precise percentages based on unrounded numbers not shown in the publication, they must include a footnote describing this. For example, “Reported percent changes are based on unrounded data not shown here.”

8. Tabular Data

Standard 8.1: All tabulations generated from sample surveys must present weighted estimates.

Standard 8.2: All tabulations must account for missing or invalid data items (e.g., footnotes for missing items due to confidentiality and unreliability).

Guideline 8.2a: A single footnote that combines confidentiality and unreliability suppressions is acceptable.

Standard 8.3: Within a table, if any differences are identified as statistically significant, then all statistically significant differences must be similarly identified in all tables. Authors are not required to identify statistically significant differences in the table.

Standard 8.4: Tabulations must be formatted to promote clarity and comprehension of the data presented.

Guideline 8.4a: Examples of formatting practices that promote clarity include the following:

- Presenting at most four dimensions in a cross-tabulation.
- Labeling all variables.
- Labeling the type of statistics being presented (e.g., frequency, percentage, means, and standard errors)
- Presenting totals and subtotals when appropriate.

- Labeling columns for each page in multi-page tabulations.
- Indicating when a value is suppressed for disclosure or unreliability issues.
- Providing a title of the table.
- Specifying the units of measured used within the table.
- Providing a source or citation for the table.
- Specifying the time period of the data within the table.
- Tables and figures should avoid misleading differences (e.g., ranking, differences between population groups) if uncertainty measures are not presented.

9. Writing Results

Standard 9.1: Authors must avoid using subjective language (e.g., feel, think, or believe) and avoid using normative language (i.e., statements that include a value judgement) when reporting the results of their analyses.

Standard 9.2: Descriptive statistics should not be presented as statements that imply they are the result of any event, random or otherwise. Thus, authors must avoid characterizing comparative frequencies or proportions with statements such as more likely, likely, or less likely.

10. Official Statistical Products

NCSES official statistics are statistics released by NCSES that comply with the requirements of the OMB Statistical Policy Directives and the NCSES Statistical Standards. NCSES official statistics are subject to the [NSF Information Quality Guideline \(IQG\)](#) and do not require a disclaimer describing quality limitations associated with the statistics as is required for experimental statistics. Information products that include official statistics are considered official statistical products. The NSF IQG is designed to ensure and maximize the quality, objectivity, utility, and integrity of information, including statistical information. The IQG also establishes administrative mechanisms allowing affected persons to seek and obtain correction of information maintained and disseminated by the agency that does not comply with the OMB guidelines or NSF guidelines. As noted above, the NSF IQG, the OMB Statistical Policy Directives, and the NCSES Statistical Standards document the level of quality expected in all NCSES statistical activities.

Standard 10.1: To acquire, collect, or use data for producing NCSES official statistics, NCSES staff must consult with the Office of the NCSES Chief Statistician during the planning or design phase and also during the post-data collection evaluation phase or analysis phase to ensure the source data meets the quality standards in the NSF IQG.

Guideline 10.1a: NCSES staff must consult stakeholder requirements and expectations to identify the intended official statistics and provide detailed descriptions to include the following:

- Definition of top-line estimates
- Key data items and key estimates

Guideline 10.1b: Top-line estimates refer to estimates of the total target population or estimates of all units being measured for a policy relevant characteristic (e.g., U.S. trained research doctorate population; College-educated science and engineering workforce; Total R&D expenditures). Key data items and estimates refer to policy relevant populations, characteristics, or topics measured by the data, which may include all units being measured or a subset. For the NCSES surveys, key data items are included on each survey's webpage under the "Methodology" tab.

Guideline 10.1c: NCSES staff must consult with the Office of the NCSES Chief Statistician to ensure the study designs or survey design is aligned to support the target precision and accuracy of the intended official statistics.

Guideline 10.1d: NCSES staff must maintain close adherence to what was documented in the Information Collection Request previously approved by OMB. Any significant deviations should be highlighted and justified.

Standard 10.2: The statistical quality of official statistics must undergo rigorous program review, statistical review, and receive approval by the NCSES Chief Statistician for releasing.

Guideline 10.2a: The reliability of official statistics must meet the following quality criteria:

- The estimated coefficients of variation for top-line estimates are less than 5%.
- The estimated coefficients of variation for the majority of the key estimates are less than or equal to 30%.

Guideline 10.2b: The indicators of accuracy of official statistics must meet the following quality criteria:

- Unit response rates > 60%.
- Item response rates > 70%.
- Coverage ratios for population groups associated with key estimates > 70%.

At the discretion of the NCSES Chief Statistician, the above requirements may be waived if the results from an appropriate nonresponse bias analyses or other quality assessment efforts are at an acceptable level for release as an official statistical product. All information products not approved for release as an official statistical product will be considered for release as an experimental statistical product (see the experimental statistical products section).

11. Experimental Statistical Products

SPD1 encourages statistical agencies to 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.” While the overarching goal of NCSES is to produce relevant and timely official statistics to inform decision making, in its innovative efforts toward the development of information products, NCSES may produce products that are experimental in the sense that they provide relevant information but do not meet all the NCSES Statistical Standards. Thus, NCSES experimental statistics are statistics released by NCSES that do not comply with all the requirements of the OMB Statistical Policy Directives and the NCSES Statistical Standards. Information products that only include experimental statistics are considered experimental statistical products. These products must be approved by the NCSES Chief Statistician and be clearly marked as experimental statistical products.

Historically and currently, NCSES’s information products are derived from censuses, sample surveys, and administrative records. To meet the growing demand for information about new populations and for more complex information that shows greater detail, multivariate relationships, unit-level microdata and more, NCSES encourages the exploration of innovative and nontraditional methods to develop information products such as, but not limited to, linked datasets, public-use synthetic microdata files, and surveys of previously unmeasured groups. As new methods are developed, quality measures for these methods must also be developed, calibrated, and standardized. Even though these are products for which information quality standards have not been established or for which some of the existing NCSES quality standards are not met, NCSES believes the products can provide useful information for users.

As a federal statistical agency, NCSES strives to provide maximum transparency in describing these experimental statistical products and their potential quality issues so users can evaluate their fitness for the intended use. This information allows robust stakeholder feedback on the quality and utility of these experimental statistical products to improve future iterations, which may become official statistics.

Standard 11.1: Any information product developed from a data source or a methodology that does not meet the quality standards for official statistics as outlined in Section 10 will be reviewed by the Office of the NCSES Chief Statistician to assess the appropriateness of its release as an experimental statistical product.

Guideline 11.1a: In alignment with Standard 1.1., for any information product being developed from a data source or a methodology that does not meet the quality standards for official statistics, NCSES staff should begin consultations with the Office of the NCSES Chief Statistician during the planning phase for the product and continue, as appropriate, through the completion of the activities related to the product development.

Guideline 11.1b: Through the implementation of Standards 10.1, 10.2, and 11.1, all information products disseminated to the public by NCSES will be designated as either an official statistical product or an experimental statistical product.

Standard 11.2: Any information product developed from a pilot data collection, pilot methodological study, linked or blended data, synthetic data, or an exploratory or nontraditional methodology will be classified as an experimental statistical product. The methodology and information product are subject to approval for public release by the NCSES Chief Statistician.

Standard 11.3: Any information product that uses a methodology that results in statistics that are different from or augment publicly available official statistics will be classified as an experimental statistical product. The methodology and information product are subject to approval for public release by the NCSES Chief Statistician.

Standard 11.4: Experimental statistical products must be accompanied by a complete description of their methodology.

Guideline 11.4a: The experimental statistical product and documentation describing the methodology should be released to the public as a package and posted to the NCSES website.

Guideline 11.4b: The topics included in the description should mirror those provided in the NCSES guidelines for survey methodology reports included within the *Guidelines for Preparing Technical Documentation for NCSES Surveys* (May 2019). Topics generally described in the documentation for products using administrative and other alternative data sources should also be included.

Guideline 11.4c: The description should discuss alternative approaches and the rationale and justification for the proposed methodology.

Guideline 11.4d: Additional topics may be required for inclusion in the description if questions arise during the statistical review.

Standard 11.5: Experimental statistical products must describe all potential sources of error for statistics and other results. In addition, any anticipated noncompliance with the NCSES Statistical Standards should be documented. Examples of the potential error sources that should be described include, but are not limited to, the following:

- Linked data files/products must discuss the potential errors arising from incorrect linkages, nonlinkages, other linkage errors, and coverage errors;
- Synthetic data files/products must discuss errors and the fidelity to the truth source (e.g., correlations, aggregate totals, model-based estimates);
- Pilot data collections and pilot methodological studies must discuss the potential for coverage errors, measurement errors, and other nonsampling errors;

- Blended data products must discuss potential errors arising from definitional differences in data items, contemporaneity of data (same item measured at different times (e.g., administrative data measuring employment as of March vs survey data measuring employee headcount as of April));
- Nonprobability samples or administrative data must describe violations of or problems with coverage and randomization assumptions.

Standard 11.6: NCSES should have public-facing indications, such as on the NCSES website and in associated product documentation, when an information product is an experimental statistical product and is not considered an official statistical product.

Standard 11.7: An appropriate disclaimer is required on or near the first page of any experimental statistical product and on any table, graphic, or figure that includes experimental statistics.

Guideline 11.7a: NCSES staff should consult with the Office of the NCSES Chief Statistician in the development of disclaimer language for experimental statistical products.

Guideline 11.7b: All experimental statistical products should include the following disclaimer, with minor wording variations as appropriate, on or near the first page of the product:

This NCSES information product includes experimental statistics developed from <type of experimental product (pilot data collection, synthetic data files, etc.)>. The estimates included in this information product are not official statistics and should not be used to make official statements or inferences about characteristics of the population or economy.

The <type of experimental product (pilot data collection, synthetic data files, etc.)> data are designated as an experimental statistical product. NCSES experimental statistics and experimental statistical products are created using innovative and exploratory methodologies that benefit users in the absence of other relevant information. Experimental statistical products may not meet all of NCSES's quality standards and, as a result, users should review the Data Sources and Limitations section of this product to assess the utility limitations of these experimental statistics relative to the intended use.

Guideline 11.7c: All experimental statistical products should include the following disclaimer, with minor wording variations as appropriate, on any table, graphic, or figure that includes experimental statistics:

The <type of experimental product (pilot data collection, synthetic data files, etc.)> data tables are designated as an experimental statistical product. These estimates are experimental and may not meet all the quality standards of the National Center for Science and Engineering Statistics. Users should take caution when using estimates presented in this <type (table, graphic, figure)>. Additional information about the

experimental statistical product designation can be found in the “Technical Notes” accompanying these tables.

Standard 11.8: Any information product that proposes to include both official statistics and experimental statistics must be approved by the Office of the NCSES Director, must separate and clearly identify the presentation of the experimental statistics, and must adhere to all the standards within this section pertaining to the dissemination of experimental statistics products.

Guideline 11.8a: Official statistics and experimental statistics should not be included in the same table, graphic, or figure within an information product.

Guideline 11.8b: In alignment with Standard 1.1., for any information product that proposes to include both official statistics and experimental statistics, NCSES staff should begin consultations with the Office of the NCSES Chief Statistician during the planning phase for the product and continue, as appropriate, through the completion of the activities related to the product development.

Requesting Waivers to the Standards

If an author is not complying with these standards or if they anticipate that they may be unable to comply with any requirements of these standards in the production of an official statistical product or experimental statistical product, the author must apply for a waiver. Waivers to any of the listed standards may be granted when warranted. Waiver requests must include a written statement discussing the proposed information product (official or experimental statistical product), the rationale for the deviation, and any anticipated effects that may result from the deviation. The deviation must be approved by the program director with concurrence from the NCSES Chief Statistician. In response to any waiver request, the NCSES Chief Statistician must document the determination (approval/rejection) and the rationale for the determination.

Distribution, Enforcement, and Cancellation

These standards were distributed by the NCSES Chief Statistician, apply to all NCSES staff and NCSES contractors, replace the Statistical Standards for Information Products released on November 4, 2021, and are effective until replaced or cancelled.

Revision History

Version	Date	Section	Description	Approver
1.0	09/01/2020	Throughout	Initial version	Samson Adeshiyan
2.0	11/04/2021	Throughout	Incorporated format and editorial revisions. Revised text in standards 1.1, 8.1,	John Finamore

Version	Date	Section	Description	Approver
			and 9.2. Added standard 8.2.	
3.0	01/10/2025	Introduction, Section 1, 10, and 11	Added text to clarify the scope, purpose, and background. Introduced the concept of NCSES experimental statistical products. Removed standard 4.4 and guideline 4.4a. Added Section 1 and Section 11, and revised Section 10.	John Finamore

Appendix 1: Statistical Publication Standards Checklist

Standard/ Guideline	Check	Yes	N/A	Notes
2.1	NCSSES publication estimates have been generated using verified data that has undergone internal review for accuracy.			
2.2	All necessary documentation to conduct a statistical review has been supplied to the reviewer.			
2.2a	Authors must provide to their reviewers detailed citation for each data source used in the publication. Data citations for review should include the data provider, title, year of publication, publisher or distributor, URL, identifier, or other access location.			
2.2b	Authors must save and make available to their reviewers any copies of downloaded data, metadata, and associated documentation that was used for the publication.			
2.2c	Authors must save codes, output, or spreadsheets containing interim analyses performed to produce the statistics, associated sampling errors, and statistical testing reported in the publication.			
2.2d	Authors must fill and submit the attached checklist with all other supporting documentation to the reviewer to facilitate an efficient statistical review.			
2.2e	Summary of data checking.			
2.3	Any requested exceptions have been approved by the author's program director and the NCSSES Chief Statistician and documentation granting the approval has been submitted in support of the statistical review.			
3.1	All subject matter or other methodological literature referred to within the publication has been cited within the document.			
3.2	If NCSSES survey data is used in the publication the links to the survey webpage are included in the document.			
3.3	For publications that use a variety of data sources, any differences in construct definition or other variables are noted within the document.			
3.4	Any data limitations and its potential impact on the publication's results are addressed within the publication.			
3.5/3.5a	The publication includes any necessary statements about both sampling and nonsampling error.			
3.6	Any errors that significantly influence the results of the analysis have been addressed within the publication.			
3.7	Any error sources that are specific to the publication under review must be addressed in the publication.			
4.2	The statistical significance level for any testing has been stated in the methodology section.			

Standard/ Guideline	Check	Yes	N/A	Notes
4.3/4.3a	Comparison statements based on sample surveys must be supported by statistical testing. The publication's text clearly states which tests are statistically significant.			
4.4	Statistically significant differences in tables/figures have been clearly stated in the graph or text.			
5.1	Any assumptions made when conducting the analysis have been discussed in the publication.			
5.2	Any non-standard statistics have been described within the publication and been discussed during a consultation phase with a math-stat.			
5.3	Any non-standard methods used during statistical processing (e.g., weighting, imputation) have been discussed within the publication.			
6.1	The publication clearly states if constant vs. current dollars have been used in any time-series graph.			
6.2/6.3	Any price deflators that were used in a publication must have been explicitly discussed in the publication. Any switches between current and constant dollars are explicitly stated within the document.			
6.4	The price deflator that was used to convert current to constant dollars has been explicitly stated in the publication.			
7.1	Any calculations made in data products performed to produce summary statistics have been calculated using numbers reported in the publication.			
7.2	Percentages used the minimum number of significant digits to communicate the point.			
8.1	Tables generated from sample surveys have been presented weighted estimates.			
8.2	All tabulations account for missing or invalid data items (e.g., confidentiality, unreliability).			
8.3	Statistically significant differences are consistently noted in tables			
8.4	Table formatting has been completed in accordance with these standards.			
9.1	The publication does not include subjective language and does not include normative language when reporting the results of the analysis.			
9.2	The publication does not include comparison statements that use the term 'likely' when presenting descriptive statistics.			