



ACTUARIAL STANDARDS BOARD

● EXPOSURE DRAFT ●

**Proposed Revision of
Actuarial Standard of
Practice No. 23**

Data Quality

**Comment Deadline:
February 29, 2016**

**Developed by the
Data Quality Task Force of the
General Committee of the
Actuarial Standards Board**

**Approved for Exposure by the
Actuarial Standards Board
November 2015**

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TO: Members of Actuarial Organizations Governed by the Standards of Practice of the Actuarial Standards Board and Other Persons Interested in Data Quality

FROM: Actuarial Standards Board (ASB)

SUBJ: Proposed Revision of Actuarial Standard of Practice (ASOP) No. 23

This document contains an exposure draft of a proposed revision of ASOP No. 23, *Data Quality*. Please review this exposure draft and give the ASB the benefit of your comments and suggestions. Each written response and each response sent by e-mail to the address below will be acknowledged, and all responses will receive appropriate consideration by the drafting committee in preparing the final document for approval by the ASB.

The ASB accepts comments by either electronic or conventional mail. The preferred form is email, as it eases the task of grouping comments by section. If you wish to use e-mail, please send a message to **comments@actuary.org**. You may include your comments either in the body of the message or as an attachment prepared in any commonly used word processing format. **Please do not password-protect any attachments. If the attachment is in the form of a PDF, please do not “copy protect” the PDF.** Include the phrase “ASB COMMENTS” in the subject line of your message. Please note: Any message not containing this exact phrase in the subject line will be deleted by our system’s spam filter.

If you wish to use conventional mail, please send comments to the following address:

ASOP No. 23 Revision
Actuarial Standards Board
1850 M Street, NW, Suite 300
Washington, DC 20036

The ASB posts all signed comments received to its website to encourage transparency and dialogue. Anonymous comments will not be considered by the ASB nor posted to the website. The comments will not be edited, amended, or truncated in any way. Comments will be posted in the order that they are received. Comments will be removed when final action on a proposed standard is taken. The ASB website is a public website, and all comments will be available to the general public. The ASB disclaims any responsibility for the content of the comments, which are solely the responsibility of those who submit them.

Deadline for receipt of responses in the ASB office: **February 29, 2016**

Background

The ASB originally adopted ASOP No. 23, *Data Quality* (Doc. No. 044), in 1993. That ASOP was prepared by the Data Quality Task Force of the Specialty Committee of the ASB. The

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General Committee revised ASOP No. 23 in 2004 to be consistent with the then-current ASOP format, to reflect current, generally accepted practice with respect to data quality, and to provide guidance concerning other information relevant to the use of data. ASOP No. 23 was further updated for deviation language, effective May 1, 2011.

In 2014, the ASB concluded that this ASOP should be reviewed. This revision is the result of that review.

Key Changes

Key changes reflected in this exposure draft are as follows:

1. Clarifying that the standard also applies to actuaries preparing data for other actuaries to use in an actuarial work product.
2. Improving consistency in the use of defined terms.
3. Requiring that the actuary not rely on data or related information if it becomes apparent in the course of the assignment that the data or related information are unsuitable for use.
4. Requiring the actuary to disclose in summary form any unresolved questionable data or related information uncovered on review that may have a significant effect on the analysis, and any significant steps taken to improve the data.
5. Requiring a disclosure as to why a review was not performed and any resulting limitations on the use of the actuarial work product, if the actuary did not review the data.
6. Limiting the documentation requirements for adjustments or modifications made to the data to those expected to have a significant effect.

Request for Comments

1. Does this proposed revision provide appropriate guidance for an actuary preparing data for another actuary's use (for example, legislatively-mandated data submissions)?
2. Does this proposed revision provide appropriate guidance for working with nontraditional data sources (for example, predictive models)?
3. Considering the guidance in section 3.6, which discusses the quality of other information relevant to data, is the title of the standard "Data Quality" appropriate?

The ASB voted in November 2015 to approve this exposure draft.

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The ASB establishes and improves standards of actuarial practice. These ASOPs identify what the actuary should consider, document, and disclose when performing an actuarial assignment. The ASB's goal is to set standards for appropriate practice for the U.S.

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**PROPOSED REVISION OF
ACTUARIAL STANDARD OF PRACTICE NO. 23**

DATA QUALITY

STANDARD OF PRACTICE

Section 1. Purpose, Scope, Cross References, and Effective Date

- 1.1 Purpose—The purpose of this actuarial standard of practice (ASOP) is to provide guidance to the actuary when performing the following:
- a. selecting the **data** that underlie the actuarial work product;
 - b. relying on **data** supplied by others;
 - c. reviewing **data**;
 - d. using **data**;
 - e. preparing **data** to be used by other actuaries in an actuarial work product; and
 - f. making appropriate disclosures with regard to **data** quality.
- 1.2 Scope—This standard applies to actuaries when performing actuarial services involving **data**. Other actuarial standards of practice may contain additional considerations related to **data** quality that are applicable to particular areas of practice or types of actuarial assignment. If an actuary prepares **data** to be used by other actuaries in an actuarial work product or assumes responsibility for preparing **data**, the actuary should apply the relevant portions of the standard as though the actuary were using the **data**.

This standard does not apply to the generation of a wholly hypothetical data set.

This standard does not require the actuary to perform an **audit** of the **data**.

If the actuary departs from the guidance set forth in this standard in order to comply with applicable law (statutes, regulations, and other legally binding authority), or for any

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other reason the actuary deems appropriate, the actuary should refer to section 4.

- 1.3 Cross References—When this standard refers to the provisions of other documents, the reference includes the referenced documents as they may be amended or restated in the future, and any successor to them, by whatever name called. If any amended or restated document differs materially from the originally referenced document, the actuary should consider the guidance in this standard to the extent it is applicable and appropriate.
- 1.4 Effective Date—This standard will be effective for any actuarial work product for which **data** were provided to or developed by the actuary on or after four months following adoption by the Actuarial Standards Board.

Section 2. Definitions

The terms below are defined for use in this actuarial standard of practice.

- 2.1 Appropriate Data—**Data** suitable for the intended purpose of an analysis and relevant to the system or process being analyzed.
- 2.2 Audit—A formal and systematic examination of **data** for the purpose of testing its accuracy and completeness.
- 2.3 Comprehensive—Containing sufficient **data elements** or records needed for the analysis.
- 2.4 Data—Numerical, census, or classification information but not general or qualitative information. Assumptions are not **data**, but **data** are commonly used in the development of actuarial assumptions.
- 2.5 Data Element—An item of information, such as date of birth or risk classification.
- 2.6 Review—An informal examination of the obvious characteristics of **data** to determine if such **data** appear reasonable and consistent for purposes of the assignment. A **review** is not an **audit** of **data**.

Section 3. Analysis of Issues and Recommended Practices

- 3.1 Overview—**Appropriate data** that are accurate and complete may not be available. The actuary should use available **data** that, in the actuary's professional judgment, allow the actuary to perform the desired analysis. However, if significant **data** limitations are

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known to the actuary, the actuary should disclose those limitations and their implications, as described in section 4. The following sections discuss such considerations in more detail.

3.2 Selection of Data—In undertaking an analysis, the actuary should consider what **data** to use. The actuary should consider the scope of the assignment and the intended use of the analysis being performed to determine the nature of the **data** needed and the number of alternative **data** sets or **data** sources, if any, to be considered. The actuary should do the following:

- a. consider the **data elements** that are desired and possible alternative **data elements**; and
- b. select the **data** for the analysis with due consideration of the following:
 1. whether the **data** constitute **appropriate data**, including whether the **data** are sufficiently current;
 2. whether the **data** are reasonable with particular attention to internal and external consistency;
 3. the degree to which the **data** are **comprehensive**;
 5. any known significant limitations of the **data**;
 6. the availability of additional or alternative **data** and the benefit to be gained from such additional or alternative **data**, balanced against the time and cost required to collect and compile such additional or alternative **data**; and
 7. sampling methods, if used to collect the **data**.

3.3 Review of Data—A **review** of **data** may not always reveal existing defects. Nevertheless, whether the actuary prepared the **data** or received the **data** from others, the actuary should perform a **review**, unless, in the actuary’s professional judgment, such **review** is not necessary or not practical. In exercising such professional judgment, the actuary should consider the purpose and nature of the assignment, any relevant constraints, and the extent of any known checking, verification, or **audit** of the **data** that has already been performed.

When determining the nature and extent of such a **review**, the actuary should do the

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following:

- a. make a reasonable effort to determine the definition of each **data element** used in the analysis;
- b. perform a **review** of the **data** used in the actuary's analysis for the purpose of identifying **data** values that are questionable or relationships that are significantly inconsistent. If the actuary believes questionable or inconsistent **data** values could have a significant effect on the analysis, the actuary should consider further steps, when practical, to improve the quality of the **data**. Any unresolved questionable **data** values that may have a significant effect on the analysis, and significant steps taken to improve the **data**, should be disclosed in summary form, as described in section 4; and
- c. if similar work has been previously performed for the same or recent periods, perform a **review** of the current **data** for consistency with the **data** used in the prior analysis. If the actuary does not have the prior **data**, the actuary should consider requesting the prior **data**.

If, in the actuary's professional judgment, it is not appropriate to perform a **review** of the **data**, the actuary should disclose that the actuary has not performed such a **review**, the reason the actuary has not performed such a **review**, and any resulting limitation on the use of the actuarial work product, as described in section 4.

3.4 Use of Data—Because **appropriate data** that are accurate and complete may not be available, the actuary should make a professional judgment about which of the following are applicable:

- a. the **data** are of sufficient quality to perform the analysis;
- b. the **data** require enhancement before the analysis can be performed, and it is practical to obtain additional or corrected **data** that will allow the analysis to be performed;
- c. judgmental adjustments or assumptions can be applied to the **data** that allow the actuary to perform the analysis. If the actuary judges that the use of the **data**, even with adjustments and assumptions applied, may cause the results to be highly uncertain or contain a significant bias, the actuary may choose to complete the assignment but should disclose the potential existence of the uncertainty or bias, and, if reasonably determinable, the nature and potential magnitude of such uncertainty or bias, as described in section 4;

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- d. if the actuary believes that the **data** are likely to contain significant defects, the actuary should determine, if practical, the nature and extent of any checking, verification, or **audit** of the **data** that has been performed. Then, if, in the actuary's professional judgment, a more extensive **review** is needed, the actuary should arrange for such a **review** prior to completing the assignment; or
- e. if, in the actuary's professional judgment, the **data** are so inadequate that the **data** cannot be used to satisfy the purpose of the analysis, then the actuary should obtain different **data** or decline to complete the assignment.

3.5 Reliance on Data Supplied by Others—In most situations, the **data** are provided to the actuary by others. The accuracy and completeness of **data** supplied by others are the responsibility of those who supply the **data**. The actuary may rely on **data** supplied by others, subject to the guidance in sections 3.3 and 3.4, unless it is or becomes apparent to the actuary in the course of the assignment that the **data** are unsuitable for use in the actuary's analysis. However, if an actuary is required by a regulator or other governmental authority to use **data** that the actuary considers unsuitable for use in the actuary's analysis, the actuary may use the **data** subject to the disclosure requirements of section 4. The actuary should disclose reliance on **data** supplied by others in an appropriate actuarial communication, as described in section 4.

3.6 Reliance on Other Information Relevant to the Use of Data—In many situations, the actuary is provided with other information relevant to the appropriate use of **data**, such as contract provisions, plan documents, and reinsurance treaties. The validity and completeness of such information are the responsibility of those who supply such information. The actuary may rely on such information supplied by others, unless it is or becomes apparent to the actuary in the course of the assignment that the information is unsuitable for use in the actuary's analysis, or the information suggests that the **data** may be unsuitable. The actuary should disclose reliance on such information supplied by others in an appropriate actuarial communication, as described in section 4. If the actuary believes the information is unsuitable, or inconsistencies between the information and the data suggest that the information may be unsuitable, the actuary should make a professional judgment about whether to use the other information. The actuary should consider disclosing when other relevant information that has been provided is not used.

3.7 Limitation of the Actuary's Responsibility—The actuary is not required to do any of the following:

- a. determine whether **data** or other information supplied by others are falsified or intentionally misleading;

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- b. develop additional **data** compilations solely for the purpose of searching for questionable or inconsistent **data**; or
- c. perform an **audit** of the **data**.

3.8 Documentation—The actuary’s documentation should include the following:

- a. the process the actuary followed to evaluate the **data**, including the **review** or any consideration of prior **data**;
- b. a description of any significant defects the actuary believes are in the **data**;
- c. a summary description of any adjustments or modifications made to the **data**, other than routine corrections made by reference to source documents, that are expected to have a significant effect on the analysis, including the reasoning to support any such adjustments or modifications; and
- d. any other documentation necessary to comply with the disclosure requirements of section 4.

Section 4. Communications and Disclosures

4.1 Communication and Disclosure—When issuing communications under this standard, the actuary should comply with ASOP No. 41, *Actuarial Communications*. In addition, the actuary should disclose the following items:

- a. the source(s) of the **data**;
- b. whether the actuary performed a **review** of the **data** and, if not, the reason for not reviewing the **data**;
- c. the extent of the actuary’s reliance on **data** and other information relevant to the use of the **data** supplied by others;
- d. in summary form, significant judgmental adjustments or assumptions that the actuary applied to the **data** or to other information relevant to the use of the **data**, or are known by the actuary to have been applied to the **data** or other information, to allow the actuary to perform the analysis;
- e. any limitations on the use of the actuarial work product due to uncertainty about

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the quality of the **data** or other information relevant to the use of the **data**;

- f. in summary form, unresolved concerns the actuary may have about the **data** or other information relevant to the use of the **data** that could have a significant effect on the actuarial work product;
- g. the existence of results that are highly uncertain or have a potentially significant bias of which the actuary is aware due to the quality of the **data** or other information relevant to the use of the **data**; and the nature and potential magnitude of such uncertainty or bias, if they can be reasonably determined;
- h. the disclosure in ASOP No. 41, section 4.2, if any material assumption or method was prescribed by applicable law (statutes, regulations, and other legally binding authority);
- i. the disclosure in ASOP No. 41, section 4.3, if the actuary states reliance on other sources and thereby disclaims responsibility for any material assumption or method selected by a party other than the actuary; and
- j. the disclosure in ASOP No. 41, section 4.4, if, in the actuary's professional judgment, the actuary has otherwise deviated materially from the guidance of this ASOP.

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Appendix

Background and Current Practices

Note: The following appendix is provided for informational purposes, but is not part of the standard of practice.

Background

An actuarial analysis is based upon an analysis of data, along with practical knowledge of the field of practice and training in actuarial theory, which together enable the actuary to interpret the results of calculations. Throughout the analytic process, data play an important role. The accuracy and validity of the actuarial analysis are dependent on, among other things, the quality of the data used. Hence, an actuarial standard of practice concerning data quality is appropriate.

Data frequently contain errors, are not fully complete, and are not precisely appropriate for the intended analysis. Actuaries deal with these limitations, the majority of which are non-critical. However, actuaries are often called upon to perform actuarial services in situations where data limitations may be critical. Actuaries use professional judgment when determining whether and how to refine data or make modifications within the analysis.

Current Practices

Actuaries use informed judgment to determine what kinds of data are appropriate for a particular analysis. It is important that the data used are relevant to the system or process being analyzed.

Data have played an increasingly important role in the insurance industry in recent years. In addition to the traditional uses of data that have been in place for many years, insurers have been using broader sources of data more recently to support improved business decisions. This has included more sophisticated data analytics to improve claims processes, underwriting, pricing, distribution management, and customer service. In addition, there has been expansion of use of sophisticated models for a wide range of purposes, and those models are heavily reliant on the data inputs. Because of their analytical skills, actuaries have been deeply involved in these advancements, including assessing the quality and comprehensiveness of data for use in various applications.

Persons or organizations responsible for generating, collecting, or publishing data may apply different standards of quality assurance, ranging from straightforward compilation of figures to extensive verification. Actuaries, in turn, deal with the question of the quality of data underlying their work products in a variety of ways and with varying levels of review or checking.

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Actuaries are called upon to provide analyses for a broad range of uses, from limited distribution within an organization to public exposure.

Important aspects of data use include documentation and disclosure of (1) the sources of data; (2) review of data; (3) significant biases resulting from data used by the actuary; (4) adjustments or corrections made to the data; and (5) the extent of reliance on data supplied by others. Typically, actuaries do not audit data.