



**ACTUARIAL STANDARDS BOARD**

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**Actuarial Standard  
of Practice  
No. 13**

**Trending Procedures in  
Property/Casualty Insurance**

**Revised Edition**

**Developed by the  
Subcommittee on Ratemaking of the  
Casualty Committee of the  
Actuarial Standards Board**

**Adopted by the  
Actuarial Standards Board  
June 2009**

**Updated for Deviation Language Effective May 1, 2011**

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**TABLE OF CONTENTS**

Transmittal Memorandum iii

**STANDARD OF PRACTICE**

Section 1. Purpose, Scope, Cross References, and Effective Date	1
1.1 Purpose	1
1.2 Scope	1
1.3 Cross References	1
1.4 Effective Date	1
Section 2. Definitions	2
2.1 Coverage	2
2.2 Experience Period	2
2.3 Forecast Period	2
2.4 Social Influences	2
2.5 Trending Period	2
2.6 Trending Procedure	2
Section 3. Analysis of Issues and Recommended Practices	2
3.1 Purpose or Use of Trending Procedures	2
3.2 Historical Insurance and Non-Insurance Data	3
3.3 Economic and Social Influences	3
3.4 Selection of Trending Procedures	3
3.5 Criteria for Determining Trending Period	3
3.6 Evaluation of Trending Procedures	3
3.7 Reliance on Data or Other Information Supplied by Others	4
3.8 Documentation	4
Section 4. Communications and Disclosures	4
4.1 Actuarial Communication	4
4.2 Additional Disclosures	4

**APPENDIXES**

Appendix 1—Background and Current Practices	5
Background	5
Current Practices	5
Appendix 2—Comments on the Exposure Draft and Responses	6

## ASOP No. 13—June 2009

June 2009

**TO:** Members of Actuarial Organizations Governed by the Standards of the Actuarial Standards Board and Other Persons Interested in Trending Procedures in Property/Casualty Insurance

**FROM:** Actuarial Standards Board (ASB)

**SUBJ:** Actuarial Standard of Practice (ASOP) No. 13

This document contains the final version of the revision of ASOP No. 13, *Trending Procedures in Property/Casualty Insurance*.

### Background

The existing ASOP No. 13, *Trending Procedures in Property/Casualty Insurance Ratemaking*, was developed by the Subcommittee on Ratemaking of the Casualty Committee in July 1989 and adopted by the ASB in July 1990. Since the promulgation of the original standard, developments in trending procedures have continued, and the use of trending in non ratemaking areas has become more widespread. The Subcommittee prepared this revision of ASOP No. 13 to reflect appropriate actuarial practice with respect to trending procedures in property/casualty insurance and to be consistent with the current ASOP format. Further, this proposed revision expands guidance on the application of trend procedures beyond ratemaking to include reserving, valuations, underwriting, and marketing analyses.

### Exposure Draft

The exposure draft of this revision was issued in January 2008 with a comment deadline of May 1, 2008. The Subcommittee on Ratemaking carefully considered the thirteen comment letters received and made changes to the language in several sections in response. For a summary of the substantive issues contained in the exposure draft comment letters and the responses, please see appendix 2.

The most significant changes from the exposure draft were as follows:

1. Section 1.2, Scope and section 2.6, Trending Procedure, were revised to indicate that, for the purpose of this standard, trending does not encompass the process commonly referred to as “development.”
2. Section 4.1, Actuarial Communication, and section 4.2, Additional Disclosures, have been revised to indicate that the actuary needs to make specific disclosures when certain aspects of the trend procedure have a material effect on the result or conclusions of the actuary’s overall analysis.

The ASB voted in June 2009 to adopt this standard.



**ACTUARIAL STANDARD OF PRACTICE NO. 13**

**TRENDING PROCEDURES IN  
PROPERTY/CASUALTY INSURANCE**

**STANDARD OF PRACTICE**

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

- 1.1 Purpose—This actuarial standard of practice (ASOP) provides guidance to actuaries when performing professional services using trending procedures to estimate future values.
- 1.2 Scope—This standard applies to actuaries when performing professional services to estimate future values using trending procedures for all property/casualty coverages. This includes work performed for insurance or reinsurance companies, and other property/casualty risk financing systems that provide similar coverage, such as self insurance.

For purposes of this standard, a trending procedure does not encompass the process commonly referred to as “development,” which estimates changes over time in losses (or other items) within a given exposure period (for example, accident year or underwriting year).

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 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 is effective for actuarial services performed on or after November 1, 2009.

## ASOP No. 13—June 2009

### Section 2. Definitions

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

- 2.1 Coverage—The terms and conditions of a plan or contract, or the requirements of applicable law, that create an obligation for claim payment associated with contingent events.
- 2.2 Experience Period—The period of time to which historical data used for actuarial analysis pertain.
- 2.3 Forecast Period—The future time period to which the historical data are projected.
- 2.4 Social Influences—The impact on insurance costs of societal changes such as changes in claim consciousness, court practices, and legal precedents, as well as in other noneconomic factors.
- 2.5 Trending Period—The time over which trend is applied in projecting from the experience period to the forecast period.
- 2.6 Trending Procedure—A process by which the actuary evaluates how changes over time affect items such as claim costs, claim frequencies, expenses, exposures, premiums, retention rates, marketing/solicitation response rates, and economic indices. Trending procedures estimate future values by analyzing changes between exposure periods (for example, accident years or underwriting years). A trending procedure does not encompass the process commonly referred to as “development,” which estimates changes over time in losses (or other items) within a given exposure period.

### Section 3. Analysis of Issues and Recommended Practices

- 3.1 Purpose or Use of Trending Procedures—Trending is an important component in many analyses performed by actuaries including, but not limited to, ratemaking, reserving, valuations, underwriting, and marketing. The actuary should identify the intended purpose or use of the trending procedure. The actuary should apply trending procedures that are appropriate for the applicable purpose or use.

Where multiple purposes or uses are intended, the actuary should consider the potential conflicts arising from those multiple purposes or uses and should consider adjustments to accommodate the multiple purposes or uses to the extent that, in the actuary’s professional judgment, it is appropriate and practical to make such adjustments.

The actuary may present the trend estimate resulting from the trending procedure in a variety of ways, such as a point estimate, a range of estimates, a point estimate with a margin for adverse deviation, or a probability distribution of the trend estimate. The

## ASOP No. 13—June 2009

actuary should consider the intended purpose or use of the trend estimate when deciding how to present the trend estimate.

- 3.2 Historical Insurance and Non-Insurance Data—The actuary should select data appropriate for the trends being analyzed. The data can consist of historical insurance or non-insurance information. When selecting data, the actuary should consider the following:
- a. the credibility assigned to the data by the actuary;
  - b. the time period for which the data is available;
  - c. the relationship to the items being trended; and
  - d. the effect of known biases or distortions on the data relied upon (for example, the impact of catastrophic influences, seasonality, coverage changes, nonrecurring events, claim practices, and distributional changes in deductibles, types of risks, and policy limits).
- 3.3 Economic and Social Influences—The actuary should consider economic and social influences that can have a significant impact on trends in selecting the appropriate data to review, the trending calculation, and the trending procedure. In addition, the actuary should consider the timing of the various influences.
- 3.4 Selection of Trending Procedures—The actuary should select trending procedures after appropriate consideration of available data. In selecting these procedures, the actuary may consider relevant information such as the following:
- a. procedures established by precedent or common usage in the actuarial profession;
  - b. procedures used in previous analyses;
  - c. procedures that predict insurance trends based on insurance, econometric, and other non-insurance data; and
  - d. the context in which the trend estimate is used in the overall analysis.
- 3.5 Criteria for Determining Trending Period—The actuary should consider both the lengths of the experience and forecast periods, and changes in the mix of data between the experience and forecast periods when determining the trending period. When incorporating non-insurance data in the trending procedure, the actuary should consider the timing relationships among the non-insurance data, historical insurance data, and the future values being estimated.
- 3.6 Evaluation of Trending Procedures—The actuary should evaluate the results produced by each selected trending procedure for reasonableness and revise the procedure where appropriate.

## ASOP No. 13—June 2009

- 3.7 Reliance on Data or Other Information Supplied by Others—When relying on data or other information supplied by others, the actuary should refer to ASOP No. 23, *Data Quality*, for guidance.
- 3.8 Documentation—The actuary should prepare and retain appropriate documentation regarding the methods, assumptions, procedures, and the sources of the data used. The documentation should be in a form such that another actuary qualified in the same practice area could assess the reasonableness of the actuary’s work, and should be sufficient to comply with the disclosure requirements in section 4.

### Section 4. Communications and Disclosures

- 4.1 Actuarial Communication—When issuing an actuarial communication subject to this standard, the actuary should refer to ASOP Nos. 23 and 41, *Actuarial Communications*. In addition, the actuary should disclose the following, as applicable, in an actuarial communication:
- a. the intended purpose(s) or use(s) of the trending procedure, including adjustments that the actuary considered appropriate in order to produce a single work product for multiple purposes or uses, if any, as described in section 3.1;
  - b. significant adjustments to the data or assumptions in the trend procedure, that may have a material impact on the result or conclusions of the actuary’s overall analysis;
  - c. the disclosure in ASOP No. 41, *Actuarial Communications*, section 4.2, if any material assumption or method was prescribed by applicable law (statutes, regulations, and other legally binding authority);
  - d. 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
  - e. 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.
- 4.2 Additional Disclosures—In certain cases, consistent with the intended purpose or use, the actuary may need to make the following disclosures in addition to those in section 4.1:
- a. When the actuary specifies a range of trend estimates, the actuary should disclose the basis of the range provided.
  - b. The actuary should disclose changes to assumptions, procedures, methods or models that the actuary believes might materially affect the actuary’s results or conclusions as compared to those used in a prior analysis, if any, performed for the same purpose.



**Appendix 1**

**Background and Current Practices**

Background

Recognition of the significance of trend in many property/casualty analyses and difficulty of discerning turning points has led to a need for increasingly sophisticated trending procedures. Publications of the CAS such as *Variance* and the *Syllabus of Examinations*, and many other publications such as statistics and economics textbooks, provide extensive information on alternative procedures. The actuary may refer to these or develop other procedures, as appropriate for each situation.

Current Practices

Trending procedures are used in ratemaking, reserving, valuation, underwriting, and marketing for most property/casualty insurance plans or policies. In such procedures, actuaries generally place reliance on (1) data generated by the book of business being analyzed, (2) other insurance data, and (3) non-insurance data, in that order of preference. Mathematical techniques are often used to smooth and extrapolate from historical data. In the absence of strong contrary indications, there is a reliance on extrapolations of historical insurance data. Procedures based on non-insurance data are also used. In trending procedures, judgmental considerations generally include, but are not limited to, the historical data used, the success of these techniques in making prior projections, the statistical goodness of fit of the techniques to the historical data, and the impact of any sudden, nonrecurring changes (for example, tort reform) which had not yet been incorporated in the historical data.

**ASOP No. 13—June 2009**

**Appendix 2**

**Comments on the Exposure Draft and Responses**

The exposure draft of this ASOP, *Trending Procedures in Property/Casualty Insurance*, was issued in January 2008 with a comment deadline of May 1, 2008. Thirteen comment letters were received, some of which were submitted on behalf of multiple commentators, such as by firms or committees. For purposes of this appendix, the term “commentator” may refer to more than one person associated with a particular comment letter. The Subcommittee on Ratemaking carefully considered all comments received, and the Casualty Committee and ASB reviewed (and modified, where appropriate) the proposed changes.

Summarized below are the significant issues and questions contained in the comment letters and the responses.

The term “reviewers” in appendix 2 includes the subcommittee, the Casualty Committee, and the ASB. Unless otherwise noted, the section numbers and titles used in appendix 2 refer to those in the exposure draft.

<b>GENERAL COMMENTS</b>	
Comment	One commentator stated that the concept of trending is applicable to all actuaries and any ASOP that’s created should serve as a single source of professional guidance. The commentator therefore suggested the ASOP title be changed to “Trending Procedures” and that the document be reviewed to make sure it covers all actuarial practice areas (rather than develop separate ASOPs for each area).
Response	The reviewers believe the uses of “trend” can vary among practice areas and that this ASOP is specific to situations that impact property/casualty insurance. The approach taken in other areas has been to incorporate trending as needed in task specific ASOPs.
Comment	Several commentators expressed concern that this standard unintentionally covered reserving practices already subject to ASOP No. 43, <i>Property/Casualty Unpaid Claim Estimates</i> . The concern was the inclusion of reserving practices commonly known as “loss development.”
Response	The reviewers agreed that there was a need to carve out “loss development.” However, the reviewers wanted to ensure that other uses of trend in a reserving context (examples include Cape Cod, Bornhuetter Ferguson, and frequency/severity methods) were included in this standard. The reviewers added language to section 1.2, Scope and section 2.6, Trending Procedure to achieve the goal of carving out “development,” but not the other uses of trend in reserving. In other words, changes between exposure periods are included under this standard but not changes within an exposure period. The term “development” is used rather than “loss development” to recognize that development triangles are also applied to premiums and other components.

**ASOP No. 13—June 2009**

Comment	One commentator stated there are many individual assumptions in actuarial work—the most obvious example being loss development factors—that are not the subject of a separate standard. The commentator also stated he didn't feel "trend" was important enough to warrant its own standard and that consideration should be given to greatly broadening the standard (or combining it with another one) to create one standard encompassing all, for example, "Selection of Actuarial Assumptions in Estimation of Ultimate Losses for Casualty Projections."
Response	The reviewers believe that trend is important enough to warrant its own standard, and note that ASOP Nos. 12, 25, 29, 30, 38, and 39, in addition to 13, address many different aspects of ratemaking.
Comment	Several commentators requested specific guidance on the many problems facing actuaries when trending, such as selecting regression models, extrapolation, statistical methods, etc.
Response	The reviewers believe it is not the purpose of the standard to provide specific procedures and that it is too difficult to keep a standard up to date with specific procedures.
<b>SECTION 2. DEFINITIONS</b>	
<b>Section 2.2, Experience Period</b>	
Comment	One commentator suggested changing "to" to "from" and "pertain" to "was obtained" in the definition stating he sees the experience period as being the source of data for the forecast period.
Response	The reviewers believe revising the language would make it less clear and did not make the change.
<b>Section 2.5, Trending Period</b>	
Comment	One commentator suggested that ASOP No. 13 give a more fundamental definition of the trending period and that the description of the simple calculation of the trending period be moved to section 3.5, Criteria for Determining Trending Period. In addition, the commentator suggested the definition of "trending period" be rewritten to, "the time over which trend is applied in projecting from the experience period to the forecast period."
Response	The reviewers modified the definition to reflect the suggested language, but did not agree with the suggestion to move the simple calculation to section 3.5 Criteria for Determining Trending Period.
<b>Section 2.6, Trending Procedure</b>	
Comment	One commentator stated that in the definition of "trending procedures," reference is made to "response rates" and "conversion/issue rates," and suggested that these terms be separately defined as they have meaning that may not be readily apparent.
Response	The reviewers agreed that these terms may have meaning that is not readily apparent and removed them from the definition as they were meant to be illustrative of items that might be the subject of trend analysis. These examples were replaced by the example of marketing/solicitation response rates.
Comment	One commentator suggested modifying the definition to "a process by which the actuary evaluates how changes over time may affect items such as...."
Response	The reviewers disagreed with adding the word "may" and left the definition unchanged.

**ASOP No. 13—June 2009**

<b>SECTION 3. ANALYSIS OF ISSUES AND RECOMMENDED PRACTICES</b>	
<b>Section 3.1, Purpose or Use of Trending Procedures</b>	
Comment	One commentator stated that mention should be made (for example, in section 3.4, Selection of Trending Procedures) of specific situations that may require stochastic trending procedures or, at the very least, consideration of multiple scenarios. In addition, the commentator stated it would not be wise to evaluate reinvestment risk based on a single projection of future interest rates noting that interest rates are an economic index for purposes of section 2.6, Trending Procedures, and thus projection of future interest rates would be subject to this standard. If such was not intended, then the phrase “economic index” should be clarified so as to restrict its meaning.
Response	The reviewers added a new paragraph in section 3.1 to recognize that a range or probability distribution of trend estimates may be appropriate.
Comment	One commentator was concerned whether a marketing analysis conducted by an actuary is truly an actuarial work product.
Response	The reviewers believe if an actuary is applying trending methodologies to marketing, then the standard should apply. This is one of the reasons the standard is being expanded beyond ratemaking.
<b>Section 3.2, Historical Insurance and Non-Insurance Data</b>	
Comment	One commentator believed it would be appropriate to add language such as, “In situations where non-insurance data is being used, the actuary should determine and document the causal relationship between the non-insurance data being used and the event or value being forecasted” to clarify this section.
Response	The reviewers disagreed and did not change the language because establishing a causal relationship is not a requirement for use of non-insurance data.
Comment	One commentator suggested modifying this section to read, “The actuary should select available data appropriate for the trends being analyzed. The data can consist of historical insurance or non-insurance information. Considerations should include...”
Response	The reviewers did not add the word “available” to the language but did remove the word “other” per the commentator’s suggestion.
Comment	One commentator suggested that the proposed revised ASOP suffers from the complete absence of any mention of “operational influences,” stating that trends in observed values as a result of operational changes are very common in marketing and reserving, for example, and suggested language to its effect be added.
Response	The reviewers considered operational influences, as reflected in the examples given in this section 3.2 and added “claim practices.”
Comment	One commentator stated that section 3.2(c) was unclear in stating what actuaries are expected to consider. The commentator also stated that he didn’t see how the difference between “explanatory value” and “predictive value” of the data might lead to any change in trending procedure and recommended either removing this section or else providing additional clarification as to its intent.
Response	The reviewers modified the language in section 3.2(c) to clarify the intent.

**ASOP No. 13—June 2009**

Comment	One commentator suggested including a section 3.2(e), which would state the following:
Response	<p align="center">e. the data that is used for trending and the data that it is being applied to.</p> <p>The reviewers did not add a 3.2 (e) but modified the existing 3.2 (c) to read as follows:</p> <p align="center">c. relationship with items being trended; and</p>
Comment	One commentator stated that the first paragraph of this section uses the adjective “historical” to modify “insurance and non-insurance data,” which can be interpreted as implicitly prohibiting procedures that blend historic data with projections acquired from external parties and recommend that “historical” be removed.
Response	The reviewers did not agree and therefore did not modify the language.
<b>Section 3.3, Economic and Social Influences</b>	
Comment	One commentator stated that the sentence, “It is inappropriate to analyze only those factors that have an impact on trend in one direction,” be revised to read, “It is inappropriate to consider for analysis only those factors that have an impact on trend in one direction,” stating that certain factors do not lend themselves to rigorous analysis, and the remaining factors could potentially impact the trend only in one direction.
Response	The reviewers agreed and deleted the sentence instead.
Comment	One commentator believed the comment about “avoidance of bias” is oddly placed and believes if such a comment is needed, it should be promoted to a more prominent, generally applicable place so as to indicate that biases should be avoided wherever they are found, not just in the consideration of economic factors.
Response	The reviewers agreed, believing that this is a very broad consideration, which is covered elsewhere such as by aspects of the Code of Professional Conduct, and thus deleted the sentence.
<b>Section 3.7, Reliance on Data or Other Information Supplied by Others</b>	
Comment	One commentator questioned whether sections 3.7, <i>Reliance on Data or Other Information Supplied by Others</i> ; 3.8, <i>Documentation</i> ; 4.1, <i>Actuarial Communication</i> ; and 4.2, <i>Additional Disclosures</i> provided sufficient guidance.
Response	The reviewers believe these sections provide sufficient guidance and made no modifications.
<b>SECTION 4. COMMUNICATIONS AND DISCLOSURES</b>	
<b>Section 4.1, Actuarial Communication</b>	
Comment	One commentator believed generic commentary about disclosures, communication, appropriateness, judgment, etc. is not unique to trending, and with rewording could be applied to just about any important actuarial assumption. The commentator stated this implies that the standard could be broadened to encompass a variety of assumptions or that these generic guidances could be restricted to a generic ASOP such as ASOP Nos. 23 and 41 (eliminating the need to repeat them in this section).
Response	The reviewers did not believe that there was any redundancy in that the introduction of this section is reinforcing that the actuary in making an actuarial communication should first and foremost be guided by ASOP Nos. 23 and 41. The additional material that follows in this section is guidance that is particularly relevant when offering an actuarial communication relating to trending procedures.

**ASOP No. 13—June 2009**

Comment	One commentator felt that the guidance in section 4.1 was insufficient, stating that reference to ASOP No. 41, <i>Actuarial Communications</i> , is an inadequate substitute for the professional expectations established in ASOP No. 9, <i>Documentation and Disclosure in Property and Casualty Insurance Ratemaking, Loss Reserving, and Valuations</i> .
Response	The ASB has determined that ASOP No. 9 will be repealed when a revised ASOP No. 41 is adopted. The reviewers believe that all relevant guidance that was included in ASOP No. 9 is to be covered in the revised ASOP No. 41.
Comment	One commentator believed section 4.1(b) placed an undue burden on the actuary stating the actuary is required not only to assess whether or not there were significant limitations in the data, but also to speculate on what a more in-depth analysis (using data that, presumably, isn't available) might produce.
Response	The reviewers agreed and modified the language in section 4.1(b) to address the commentator's concern.
Comment	One commentator believed the current wording in section 4.1(c) could potentially require documentation of risks and uncertainties that are not likely to result in a large deviation from the trend estimate and recommended that this paragraph be revised to read as follows: "specific significant risks and uncertainties that might cause the actual trend to vary materially from the trend estimate, if any."
Response	The reviewers deleted section 4.1(c) because the language was overly broad, and the requirement to disclose all significant assumptions provided the user of the analysis a sufficient basis to evaluate the actuary's work.
Comment	One commentator suggested because ASOP No. 23, <i>Data Quality</i> , and ASOP No. 41, are referenced in the first sentence of this section, that sections 4.1(b) and 4.1(c) are not necessary, stating that section 4.1, particularly subsection (g), of ASOP No. 23 adequately addresses this guidance and in a way that is more understandable.
Response	The reviewers deleted 4.1(c) and revised 4.1(b).
<b>Section 4.2, Additional Disclosures</b>	
Comment	One commentator felt the guidance in section 4.2 was insufficient while another commentator recommended section 4.2(b) be revised to state, "The actuary should disclose changes to assumptions, procedures, methods or models that the actuary believes might materially affect the latest trend estimate from any prior estimates. The actuary should also retain documentation concerning the potential magnitude of the impact of those material changes if those impacts can be reasonably determined." The commentator believed this modification would help limit varying interpretations of the term "update" in the section's lead-in sentence.
Response	The reviewers agreed and modified the language.
Comment	One commentator recommended that section 4.2(b) be removed from the standard stating that the trigger language seems unclear, particularly the meaning of "update of the previous estimate." The commentator also believed this paragraph to be superfluous since the requirement to document assumptions, procedures, methods or models, or changes to such, already exists.
Response	The reviewers revised the language in section 4.2(b) in response to another comment and believe the revision has addressed these concerns.

**ASOP No. 13—June 2009**

<b>APPENDIX</b>	
Comment	One commentator suggested changing “property casualty” to “property/casualty” to be consistent with other references to the practice area.
Response	The reviewers agreed and made the change.
Comment	One commentator suggested changing “Proceedings” to “Variance” in the Background section to make it a more generalized term.
Response	The reviewers agreed and made the change.