



## **ACTUARIAL STANDARDS BOARD**

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**Actuarial Standard  
of Practice  
No. 48**

### **Life Settlements Mortality**

**Developed by the  
Life Settlements Mortality Task Force of the  
Life Committee of the  
Actuarial Standards Board**

**Adopted by the  
Actuarial Standards Board  
December 2013**

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**Doc. No. 175**

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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 Reporting and Validation of Mortality used in Life Settlements Investments

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

**SUBJ:** Actuarial Standard of Practice No. 48

This document contains the final version of ASOP No. 48, *Life Settlements Mortality*.

### **Background**

The life settlements market arose from the viatical settlements market, which grew quickly in the 1980s. Actuaries are involved in various aspects of the market, including working with Life Expectancy (LE) providers to establish appropriate survival curves for risk appraisal, determining a value for a buyer who wishes to purchase a specific life insurance policy or portfolio, and valuing the policies in a portfolio for financial reporting purposes. An understanding of mortality assumptions and of how individual risk assessment affects the mortality assumptions for individual lives is critical to a proper actuarial valuation and risk analysis. To date, actuarial practices have varied widely in this market, and there are no specific regulatory standards defining life settlements mortality tables or assumptions.

The life settlements market has demanded actual-to-expected (A/E) results from the LE providers, but in the absence of specific guidelines and disclosures, practices for calculating A/E results have varied widely. A limited number of states require LE providers to file A/E ratios, but again, lack of specific guidelines has led to concerns with mortality tables and methodologies used. At issue are survival curves defined for exposure measurement and methodologies for adjusting such curves to reflect individual risk assessments. Also, measurement of exposures based on multiple underwritings has posed significant difficulties.

### **Exposure Draft**

In May 2013, the ASB approved the exposure draft with a comment deadline of July 31, 2013. Ten comment letters were received and considered in making changes that are reflected in this final ASOP. For a summary of issues contained in these comment letters, please see appendix 2. The majority of commentators supported the effort to issue this ASOP, although a few comments indicated a concern with the scope of the ASOP, and one commentator believed this ASOP should not be issued.

Changes made to the final standard in response to the comment letters include the following:

1. Sections 2.16, Mean Life Expectancy, and 2.17, Median Life Expectancy, were revised to

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remove examples of formulas that could be used to calculate mean and median life expectancy.

2. Section 2.20, Mortality Assumption, was revised to include mortality rates and survival curves period by period. Survival curves are commonly used in the life settlements market to illustrate the mortality assumption.
3. Section 4.1, Disclosures, was revised after considering the feedback on a question raised in the exposure draft transmittal letter to require the actuary to disclose: a description of how the mortality assumption was developed and how the mortality assumption differs from that of the life expectancy provider, a description of how multiple life expectancy evaluations are handled (previously in section 4.2(f)), and the reason for choosing an IBNR assumption (if any).
4. Section 4.2, Disclosures when Performing A/E Analysis, was revised to allow the actuary to determine whether presentation of historical A/E results is appropriate with appropriate disclosure if they are not presented.

Please see appendix 2 for a detailed discussion of the comments received and the reviewers' responses.

The ASB thanks everyone who took the time to contribute comments and suggestions on the exposure draft.

The ASB voted in December 2013 to adopt this standard.

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Life Settlements Mortality Task Force

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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.*

**ACTUARIAL STANDARD OF PRACTICE NO. 48**

**LIFE SETTLEMENTS MORTALITY**

**STANDARD OF PRACTICE**

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

- 1.1 **Purpose**—This actuarial standard of practice provides guidance to actuaries developing and evaluating **mortality assumptions** and evaluating mortality experience associated with **life settlements**.
- 1.2 **Scope**—This standard applies to actuaries performing professional services, when reporting on or evaluating mortality experience with respect to **life settlements** or when developing, analyzing, or using **mortality assumptions** with respect to **life settlements**.
- 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 work performed on or after April 30, 2014.

**Section 2. Definitions**

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

- 2.1 **Actual-to-Expected (A/E) Analysis**—The process of calculating and analyzing **A/E ratios** over a selected time period; for example, across different ages, genders, and **durations**. This is also known as an A/E study.
- 2.2 **Actual-to-Expected Ratio**—Actual deaths (either face amount or number of lives) in a group of lives being evaluated, over a specified period divided by the **expected deaths** over the same period.
- 2.3 **Debits and Credits**—The components of a system used by underwriters to determine a set of **mortality multiples** to apply to a base mortality table. Debits increase the **mortality multiple** due to various **impairments** that an **insured** may have; credits reduce the **mortality multiple** due to good health characteristics.

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- 2.4 **Duration**—The length of time since a **life expectancy** estimate was issued.
- 2.5 **Expected Deaths**—The number of deaths statistically expected in a given time interval.
- 2.6 **Graduation**—The process of making adjustments to experience results in order to have a smooth progression in the mortality rates over the whole age range.
- 2.7 **Historical A/E Mortality Basis**—**Mortality assumptions** developed from a base mortality table using information such as **underwriting** multipliers, improvement factors, medical records, and other pertinent information relevant to the individual life expectancies as of their associated **underwriting** dates.
- 2.8 **Impaired Mortality**—A **mortality assumption** that has been adjusted for **impairments**.
- 2.9 **Impairment**—A health factor or condition that tends to increase an **insured's** probability of death.
- 2.10 **Incurred but not Reported (IBNR) Deaths**—Adjustment to observed deaths in a given time period to account for deaths that have occurred but have not been reported due to the time lag in reporting systems or errors and incomplete information available from reporting sources regarding deaths.
- 2.11 **Incurred Death**—A death occurring during a period of exposure being analyzed, whether reported during that period or not.
- 2.12 **Insured**—An individual whose life is covered by a life insurance policy.
- 2.13 **Life Expectancy (LE)**—The expected future lifetime of an **insured**. Two primary types of life expectancies, mean and median, are reported by **LE providers** in the **life settlements** market.
- 2.14 **Life Expectancy Provider (LE Provider)**—An entity that applies medical **underwriting** analysis to determine a **mortality assumption** or **life expectancy**.
- 2.15 **Life Settlement**—The life insurance policy or policies sold to an investor. The term “life settlement” includes viatical and other life settlements. Generally, a viatical life settlement is any life settlement where the **insured** has a **life expectancy** of less than two to three years, depending on state regulation.
- 2.16 **Mean Life Expectancy**—The average **life expectancy** based on the assumed **survival curve**.
- 2.17 **Median Life Expectancy**—The point in time at which, based on the assumed **survival curve**, there is a 50% probability that the person will still be alive.



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- 2.18 **Modification Factor**—A factor that is used to adjust standard mortality to reflect rating classification. This may include items such as flat extras, mortality multiples, and age ratings.
- 2.19 **Modified A/E Mortality Basis**—**Mortality assumptions** other than the **historical A/E mortality basis**. Use of this basis may result in **life expectancy** estimates that differ from those originally provided.
- 2.20 **Mortality Assumption**—A set of values representing mortality rates or the survival curve period by period. This may reflect an assumption of future mortality improvement or deterioration or **modification factors**. This term may apply to either a single **insured** or group of **insureds**.
- 2.21 **Mortality Multiple**—A **modification factor** typically determined from a **debit/credit underwriting** methodology.
- 2.22 **Survival Curve**—The probability data set representing the assumed probability of survival to the end of every period in the future for an **insured**.
- 2.23 **Underwriting**—The process of evaluating medical and other information received on a given **insured** to determine **modification factors** reflecting risk classification for that **insured**.

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

- 3.1 **Purpose of the Assignment**—The actuary should understand the purpose of the assignment and be familiar with any regulatory or accounting standards that may have a bearing on the actuary's work product. Assignments that may result in different sets of **mortality assumptions** include fair value valuation (for example, under Accounting Standards Codification 820, *Fair Value Measurements and Disclosures*) and performing or using an **A/E study**.
- 3.2 **Required Knowledge**—The actuary should be reasonably knowledgeable about relevant aspects of mortality table construction, exposure methods, mortality improvement, older age and **impaired mortality**, **graduation**, and related issues.
- 3.3 **Developing Mortality Assumptions**—When an actuary is developing **mortality assumptions**, the following apply.
  - 3.3.1 **Base Mortality Table Selection**—The actuary should select a base mortality table that is appropriate for the purpose of the assignment. The actuary should choose a table (which may be a combination of tables) that in the actuary's professional judgment reflects the characteristics of the underlying population. The actuary may use credible data to create new mortality tables if existing tables do not adequately fit the underlying population. If the actuary uses a mortality table prescribed by another party or applicable law, the actuary should refer to ASOP

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No. 41, *Actuarial Communications*, section 3.4.4, and the disclosures in sections 4.3(a) and (b) of this ASOP.

- 3.3.2 **Mortality Table Modifications**—The actuary should consider whether modifications to the base mortality table(s) are needed to fit the population being examined. In making these modifications, the actuary should consider items that may lead to a differentiation in mortality, such as socio-economic effect (i.e., a tendency for mortality rates to differ based on sociologic and economic factors), antiselection, selection period, **impairment(s)**, **impairment** level, marketing methods, policies settled versus policies evaluated but not sold as **life settlements**, and variations in **LE** estimates provided by different **LE providers**.
- 3.3.3 **Mortality Improvement or Deterioration**—The actuary should consider whether incorporating historical and projected mortality improvement or deterioration is appropriate. These adjustments could be due to mortality improvement caused by medical advancements or new approved drugs, which could cause a shift in expected mortality for a group of **insureds** within the population.
- 3.3.4 **Application of Individual Underwriting to Mortality Assumptions**—If the actuary has access to **underwriting** information on individual **insureds** in the population, the actuary should consider adjusting the **mortality assumptions** to reflect this information. The actuary should consider using available data regarding factors such as the **impairment(s)**, **impairment** level, **debits or credits** assigned, **mortality multiples**, and life expectancies and their associated **survival curves**, as appropriate for the purpose of the assignment.

If **LEs** are used, the actuary should make a reasonable effort to learn and understand the basis for the **LEs** including whether the **LE** information provided is a **mean** or **median LE**. If the actuary has unresolved concerns about the **LEs** used that have a material impact, the actuary should make the disclosure in section 4.1(f).

- 3.3.5 **Mortality Assumption Adjustments Using A/E Analysis**—The actuary should consider adjusting **mortality assumptions** when A/E results are available.
- 3.4 **A/E Analysis**—When performing an **A/E analysis**, the actuary should produce results by **duration**. As data and credibility allow, the actuary should analyze results by gender, smoking class, age bands, level of **mortality multiples**, **impairment** type, and other pertinent categories.
- 3.4.1 **Incurred Deaths**—The actuary should be aware of the methodology and sources used in determining **incurred deaths** and the completeness of such approach for determining deaths. The actuary should consider whether to adjust actual results to reflect **IBNR** deaths. The actuary should consider using a supplemental external source of recorded deaths, such as the Social Security Death Master File, if available, to improve the timeliness of reported deaths.

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- 3.4.2 Multiple Life Expectancies for a Single Life—The actuary should assess whether the method for handling data regarding an **insured** underwritten multiple times (and creating multiple exposures) is appropriate for the intended use of the A/E study, given the reasons a specific **insured** was underwritten more than once. If the actuary uses a method prescribed by another party, the actuary should refer to ASOP No. 41, section 3.4.4, and the disclosures in section 4.3(a) and (b) of this ASOP.
- 3.4.3 Use of a Modified A/E Mortality Basis—The actuary may analyze results based on a **historical A/E mortality basis** or a **modified A/E mortality basis**. If a **modified A/E mortality basis** is used, the actuary should prepare results using a **historical A/E mortality basis** for comparative purposes, if the actuary believes doing so is appropriate. The actuary should refer to Section 4.2 (e).
- 3.5 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.
- 3.6 Credibility of Data Used in Evaluation of Mortality—When considering the credibility of the data used in setting assumptions, the actuary should refer to ASOP No. 25, *Credibility Procedures*, for guidance.
- 3.7 Documentation—The actuary should prepare and retain documentation in compliance with the requirements of ASOP No. 41. The actuary should also prepare and retain documentation to demonstrate compliance with the disclosure requirements of section 4.

### Section 4. Communications and Disclosures

- 4.1 Disclosures—When issuing actuarial communications relating to mortality in **life settlements**, the actuary should refer to ASOP Nos. 23, 25, and 41. In addition, the actuary should disclose the following items:
- a. a description of how the **mortality assumption** was developed including any modifications to the **mortality assumption** to reflect risk characteristics;
  - b. a description of the methods used to adjust results for the impact of multiple **life expectancy** evaluations on the same **insured** or on the same policy;
  - c. whether the actuary has information about the **LE provider's** mortality assumption and, if so, how the actuary's **mortality assumption** differs from that of the **LE provider**;
  - d. the extent of historical or projected mortality improvement or deterioration assumed for the assignment;

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- e. the method used for determining **incurred deaths**, including any **IBNR** assumption, and discussion of the significance and reason for choosing such **IBNR** assumption;
- f. any unresolved concerns the actuary may have about the data, assumptions used, or methodology used that could have a material impact on the actuarial work product;
- g. the **mortality assumption** for estimating the price that would be received to sell the asset in an orderly transaction between market participants, and the basis for that assumption, when performing work related to fair-value projections;

4.2 Disclosures when Performing an A/E Analysis—In addition to the disclosures in section 4.1, the actuary should disclose the following items if an **A/E analysis** is performed:

- a. the source of the expected **mortality assumptions** and why the actuary believes they were appropriate for the assignment;
- b. results of the **A/E analysis** by **duration**;
- c. as data and credibility allow, a presentation of results by gender, smoking class, age bands, level of **mortality multiples**, **impairment** type, and other pertinent categories;
- d. whether a **historical A/E mortality basis** or a **modified A/E mortality basis** was used for the **A/E analysis**. Such disclosure should indicate the implications of the method, the reasons for the choice of method, and whether the method could distort the results of the analysis;
- e. if results on a **modified A/E mortality basis** are disclosed, the actuary should disclose results based on a **historical A/E mortality basis** for comparative purposes if the actuary believes doing so is appropriate. If results on a **modified A/E mortality basis** are disclosed and the actuary does not disclose **historical A/E mortality basis** results, the actuary should disclose why they are not being disclosed;
- f. a description of the methods used to adjust results for the impact of multiple policies on the same **insured**;
- g. when **IBNR** is included in the analysis, a presentation of results with and without **IBNR**; and
- h. a statement that A/E results may not be indicative of future results.

4.3 Other Disclosures—The actuary should include the following, as applicable, in an actuarial communication:

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- a. the disclosure in ASOP No. 41, section 4.2, if any material assumption or method was prescribed by applicable law;
- b. 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
- c. 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.

**Appendix 1**

**Background and Current Practices**

*Note:* This appendix is provided for informational purposes and is not part of the standard of practice.

**Background**

Life Settlements are financial transactions in which a third party buys an existing life insurance policy for more than its cash surrender value but less than its net death benefit. The life settlements market grew out of the viatical settlements market, where chronically ill AIDS patients sold their policies, often to individual investors. The viatical settlements market essentially ended with the advent of antiretroviral drugs, which extended the lives of AIDS patients, lowering the economic value of their life insurance policies. From there, the market focus shifted to other health-impaired policyholders, primarily at older attained ages.

In the life settlements market, a mortality assumption is determined, which allows the buyer to project expected premiums, death benefits, and other relevant cash flows period by period. These expected cash flows are then discounted to determine the policy value. To determine the mortality assumption for an insured, it is common to use life expectancy (LE) estimates, often measured in months, produced by LE providers. The accuracy of the LE estimates is of great interest to the life settlements market since the value of a policy is highly dependent on the mortality assumption derived based on the LE estimate.

The life settlements market is highly dependent on actuarial expertise. In particular, analysis of actual mortality experience as compared to expectations (actual/expected or A/E analysis) has generated controversy in the life settlements market.

An A/E study is a backward-looking evaluation of underwriting results based on assumed mortality. The mortality assumption may be based on the mortality tables and modification factors used to produce the original LE estimate. At times, the mortality assumptions may be modified to reflect factors relevant to current LE estimates so that past results may be measured against current underwriting methodologies and tables.

**Current Practices**

Actuaries working in the life settlements market have been asked to assess mortality for many different purposes, including the following:

- an A/E study of an LE provider;
- the determination of survival curves for an LE provider;
- the pricing/modeling of life settlements policies and portfolios on behalf of investors;
- the valuation for financial reporting; and
- risk models to examine extension risk and its consequences for investor performance.

The discussion below focuses on A/E studies, which have been central to the life settlements market and an area of interest in life settlement discussions. However, as noted above, there are several other mortality-related tasks that actuaries may be asked to perform.

An actuary performing an A/E study on a block of lives or policies has several options for creating mortality assumptions for individual lives. The analyses differ regarding whether the original LE provider's mortality assumption is adjusted. A historical A/E mortality basis utilizes the LE provider's methodology in use at the time each LE was issued. Two modified A/E mortality bases used today are as follows:

1. Adjusted to Current Methodology A/E Mortality basis—A/E analysis that typically defines expected deaths using mortality tables, underwriting multipliers, improvement factors, and any other aspects of the underwriter's current methodology applied to the medical records and any other pertinent information for each insured that existed at the time the insured was underwritten. This attempts to measure how accurate the LE provider's current methodology is by back-testing it to obtain the A/E analysis that would have developed if the LE provider's current methodology had been in place from the time it began issuing LEs.
2. Back-solving the actual LE into a mortality table—A/E analysis that defines expected deaths by using the back-solving method with the actual LE that was issued and mortality assumptions that may or may not have actually been used when the LE was issued by the LE provider. This has commonly been used when the LE provider's table is proprietary, non-existent, deemed not relevant, or in the actuary's judgment is not appropriate for the life settlement population being studied.

In performing an A/E study, there are several methods that are used to handle multiple underwriting opinions on individual lives. The results of the A/E study can vary substantially depending on the method chosen. Some of the methods in use today are as follows:

1. Earliest submission—Counts only the earliest LE estimate produced for each insured. As a result, no single insured counts more than any other. This method does not reflect all instances of underwriting.

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2. Latest submission—Counts only the latest LE estimate produced for each insured. Considerations are the same as in method 1. This method excludes time periods where it is known that no deaths occurred.
3. One-year look-back—Includes only the latest LE estimate within each calendar year.
4. Fractional method—The earliest LE estimate contributes one exposure up until the time that the insured is underwritten a second time, at which point each contributes half an exposure. Repeat as necessary. Only one total exposure per year per insured is used, and a subject contributes only one death in the calculation.
5. Non-fractional method—Several LE estimates may be used for one insured. Possible reasons for inclusion depend on time elapsed since prior LE opinion used or material change in health status. One insured that has been underwritten many times may have a much larger impact on the A/E results than another insured who was underwritten once.

For A/E studies, there have been a wide range of adjustments made to account for IBNR. The level of IBNR chosen is crucial since the results of the A/E analysis could vary substantially. Given the age of the life settlements market, data availability, and the reliability of the methods used to determine deaths that have occurred, determining the appropriate IBNR level is difficult.

To the extent experience is available, a lag study is sometimes performed on the historical level of IBNR experienced. The results of the lag study, to the extent credible, are then used to determine the level of IBNR. Often a lag study is not feasible. In utilizing other resources to determine the level of IBNR, such as social security information, some practitioners account for differences between the population of life settlement participants and the population being considered. A further problem is that the methodologies for determining maturities may change over time, as has happened when access to the Social Security Death Master File became more restricted.



**Appendix 2**

**Comments on Exposure Draft and Responses**

The exposure draft of this ASOP, *Life Settlements Mortality*, was issued in May 2013 with a comment deadline of July 31, 2013. Ten 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 Life Settlements Task Force carefully considered all comments received, reviewed the exposure draft, and proposed changes. The Life Committee and the ASB reviewed the proposed changes and made modifications where appropriate.

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

The term “reviewers” in appendix 2 includes the Life Settlements Task Force, the Life Committee, and the ASB. Also, 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 asked whether the standard applies to valuation work involved in calculating the “theoretical” Fair Market Value of individual life policies. If so, may an actuary simply rely on a survival table produced by one independent LE provider or would more than one be required?
Response	The reviewers believe the standard does apply to certain aspects (see section 1.2, Scope) of valuation assignments involved in calculating the “theoretical” Fair Market Value of individual policies with respect to life settlements and feel that the guidance in the standard is appropriate.
Comment	One commentator noted that the standard seems to have two very different goals:  <ol style="list-style-type: none"><li>1. guidance on appropriate calculation of actual-to-expected results for mortality; and</li><li>2. dealing with appropriate documentation for the selection and use of mortality assumptions with respect to Life Settlement reports per ASOP No. 41, <i>Actuarial Communications</i>.</li></ol> The commentator stated that the actuarial profession should carefully consider whether it is truly in its best interest to attempt to meet this need via an ASOP.  The commentator also suggested that this draft be bifurcated into two different standards. If this is not viable, then the drafters should be explicitly clear so that one purpose does not overwhelm the other and confuse readers.
Response	The reviewers believe a single standard is appropriate.
Comment	One commentator suggested adding a paragraph in the background section of the transmittal memo that discusses the difficulties of using LE estimates from multiple LE providers. In addition, the commentator suggests the appendix should include these points. Otherwise, the document should be limited to A/E calculations.
Response	The reviewers do not believe this discussion is necessary in the transmittal memo or the appendix. The transmittal memo and appendix are not meant to provide guidance. Therefore, no change was made.

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Comment	One commentator suggested that the background section of the transmittal memo mention that actuaries are globally involved.
Response	The standard applies to actuarial practice only in the U.S.; therefore, no change was made.
Comment	One commentator believed it is not correct to state that actuaries are involved in all aspects of the market in the background section of the transmittal memo. It should be made clear that actuaries are not underwriters. The commentator suggested changing “all” to “various.”
Response	The reviewers agree and changed “all” to “various.”
Comment	One commentator suggested that the standard address in course of settlement claims.
Response	The reviewers believe that these claims would be either in reported claims or incurred but not reported claims and made no change.
Comment	One commentator suggested the standard address stochastic analysis in determining suitable confidence intervals for actual deaths when performing Actual-to-Expected studies.
Response	The reviewers believe that such practice would be permitted under the standard and made no change.
Comment	Two commentators suggested the standard address how monthly mortality rates are determined from annual mortality rates.
Response	The reviewers disagree with expanding the standard to address the subject and made no change.
Comment	One commentator stated that in some cases the actuary has only the (mean or median) Life Expectancy number, which was calculated by someone other than a qualified actuary, to use as a single data point in backing into an assumed table of mortality rates, and the actuary often isn’t told how that one data point was determined. Because of this, the commentator cannot support the actuarial profession accrediting and codifying the use of these practices as sound actuarial practice through publication in an Actuarial Standard of Practice.
Response	The reviewers believe the ASOP appropriately addresses this concern, and therefore made no change.
Comment	One commentator stated that actuaries should aggregate mortality experience data properly recorded and then contributed by the major companies in the industry, develop a credible experience table applicable to that business, and then create from that table suitable mortality tables to be used for pricing, valuation, and other financial risk management for their principals.
Response	The reviewers believe this is beyond the scope of the ASOP and made no change.
Comment	One commentator stated that there is not much life settlement data at many ages; therefore, it is up to the actuary to consider how to determine reasonable mortality for life settlements. The commentator stated that both a suitable underlying mortality table and system of mortality ratios for impairments is needed and must be considered reasonable by the actuary.
Response	The reviewers believe the guidance in the standard is appropriate and made no change.
Comment	One commentator stated that the same LE can be generated by more than one mortality table, including modifiers. Therefore, it is important that the actuary review LEs at many different ages and mortality levels or review the basic mortality curve and modifiers.
Response	The reviewers believe the guidance in the standard is appropriate and made no change.
Comment	One commentator stated that mortality multiples can be determined from a debit/credit underwriting methodology, but can also be based on actuarial and underwriting studies that develop the relationship between standard mortality and the mortality on a life with particular impairments.
Response	The reviewers believe the ASOP adequately provides for this and made no change.

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Comment	One commentator stated that the purpose and scope of this ASOP is aimed at actuaries doing mortality and A/E studies for life expectancy providers in the life settlements market. The commentator believes it should be pointed out that there are other uses of life expectancies and anticipated mortality, such as for financial planning.
Response	The reviewers agree LEs can be used for other reasons; however, the purpose of the ASOP was to address life settlements mortality. Therefore, no changes were made.
<b>TRANSMITTAL MEMORANDUM QUESTIONS</b>	
<b>Question 1: Life expectancy providers may provide survival curves with their estimates. As drafted, this standard does not require disclosure when the actuary chooses a different survival curve assumption. Should it?</b>	
Comment	Four commentators believed the actuary should disclose whether a survival curve assumed is different from that of the life expectancy provider.
Response	The reviewers agree and added a disclosure requirement in the new section 4.1(c).
Comment	One commentator believed this question makes the assumption that the normal practice is for the actuary to use the survival curve as provided by the LE provider. The commentator suggested a change in language to demonstrate this is not necessarily the case.  The commentator believed it is most important for the actuary to disclose how the LE provider reports are used.
Response	The reviewers revised section 4.1(a) to require a description of how the mortality assumption was developed.
Comment	One commentator stated that the level of disclosure for setting mortality assumptions for a life settlement population should be the same as that required for other types of calculations.
Response	The reviewers believe the disclosure level in the standard is appropriate and made no change.
<b>Question 2: Methodologies for Actual to Expected studies for life settlements may vary depending on the purpose of the study. The task force chose to define a “historical method” as being distinct from any number of “modified methods.” Is this distinction clear? Is it clear when a historical method is required?</b>	
Comment	Three commentators believed the distinction was clear and adequate.
Comment	Some commentators question whether results based on a “historical method” should be required. They suggested the requirement either be removed or allow the actuary to decide on whether the disclosure of results based on a “historical method” is appropriate.
Response	The reviewers revised the wording in sections 3.4.3 and 4.2(e) to allow the actuary to decide whether it is appropriate to prepare and disclose historical results.
Comment	One commentator suggested that these terms be clarified for the benefit of other actuaries that do not have a lot of experience in this area.
Response	The reviewers agree and clarified the terms in response to the comment.
<b>Question 3: Are the disclosures required in this standard sufficient and clear?</b>	
Comment	One commentator believed the disclosures are sufficient and clear.
Comment	One commentator believed the disclosures are redundant and noted that the standard states “the actuary should refer to ASOP [No.] 41.” In addition, items 4.1(f), 4.1(g), and 4.1(h) refer to specific sections of ASOP No. 41.
Response	The reviewers believe some level of redundancy is useful and retained the draft wording, noting that section 4.1(f), 4.1(g), and 4.1(h) are employed in other standards. These items were moved to a new section 4.3.
<b>Question 4: One insured may have had multiple life expectancy estimates. Are the disclosures for handling this situation appropriate?</b>	
Comment	Two commentators believed the disclosures are appropriate.

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Comment	One commentator believed the standard requires disclosure of the handling of multiple life expectancy estimates only when the method is prescribed by another party.
Response	The disclosure was moved from section 4.2 to 4.1, which is not limited to the situation where the method is prescribed by another party.
<b>SECTION 1. PURPOSE, SCOPE, CROSS REFERENCES, AND EFFECTIVE DATE</b>	
<b>Section 1.1, Purpose</b>	
Comment	One commentator believes one of the intents of the standard is for the purpose of developing mortality assumptions (as in section 3.3). The commentator recommended new wording: "...to actuaries developing and evaluating mortality assumptions, and evaluating mortality experience, associated...."
Response	The reviewers adjusted the description to be more general. The reviewers decided to use some of the recommended new wording in section 1.2, Scope.
<b>Section 1.2, Scope</b>	
Comment	One commentator stated that the scope of the proposed ASOP appears so broad that it includes virtually all actuarial work with regard to life settlements but is entirely focused on A/E calculations. The commentator suggested that the scope of the ASOP should be more specific.
Response	The reviewers note section 1.2, Scope, is limited to certain types of work related to mortality and that the guidance is not limited to A/E calculations.
<b>SECTION 2. DEFINITIONS</b>	
Comment	One commentator found the phrase "historical method" (historical A/E analysis in the definitions) confusing and believes a "modified method" is not so much a modified method as an alternative expected basis.
Response	The reviewers agree and changed the terms to improve clarity.
<b>Section 2.3, Debits and Credits</b>	
Comment	One commentator found this very unclear. The commentator asked whether debits and credits should be described in terms of percentages added to, or subtracted from, 100% of "standard" morality for the age and gender. The commentator thought an example might help.
Response	The reviewers believe the definition is clear and made no change.
<b>Section 2.4, Duration</b>	
Comment	One commentator asked: "Is it always measured in years? Never in months?"
Response	The reviewers deleted "measured in years" from the definition.
<b>Section 2.5, Expected Deaths</b>	
Comment	One commentator suggested that the standard provide guidance on calculating expected deaths.
Response	The reviewers disagree with expanding the standard to address the subject and made no change.
Comment	One commentator found this very unclear. The commentator suggested working the term "mortality assumption" into the definition, so that it can be referenced when defining Historical A/E Analysis and Modified A/E Analysis.
Response	The definition was modified to make it clearer, and, given the new definition, the reviewers concluded that including the term "mortality assumption" was not necessary.

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<b>Section 2.7, Historical A/E Analysis</b>	
Comment	One commentator recommended the following definition: “A/E analysis based upon expected mortality rates consistent with those underlying the providers’ life expectancies and incorporating, as available, the mortality tables, underwriting multipliers, improvement factors, and other pertinent information used by the providers in determining the life expectancies.”
Response	The reviewers adjusted the definition of a “Historical A/E Analysis” (now referred to as “Historical A/E Mortality Basis”) to refer to “mortality assumptions” rather than “mortality tables.” The reviewers did not specify “providers” in the definition because there are situations where a historical A/E analysis is performed using original mortality assumptions that were not provided by an LE provider.
Comment	One commentator pointed out that the term “mortality tables” is used, but it is not defined.
Response	The reviewers changed “mortality tables” to “mortality assumptions.”
Comment	One commentator suggested the phrase be reworded as follows: “...and other pertinent information applicable to the individual life expectancies as of their associated underwriting dates.”
Response	The reviewers added the suggested wording with minor modifications.
<b>Section 2.10, Incurred but not Reported (IBNR) Deaths</b>	
Comment	One commentator suggested the following wording: “Deaths occurring during a period of exposure being analyzed but not reported during that period. Usually estimated based on past experience.”
Response	The reviewers believe the existing definition is appropriate and made no change.
<b>Section 2.11, Incurred Claim</b>	
Comment	One commentator suggested the following wording: “A death occurring during a period of exposure being analyzed, whether reported during that period or not.”
Response	The reviewers implemented the suggested wording.
<b>Section 2.13, Life Expectancy (LE)</b>	
Comment	Two commentators suggested grammatical changes to the definition.
Response	The reviewers revised the definition.
<b>Section 2.14, Life Expectancy Provider (LE Provider)</b>	
Comment	One commentator suggested deleting the phrase “specializing in the assessment of older or impaired lives.” The commentator noted that LE providers determine life expectancies on young lives as well as old, and on unimpaired as well as impaired, lives.
Response	The reviewers deleted the phrase “specializing in the assessment of older or impaired lives.”
Comment	One commentator suggested changing “underwriting services” to “underwriting analysis.”
Response	The reviewers agree and made the change.
Comment	One commentator suggested the second sentence about being the underwriter is not necessary.
Response	The reviewers agree and deleted the sentence.
Comment	One commentator suggested adding a sentence such as, “LE Provider is not limited to those entities who have sought and obtained official status as such by any of the states.”
Response	The reviewers do not believe the additional sentence suggested is necessary and made no change.

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<b>Section 2.16, Mean Life Expectancy</b>	
Comment	One commentator suggested changing the formula to an integral.
Response	The reviewers believe that the formula is unnecessary and deleted it.
Comment	One commentator believes the term “mean life expectancy” is redundant.
Response	The reviewers believe the term “mean life expectancy” is necessary because of the terminology used in the life settlements market.
Comment	One commentator suggested adding “The average life expectancy; also referred to as the actuarial or complete life expectancy.”
Response	The reviewers do not believe the additional terms are necessary and made no change.
Comment	One commentator stated that it seems unwise to specify a particular formula, especially when the formula is an approximation of the complete expectation formula and in a more exacting context would be written without an equal sign. Perhaps the formula given should be characterized as an example.
Response	The reviewers believe that the formula is unnecessary and deleted it.
Comment	One commentator was surprised to see “mean” and “median” life expectancies defined in terms of months, since most mortality estimates are annual.
Response	The reviewers have adjusted the definitions to be more generic. The unit of time is no longer specified.
<b>Section 2.17, Median Life Expectancy</b>	
Comment	One commentator suggested a change in the stated formula from a summation to an integral.
Response	The reviewers believe that the formula is unnecessary and deleted it.
Comment	One commentator believes “predicted median survival” or simply “median survival” would be a better term to use than “median life expectancy.” The commentator suggested changing the description to “...the smallest number m satisfying...”
Response	The term “median life expectancy” is used in the life settlements market. The reviewers decided no change to the term was necessary. The reviewers determined that a formula was unnecessary.
<b>Section 2.18, Modification Factor</b>	
Comment	One commentator suggested replacing “reflect rating classification” with “reflect impaired mortality.”
Response	The reviewers believe the term “rating classification” encompasses preferred, standard, and impaired cases and made no change.
<b>Section 2.21, Mortality Multiple</b>	
Comment	One commentator suggested the definition be changed to “A modification factor typically determined from a debit/credit underwriting methodology used to create a multiple intended to be applied to a standard mortality risk table.”
Response	The reviewers note mortality multiples in the life settlements market may be applied to preferred, standard, or impaired risk tables and made no change.
<b>Section 2.22, Survival Curve</b>	
Comment	One commentator stated that “Read literally, this means that there is one ‘curve,’ or set of probabilities, for each insured age x.”
Response	The reviewers disagree, as the definition refers to “an insured.”

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Comment	One commentator asked whether the definition was intended to mean that each “curve” is a set, or table, of survival probabilities for all values of $t$ from 1 to $\omega-x$ .
Response	The reviewers believe the wording is clear and made no change.
<b>Section 2.23, Underwriting</b>	
Comment	One commentator suggested adding “and/or estimating life expectancy” after “...reflecting risk classification....”
Response	The definition is meant to address the underwriting process rather than LE estimation. The reviewers made no change.
<b>SECTION 3. ANALYSIS OF ISSUES AND RECOMMENDED PRACTICES</b>	
<b>Section 3.2, Required Knowledge</b>	
Comment	One commentator stated that section 3.2 sets out the requirement that an actuary “should be knowledgeable” about a variety of topics, with no limitations on this requirement.
Response	<p>Another commentator asked whether the subjects included are in the current syllabus for actuarial exams. The commentator suggested including recommended sources if the subject is covered. If not, the commentator asked whether sources should be included. The commentator asked, “If the ABCD is to determine whether a practicing actuary has the ‘required knowledge,’ on what will its opinion be based?”</p> <p>The reviewers note that the actuary needs to apply judgment in determining the degree of knowledge needed in a particular situation. The reviewers added the word “reasonably” and words “relevant aspects of.”</p>
<b>Section 3.3.1, Base Mortality Table Selection</b>	
Comment	One commentator suggested that some context be provided for the use of the word “population.” The commentator was concerned that some readers would not understand “population” refers to “appropriate population.”
Response	The reviewers changed “population” to “underlying population.”
<b>Section 3.3.2, Mortality Table Modifications</b>	
Comment	One commentator suggested adding “For example, policy face amount may be utilized as a proxy for the socio-economic effect.”
Response	The reviewers do not believe such an example is needed and, therefore, made no change.
<b>Section 3.3.4, Application of Individual Underwriting to Mortality Assumptions</b>	
Comment	One commentator believes the current wording does not clearly distinguish the actuarial role from the underwriting role.
Response	The reviewers disagree and made no change.
Comment	One commentator stated that the mortality experience for life settlements is available only for a limited portion of the survival curve. Therefore, consideration must be given to the lack of long-term experience and the selection of ultimate mortality. Consideration should be given to the “wearing off” of underwriting rating by which preferred or substandard extra mortality may be graded toward zero as the insured survives well beyond the original LE or reaches the ultimate age in the mortality table.
Response	The reviewers believe that mortality multiples can encompass wearing off and other factors affecting ultimate mortality and made no change.

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<b>Section 3.3.5, Mortality Assumption Adjustments Using A/E Analysis</b>	
Comment	One commentator suggested adding the following: “Adjustments should be considered to A/E assumptions reflecting the specific experience of the population (i.e. the life settlement portfolio), and then the experience of the specific LE Provider. Mortality tables designed for life insurance valuation (for example, 2008VBT) have implicit conservatism for life insurance that produce aggressive assumptions for life settlements and are not appropriate without adjustments.”
Response	The reviewers disagree with expanding the standard to address the subject and made no change.
<b>Section 3.4, Actual-to-Expected Analysis</b>	
Comment	One commentator believed this section ignores that one of the main contributors to wide variation in historical A/E results is the impact of the underlying mortality table. The commentator believes that any A/E results crossing time periods where the underlying mortality tables vary greatly cannot be reasonably combined.
Response	The reviewers note, in performing mortality studies, the actuary needs to make judgments about which data to use and how to adjust the data and made no change.
<b>Section 3.4.1, Incurred Claims</b>	
Comment	One commentator suggested replacing “Incurred Claims” with “Incurred Deaths” or “Incurred Maturities.”
Response	The reviewers changed the term to “Incurred Deaths.”
Comment	One commentator suggested the following: “The actuary should consider whether any IBNR assumption is reasonable based on supporting analysis or lack thereof. If there is no data to support an IBNR assumption, it should be sufficient for the actuary to disclose that they have assumed zero IBNR or provided for a short delay in reporting.”
Response	The reviewers changed “adjusting” to “whether to adjust.”
<b>Section 3.4.2, Multiple Life Expectancies for a Single Life</b>	
Comment	One commentator asked if the method used should be consistent with the method used in analyses of life-insurance mortality experience. The commentator suggested the standard state whether the method is or is not consistent and explain and justify the reason if it is different.
Response	There are several methods used in the analyses of life-insurance mortality experience. In addition, there are several issues that are unique to the life settlements market that might necessitate using a different method. For these reasons, the reviewers decided to not require the explanation of any differences and made no change.
<b>Section 3.4.3, Use of a Modified A/E Analysis</b>	
Comment	One commentator suggested adding the phrase, “the modifications made shall be explicitly and completely disclosed and,” after the introductory phrase, “If a modified A/E method is used.”
Response	The reviewers believe section 4 appropriately addresses the concerns of the commentator and made no change.
<b>SECTION 4. COMMUNICATIONS AND DISCLOSURES</b>	
Comment	One commentator suggested that section 4.2 be presented as section 4.1 and the section 4.1 be moved to section 4.2 and titled “Disclosures under other Actuarial Communications utilizing Life Settlement Mortality.”
Response	The reviewers believe disclosures for all situations should be listed first and disclosures for specific situations should be listed second. The disclosures related to ASOP No. 41 were moved to the new section 4.3.



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Comment	One commentator suggested section 4.1 and section 4.2 be renumbered 4.1.1, 4.1.2, etc.
Response	The reviewers disagree and note the numbering system follows standard ASOP formatting, and made no change.
<b>Section 4.1, Disclosures</b>	
Comment	One commentator suggested an item be added to section 4.1 for something like “the method used for interpreting and utilizing results from LE Providers.”
Response	The reviewers revised section 4.1(a) to require a description of how the mortality assumption was developed.
Comment	One commentator suggested that item 4.1(c) (incurred claims and IBNR) be removed since it will generally apply only to A/E calculations.
Response	The reviewers believe the disclosure is necessary for more than just A/E calculations and made no change.
Comment	One commentator believed item 4.1(e) should reflect purchases and sales.
Response	The wording was adjusted to reflect market participants.
Comment	On 4.1(e), one commentator stated “This is an area that deserves special caution. The actuary should clearly communicate that he/she cannot assign a ‘market value’ or determine a ‘market mortality assumption,’ because that will vary widely depending on the outlook of the individual buyer/seller. This additional unknown should be documented with the rationale for the actuary’s estimate.”
Response	The reviewers believe the disclosures discussed in sections 3.4.1 and 4.1.3(d) of ASOP No. 41 regarding risk and uncertainty address the issue raised and made no change.
<b>Section 4.2, Disclosures when Performing an A/E Analysis</b>	
Comment	One commentator suggested adding a requirement to disclose the total A/E results in addition to the durational requirement set forth in 4.2(b).
Response	The reviewers do not believe this should be a requirement and made no change.
Comment	On 4.2 (e), one commentator stated that the purpose of the historical A/E comparison is not clear from the ASOP. Such a comparison may not be useful for the actuary’s or client’s purposes. The ASOP should recommend, but not require, a historical A/E analysis for comparative purpose only if it meets the purpose of the analysis.
Response	The reviewers revised the wording to allow the actuary to disclose that historical A/E analysis results are not being presented and why.
<b>APPENDIX: BACKGROUND AND CURRENT PRACTICE</b>	
Comment	One commentator suggested removing the last sentence in the paragraph on “Adjusted to Current Methodology A/E analysis” (see Current Practices section of Appendix 1) where it is stated that an Adjusted analysis “attempts to address the question of how accurate the LE provider’s estimates are today.” The commentator believes this statement inappropriately implies that historical A/E analyses are not relevant in addressing how accurate the LE provider’s estimates are today.
Response	The reviewers agree and revised the last sentence to address the commentator’s concern.
Comment	One commentator suggested deleting the statement regarding “the main deficiency” of using the “Latest submission” (see Current Practices) method. The commentator believes this reflects an inappropriate bias.
Response	The reviewers agree and deleted the last two sentences.

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Comment	One commentator stated that the discussion in the background section is limited to buyers of policies and suggested that this be adjusted to reflect buyers “and sellers.”
Response	The reviewers believe the discussion provides a good overview of the market and made no change.
Comment	One commentator suggested that the background section reflect the fact that part of the problem with the life settlement market is that the participants in the market often do not utilize qualified actuaries at all or may utilize non-credentialed actuaries.
Response	The reviewers believe the suggested statement is not appropriate in this particular document and made no change.
Comment	One commentator was surprised that the standard does not comment on the industry practice of measuring LEs in months rather than years. The commentator feels that this industry practice gives the non-actuarial investor community a sense of spurious accuracy.
Response	The reviewers agree that the industry practice of measuring LEs in months should be mentioned and adjusted the wording in the background section.