May 10, 2019

Actuarial Standards Board (ASB)
1850 M Street NW, Suite 300
Washington, DC 20036
Via email to: comments@actuary.org

RE: Fourth Exposure Draft of Proposed Actuarial Standard of Practice on *Modeling*

Thank you for the opportunity to provide comments on the proposed actuarial standard of practice (ASOP), *Modeling*. The Enterprise Risk Management/Own Risk and Solvency Assessments (ERM/ORSA) Committee of the American Academy of Actuaries[1] has reviewed the document and offers the following comments.

Below are the committee's specific responses organized by section number.

Section 2:

- Section 2.7:
  - Consider separating the "*results component*" (bolded sentence below) from the model definition.
  - Currently, the definition of the model is stated as such: "*A model consists of three components: an information input component, … a processing component, … and a **results component, which translate the output into useful business information.***"
  - The current definition is problematic for the following reasons:
    - Section 2.10 defines output as "*The results of a model including…*" The use of the term "*results*" here is inconsistent with the "*results component*" as described in section 2.7.
    - Section 2.10 states that the output of a model can be input for other models. This implies that the "*results component*" as described in section 2.7 is optional.
      - Similar conflict with the last sentence of section 2.12.

[1] The American Academy of Actuaries is a 19,500-member professional association whose mission is to serve the public and the U.S. actuarial profession. For more than 50 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

- Section 2.11:
    - Consider including a definition for underfitting as well as adding more descriptive examples for both overfitting and underfitting.
    - See Section 3.1.4 d. comment for additional details.

Section 3:

- Section 3.1.4 b.:
    - Consider including a definition for projection model, statistical model, and predictive model.
    - The difference between projection model and predictive model is not immediately clear.
        - The term "projection model" seems to intend mean *financial* projection model based on the background and other supplemental information. However, it is unclear within the guidance itself.
- Section 3.1.4 d.:
    - Consider replacing the current statement "*whether the model is overfitting the data*" with "*whether the model is overfitting or underfitting the data*" to fully capture the bias/variance tradeoff instead of focus solely on overfitting.
    - The current statement is putting undue attention on the problem of overfitting. Overfitting should be discussed alongside the problem of underfitting under the concept of bias/variance tradeoff. An underfit model that fails to capture important signals from the data is also problematic and therefore the problem of overfitting should not be discussed as a standalone item.
- Section 3.1.6 b.:
    - Consider including a definition for margin in section 2.
- Section 3.1.6 e.:
    - Consider clarifying the following "… *reusing an existing model…*" The intention here seems to be around using a model with updated data. However, with the term "reusing," it can also be interpreted as using an existing model for a different purpose. In this case, the considerations around reusing this model will extend beyond just evaluating the appropriateness of the input.
- Sections 3.5.1 and 3.5.2:
    - These two sections, model testing and model validation, seem to be based on the sections 3.5.1 a. model integrity and 3.5.1 b. analyzing the output of the 3rd exposure draft. However, the title of these two current sections do not quite communicate this context without close examination of the paragraphs following.
    - Furthermore, the scope of model validation as described here (with a focus on model output) is significantly different from the general usage of the term "model validation" (e.g., in the context of banking CCAR or SII internal model validation, where it is a lot more comprehensive than just focusing on the model output).
    - Consider renaming these two sections "model integrity testing" and "model output validation."

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Thank you for this opportunity to provide comments to the ASB. We hope these comments are helpful. If you have any questions or would like to discuss this letter in more detail, please contact Vaun Cleveland, the Academy's policy analyst for risk management and financial reporting issues, at 202-785-7851 or cleveland@actuary.org.

Sincerely,

Seong-Min Eom, MAAA, FSA
Chairperson, ERM/ORSA Committee
Risk Management and Financial Reporting Council
American Academy of Actuaries