G. Chris Nyce, Chair
Professionalism Policy Review Committee

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October 26, 2016

Actuarial Standards Board (ASB)
1850 M Street NW
Suite 300
Washington, DC 20036

Re: Comments on Proposed Actuarial Standard of Practice on Modeling (Third Exposure)

Dear Colleagues;

This comment letter is on behalf of the Professionalism Policy Review Council (we), a committee of the Casualty Actuarial Society, to provide our comments on the Exposure Draft "Modeling (Third Exposure Draft)".

To start, we would like to thank the members of the drafting committee and the ASB for the work in drafting the revisions.

The Overall Issue:

There are many types of models. Many of the models used in P&C applications don't work the way the standard as written assumes. As such the standard would be difficult or even impossible to apply to these models. The models in question are types of "statistical models", which include for example "pricing models", "risk segmentation models", or "predictive models". In this letter, we refer to these types of models as "statistical models" for short. These models are developed by actuaries or non-actuaries with statistics backgrounds, and used widely throughout a P&C insurance organization. Examples of approaches include Generalized Linear Models (GLM's), Decision Trees, Random Forest, and Gradient Boosting. Once developed, these models are often used by non-actuaries in areas such as underwriting, claims, marketing, and operations. These models are generally used to support business decisions rather than financial reporting.

In the development and widespread application of these types of models it's not possible to apply a standard that is very much oriented toward financial reporting models used primarily by actuaries.

Due to this, actuaries that practice in these areas are greatly concerned that the standard as proposed would force actuaries to wrestle to comply with a standard that isn't written to apply to

Casualty Actuarial Society 4350 North Fairfax Drive, Suite 250, Arlington, VA 22203
office@casact.org   703.276.3100 tel   703.276.3108 fax
www.casact.org

what they are doing. Further, this dilemma could make actuaries a poor choice in the minds of non-actuaries in developing and maintaining statistical models.

We do think the standard could be applied to other types of models, for example, financial reporting models would seem to work the way the standard implies. However, the way the standard is proposed, it is impossible to interpret and apply in the context of statistical models. We worry this could put actuaries working on statistical models in the position of having to choose between their current jobs, or consider if they should leave the profession to practice what many love to do to avoid having to cope with a standard that is written in a way that is inconsistent with how statistical models are estimated and used.

Below we have laid out some of the specific factors that culminate in this result. This stems from a combination of issues. One is that definitions of terms are inconsistent with the way the terms are used in statistical modeling. But we feel that it is not just the definitions, but also the context in which they are applied. The modeling terminology and processes discussed in the standard are consistent with financial reporting models, but not consistent with how terminology is applied to statistical models and the processes used in their development.

Specific Comments:

Many of these comments are common with the prior comments from the CAS Task Force that commented on the second exposure. Some examples of how the third exposure draft is inconsistent with the use of statistical models include:

1 2.10-The definition and use of the term **model run** is could be interpreted in two different ways when it comes to statistical models. There can be many runs to estimate the model, or change the form of the model. Then when in widespread usage, you could consider each use of the model to be a **model run** as well, such as each risk priced for a pricing model or each claim evaluated for a claims model. Practicing actuaries are uncertain how the provisions regarding **model runs** should be applied for these types of models. These are two separate processes.
2 2.1 - The definition of the **assumptions** as model inputs creates inconsistencies when major **assumptions** are involved in the selection of the model form itself, for example, **assumptions** about the underlying distribution of the variables.
3 2.11 – The definition of **parameters** as input isn't always correct applied to statistical models, whose output is referred to as **parameters**. For example, the coefficients of a regression or GLM are considered **parameters**, as would be the scoring system that is derived from a statistical model, but they are not inputs to the model, but instead outputs.
4 3.4.7,b – The use of the term **margin** doesn't have a clear application in many types of models. For example, a risk scoring model, which rates claims on a scale of 1 to 100 as to the likelihood of adverse development, does not include elements to which the term **margin** as used in the standard could be applied.

We would like to share other points that aren't directly related to statistical models, but are important to consider broadly.

5 3.5.1 - The use of the term "validation" isn't defined, and is used in a different sense from the more common usage of the term by the Federal Reserve and other regulators. This will almost certainly create difficulty in applying the standard. Since it could be interpreted that the actuary needs to validate models used, and in practice P&C actuaries might use many models in a single day, and can't "validate" them all. This could effectively end the role of actuaries in estimating and using these models.
The Federal Reserve has rigorous guidance around model validation, but it is not applied to "each model run" as in the standard, and is the responsibility of the organization, not the individual. We think the intent of the drafting committee is best served without invoking the term "validation", as it may be interpreted by regulators more aligned to the Federal Reserve definition, for example, to create a much higher hurdle for the actuary than the drafters intend.

6 3.3 – The discussion of the actuary on a modeling team still leaves unclear the extent the actuary can rely on non-actuarial professionals. An example would be the economic scenario generator (ESG) in a risk model. Must the actuary apply the standard to the ESG work done by a professional economist if it is used in a risk model the actuary develops?

While these inconsistencies could possibly be individually fixed, it is the holistic impact of the differences in definitions along with a context to the standard that is focused on a particular type of financial reporting model which is very different than whole other classes of models. This creates a potentially insurmountable challenge in applying the standard to statistical models. Our concern is that promulgating this standard with application to every model, could effectively preclude actuaries from participating or using a whole class of models just because they differ from what the drafters had in mind. These models are critically important to actuarial practice today, and their applications are growing rapidly. As such, the standard as written could do significant harm to the profession. In fact, we worry some actuaries may choose to give up their designation in order to continue doing the actuarial work they are proficient in doing, if a standard is deemed to be impossible to apply in practice.

We ask that the scope of the standard be modified to apply to the financial reporting models it best addresses. We suggest the best longer run approach is to bring in members to the drafting group with expertise in statistical models to help refine the approach of future standards that may apply to statistical models.

We thank the drafters again for their efforts.

Sincerely;

Chris Nyce, Chair
CAS Professionalism Policy Review Council

The Casualty Actuarial Society Professionalism Policy Review Committee Comment Group

G. Chris Nyce, Chair
Jeffrey Alan Courchene
Ginda Kaplan Fisher
Christopher Diamantoukos
Kelly S. McKeethan
Christopher J. Monsour
Brian Stoll
Alietia Caughron