**MEMORANDUM**

TO: Judy Weaver, Chair, Financial Analysis (E) Working Group

FROM: Miriam Fisk, Chair, Actuarial Opinion (C) Working Group

Anna Krylova, Vice-Chair, Actuarial Opinion (C) Working Group

RE: Actuarial Opinion (C) Working Group Response to Enhanced Regulatory Guidance Referral

DATE: [date]

**Background**

On May 9, 2022, a memorandum from the Financial Analysis (E) Working Group (FAWG) was received by the Actuarial Opinion (C) Working Group (AOWG) requesting that the AOWG consider whether additional guidance is needed for regulatory actuaries and/or financial analysts/examiners to address concerns about additional solvency risks resulting from the use of predictive analytics in reserve setting.

FAWG noted that one of the factors contributing to the recent failure of an insurer was inadequate reserving due in part to the insurer’s use of a customized, unproven predictive model for reserving and regulators’ difficulty in reviewing/challenging the model’s reserve estimates, due to lack of experience and expertise in this area.

It is our understanding that the situation leading to the referral involved a case reserving model using predictive analytics to establish ultimate case reserves for individual open claims based on the details of each claim. The company made significant changes to its claims handling processes to incorporate the results of the new model. Claim payment patterns dramatically accelerated and case reserve levels changed materially, so the company’s data became more difficult for actuaries to use in reserve analyses and increased the uncertainty around any resulting estimates. Company management remained optimistic and expected the changes to have a favorable impact that ultimately did not materialize.

**AOWG Response**

Regulatory actuaries have not traditionally been involved in examining individual case reserves or companies’ guidelines for setting case reserves.[[1]](#footnote-1) Similarly, companies’ reserving actuaries and Appointed Actuaries have not traditionally been involved in establishing claim handling guidelines or setting case reserves for individual claims.

Traditional actuarial reserve estimation methods are generally based on the assumption that future claims activity can be predicted based on historical claims activity to date. Therefore, significant changes to a company’s operations, such as claims payment or handling practices, case reserve adequacy, or underwriting, may result in historical patterns being less predictive of future patterns and may cause the results of the analysis to be highly uncertain or contain significant bias, regardless of whether predictive analytical models are involved in setting case reserves.

This issue is recognized in the current P&C claims handling/reserving risk repository in the NAIC Financial Condition Examiners Handbook, as reflected in the following risk statements:

* Changes in the legal environment or changes in the insurer’s underwriting, case reserving or claims-handling processes are not appropriately considered within the insurer’s reserving assumptions and methodologies.
* Actuarial analysis relied upon by the insurer’s management in determining carried reserves are not based on appropriate methods and/or reasonable assumptions.
* The loss and loss adjustment expense (LAE) reserve computations are not performed correctly or the selected estimates are unreasonable.

FAWG raised a valid concern that “the use of customized predictive analytical models without sufficient knowledge, actuarial adjustments of data, and reasonability checks could result in additional solvency risks at other insurers.” When the results of a complex model are reflected in a company’s financial statements, we believe it is most important for examiners to evaluate management’s understanding and use of any models relied upon in a financial reporting context, and examiners should not need to have extensive modeling expertise to do this.

We would suggest that the [“Model and Data Regulatory Questions” document](https://content.naic.org/sites/default/files/inline-files/Model%20Questions%2012.2.22.pdf) being developed by the Big Data and AI (H) Working Group will provide a good set of questions to ask about a model. These questions will have the benefit of being consistent and standardized for use by various regulator groups and are intended to apply to any type of predictive model – reserving or otherwise. The “Main General Questions” section of the document provides suggested questions that could be used by regulators to obtain a high-level understanding of a model. For example, this section recommends asking about the model’s intended purpose, data inputs, assumptions, testing/validation, and governance. The quality of management’s responses to these or similar questions might also indicate whether management has an adequate understanding of the model and could help regulators identify initial areas of concern.

We recognize that it may become necessary to compile more specific guidance to assist examiners and analysts in evaluating risk related to the use of predictive models in a reserving context.  We would need to seek assistance from regulators and industry professionals with this specific expertise since, as noted above, the Actuarial Opinion Working Group members currently have no experience reviewing these models.

1. In fact, on a recent call of the Actuarial Opinion Working Group, no participants had ever performed an in-depth review of a case reserving predictive model. However, we recognize that the use of predictive analytics in insurance is growing, and regulators will be faced with reviewing an increasing variety of complex models. [↑](#footnote-ref-1)