

Casualty Actuarial Society 2017 Ratemaking and Product Management Seminar

Use of GLMs in Ratemaking

David Dahl, FCAS, MAAA
Casualty Actuary
Oregon Division of Financial Regulation

Filing Rating Models

- ORS 737.205(1) requires insurers to file their rates, rating plans, and rating systems.
- For a GLM model to be considered complete, the Division needs to be able to determine the model score or model tier from the input variables and information about the model provided in the filing.
- Insurers are allowed to reference filings made by advisory organizations or third party vendors.

Filing Rating Models (continued)

- For personal automobile and homeowner's coverage, the Division also requests insurer underwriting guidelines to be filed.
- A model for specific hazards such as wild fire also needs to be filed if used for eligibility.
- There are efforts at the NAIC to develop best practices for model review. Oregon plans to monitor these and make changes where appropriate.

Model Support

- Main concern with models in Oregon is unfair discrimination. By statute (ORS 746.015) this incorporates three areas: rates, availability and terms and conditions.
- Model review focuses on three aspects;
 - Variable Selection
 - Variable Support
 - Selected Rating Factors

Variable selection

Information requested

- Which variables were considered
- Method used to decide the variables to include in a model
- How model variables are updated. If a variable does not change for future renewals, the insurer needs to show the variable remains predictive for future policy periods.

Variable support

Information requested:

- Relationship between modeled variables and cost components (e.g. frequency, severity)
 - graphs (lift curves), indicated relativities
- Statistical validation
 - Diagnostic test results such as p-values or confidence intervals

Selected Factors

Information Requested

- Method used to account for possible interaction between rating variables
 - generalized linear models techniques with a statement of which variables were tested and what tests were performed
 - sensitivity testing when data is limited

Selected Factors (Continued)

Information Requested

- Explanation of any selections that are significantly different than their indications
- Information about how selections are moving toward company indications if model is being phased in over time

Confidentiality and Trade Secret information

- The model rating factors are filed as public information, ORS 737.205
- The modeled variables, model formulas, and model support can be filed confidentially if the model is considered a trade secret.
- Public information requests are evaluated by the Oregon Attorney General, not the Division of Financial Regulation.

Confidentiality (continued)

Filing tip

- Public access (confidentiality) for serff filings is determined at the schedule item level, not the pdf file or individual exhibit level.
- Confidential exhibits need to be in a separate schedule item(s) for proper of handling.

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Questions?