

Alabama – Filing Requirements in SERFF

PLEASE NOTE: We have a particular interest and emphasis on sub-point h. under section "2) A description of the dataset used including:"
When responding, please number and letter your answers that correspond to our questions.

1) An overview of the model including:

- a. technical memorandum describing the steps taken in the construction of the model;
- b. disclosure of the assumptions used in constructing the model;
- c. a description of judgment used throughout the modeling process;
- d. a description of any preliminary analyses, data checks and logical tests performed on the data and the results of those tests;
- e. a narrative of each test statistic explaining its relevance and how the statistics were used to select the optimal model
- f. a discussion of how the model can be successfully implemented;
- g. the modeler's qualifications;
- h. the software used;
- i. the timeframe involved;
- j. a description of the testing procedures;
- k. any constraints on the model;
- l. any tests for and adjustments made for correlation;
- m. credibility standards and considerations;
- n. how overfitting was addressed;
- o. the goal of the model (what is optimized?).

2) Describe the dataset used including:

- a. the variable selection process;
- b. description of the data and rating variables including whether discrete or continuous;
- c. offset variables and target variables;
- d. a discussion of adjustments made to the data set;
- e. the treatment of large losses within the data set;
- f. sample records with headings;
- g. a data dictionary showing the abbreviations used in the modeling process and the standard English meaning for each variable;
- h. **an intuitive argument for why an increase in each variable should increase or decrease frequency, severity, loss cost or expenses incurred**
- i. correlation tests;
- j. company(ies) included, geographical scope, experience period, method of organization, valuation dates and method of compiling losses for insurance data;
- k. source of any non-insurance data (customer provided or other) including who owns it and **how customers can obtain and correct errors on their records;**
- l. full documentation of any scores used as input variables including sources and score formula;
- m. whether any of the variables are subject to the fair credit reporting act;
- n. rating variables considered but not used and reasons for not using.

3) Specifics about the GLM model(s) including:

- a. the link function;
- b. the error distribution;
- c. tests for goodness of fit including log-likelihood and deviance;
- d. GLM weights;
- e. volume offsets;
- f. any adjustments for scaling for discrete variables;
- g. whether loss ratio, pure premium or frequency/severity analyses were performed and if separate frequency/severity modeling was performed, how pure premiums were determined;
- h. whether the modeling was performed on a by coverage or by peril basis and the reasons therefore;
- i. any transformations for continuous variables;
- j. the coefficients for each variable;

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- k. how the model was tested for stability over time;
 - l. provide support demonstrating that the GLM assumptions are appropriate (for example, the choice of error distribution, link function, that predictor variables are linear, etc.)
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- 4) Model results of goodness of fit tests with written interpretation including:
 - a. partial residual plots for each variable;
 - b. correlation matrix;
 - c. for each discrete variable level, parameter value for each level including the WALD confidence intervals, WALD chi square tests and p values;
 - d. for overall discrete variables, type 3 chi square tests, p values and F tests;
 - e. for continuous variables WALD confidence intervals, WALD chi square tests and p values;
 - f. the use of the Akaiki Information Criteria in your model;
 - g. Gini coefficient;
 - h. lift charts;
 - i. how coverages or perils were treated if there was not enough credible data to model.
 - 5) An explanation of why you believe this model is better than the one it is replacing. How did you form that conclusion? What metrics did you rely on?
 - 6) An explanation of how the model was used to adjust the rating algorithm.
 - 7) The rationale for using a model that is more granular than the rating plan (if applicable).
 - 8) Current, indicated and proposed rating factors;
 - 9) Explanations for filed rating values that deviate from the indications and supporting information/analyses for the differences;
 - 10) Confidence intervals;
 - 11) Histograms of rate changes and common characteristics of any outliers