ExamC (ConstructionandEvaluationofActuarialModels)StudyNoteFall2006 PDF

Exam C Construction and Evaluation of Actuarial ModelsThe examination for this material consists of four hours of multiple-choice questions and is identical to CAS Exam 4.This material provides an introduction to modeling and covers important actuarial methods that are useful in modeling. A thorough knowledge of calculus, probability and mathematical statistics is assumed.The candidate will be required to understand the steps involved in the modeling process and how to carry out these steps in solving business problems. The candidate should be able to: 1) analyze data from an application in a business context. 2) determine a suitable model including parameter values. and 3) provide measures of confidence for decisions based upon the model. The candidate will be introduced to a variety of tools for the calibration and evaluation of the models on Exam M.A variety of tables will be provided to the candidate in the study note package and at the examination. These include values for the standard normal distribution, chi-square distribution, and abridged inventories of discrete and continuous probability distributions. These tables are also available on the SOA and CAS Web sites. Since they will be included with the examination, candidates will not be allowed to bring copies of the tables into the examination room. LEARNING OUTCOMESThe candidate is expected to apply statistical methods

to sample data to quantify and evaluate models presented in SOA Exam M or CAS Exam 3. The candidate is further expected to identify steps in the modeling process, understand the underlying assumptions implicit in each family of models, and recognize which assumptions are applicable in a given business application. Specifically, the candidate is expected to be able to perform the tasks listed below: LEARNING OUTCOMESA. Construction of Empirical Models Estimate failure time and loss distributions usingKaplan-Meier estimator, including approximations for large data sets Nelson-Aalen estimator Kernel density estimatorsEstimate the variance of estimators and confidence intervals for failure time and loss distributions. Estimate failure time and loss distributions with the Cox proportional hazards model and other basic models with covariates.Apply the following concepts in estimating failure time and loss distribution Unbiasedness Consistency Mean squared error B. Construction and Selection of Parametric Models Estimate the parameters of failure time and loss distributions using Maximum likelihood Method of moments Percentile matching Bayesian procedures 100Test

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