Title: Copula Regression

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Abstract: Regression analysis is most commonly used statistical methodology in practice. Actuaries use it in a variety of applications such as determining the impact of rating factors on claim costs. Actuarial applications present some challenges to traditional ordinary least squares (OLS) regression because the relationships are often non-linear and the probability distributions are non-normal. One approach that has been successful in overcoming these challenges is the generalized linear model (GLM). In its standard form, this model only accepts particular choices of non-normal distributions and non-linear relationships. In this talk, we present Copula regression as an alternative to OLS and GLM. The major advantage of a copula regression is that there are no restrictions on the probability distributions that can be used. In this presentation, we will present the formulas and algorithms necessary for conducting a copula regression analysis, with particular emphasis on adaptations required for working the discrete distributions.