CLRS2015

Brian A. Fannin and Daniel Murphy

Reproducible, Self-Documenting Actuarial Analysis with RMarkdown

RMarkdown is a tool which provides two great benefits to an actuary

1. Literate programming - The documentation of analysis becomes a part of the analysis itself
2. Reproducibility - The analysis may be reproduced by someone other than the original author

Spreadsheets - most actuaries'?? software of choice - suffer from many shortcomings, among them the fact that the analysis is often described in an environment (e.g., Word or PowerPoint) separate from where it takes place (e.g., Excel). The actuary must constantly update several documents to ensure consistency between exhibits and the narrative which supports them. Further, text which clarifies the intent and operation of complex calculations is either difficult to find or absent. The attendant operating risk is obvious. In addition, there is a lost opportunity to meet the emerging requirements of auditors, management, and regimes like Solvency II, which demand that analysis be fully documented.

RMarkdown is a technology which has emerged in the R community to support reproducibility of complex analysis and packaging of results in a variety of formats such as HTML, PDF and MSWord. This session will explore the benefits of using RMarkdown as part of an actuary's workflow. The session will walk through a examples in the context of a reserve analysis.