TOPICS ON ASSOCIATESHIP SYLLABUS/GRADUATION METHODS

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New developments in graduation methods were discussed in this session. Essentially there are two different issues in graduation, namely smoothness and fit. There are two different philosophies or approaches to graduation. One approach is to take the crude mortality rates and use smoothing techniques directly. Examples of this approach are Whittaker-Henderson Graduation and moving average techniques. The second approach is to develop a mathematical model to describe the underlying biological process that gives rise to the crude mortality rates. An example of this is graduation by mathematical formula. In this case, the actual model can be estimated by using statistical estimation techniques such as least squares or maximum likelihood estimation.

In the Whittaker-Henderson approach, the degrees of smoothness and fit can be controlled directly. In the graduation by mathematical formula the model is inherently smooth. Statistical techniques can be used to determine how well the model fits the crude mortality rates.

In this session the two instructors dealt with these two issues. James Robinson discussed Whittaker-Henderson Graduation; Aaron Tenenbein discussed graduation by mathematical formula. The papers upon which these presentations were based are:

"Analysis & Extension of the Smoothness Component of Whittaker - Henderson Graduation" by James M. Robinson (Unpublished)

"New Mathematical Laws of Select and Ultimate Mortality" by Aaron Tenenbein and Irwin T. Vanderhoof, TSA XXXII, pp. 119-158

Copies of these papers can be obtained directly from the authors.