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Predictive Modeling NEWS

# Catching Up With ...

## Hans K Leida PhD FSA MAAA

**Principal and Consulting Actuary**
**Milliman Inc., Minneapolis**

Leida has consulted to insurance companies, Blue Cross Blue Shield plans, HMOs, government health programs and employers and recently has been working on individual and small group health insurance rate filings under the Affordable Care Act's healthcare reforms.

**Hans K Leida PhD FSA MAAA**

- BA (summa cum laude), Mathematics and English, University of St. Thomas
- PhD, Mathematics (Algebraic Topology), University of Wisconsin–Madison
- Has completed many projects involving individual and group health underwriting, pricing and rate filings.
- In 2007, co-authored a paper for America's Health Insurance Plans on the impact of guaranteed issue and community rating laws adopted by certain states in the 1990s; that paper has been widely cited with the advent of federal healthcare reform, including in *amicus briefs* presented to the US Supreme Court.
- Also has significant experience with risk adjustment and predictive modeling of healthcare costs; was the lead developer of the prescription drug-based risk adjuster included in the Milliman Advanced Risk Adjusters software product.
- Has also performed firm-level research on the new federal ACA risk adjustment model that took effect in 2014.
- Also has experience supporting Medicare Advantage and Medicare Supplement plans.
- Prior to joining Milliman, taught mathematics while pursuing his PhD.
- Also performed research and co-authored a book with the support of a grant from the National Science Foundation.
- Co-author of the upcoming textbook *Individual Health Insurance 2nd Edition*.
- Co-authored chapters in *Group Insurance 6th Edition*.
- Has prepared and participated in more than two dozen paper presentations, books, reports and theses.
- Fellow, Society of Actuaries
- Member, American Academy of Actuaries

***Predictive Modeling News:*** *Characterize the amount of innovation in the predictive modeling space, especially in the area of risk adjustment models. Is there still innovation taking place, or are experts fine-tuning existing tactics and technologies?*

**Hans K Leida PhD FSA MAAA:** A great deal of innovation is currently happening, and I believe this will continue for quite some time. One way to categorize current advances is to think about inputs, outputs and the steps in between. In healthcare predictive modeling, there is a current focus on finding additional predictors beyond demographics, diagnoses and prescription drugs that can be used to build more powerful models. Ultimately, this means going beyond administrative claim data and using other sources of information, such as medical records, publicly available marketing data or other information.

As far as outputs, in addition to simple risk scores that predict overall healthcare utilization, models are now being built that predict risk by category of service and many other events or quantities of interest, from the likelihood of ER utilization to the chances that an individual will have increasing or decreasing costs over time. Finally, for the "in between," there is still plenty of room to improve in the statistical techniques that are applied to the ever-increasing volume of data available. Examples include more robust and nonlinear modeling techniques or machine learning algorithms.

***PMN:*** *What will predictive modeling look like in the future? What kinds of functionality will analytics bring to the table tomorrow that clever minds are only beginning to think about today?*

**HKL:** Predictive modeling will become pervasive in everyday life. This has already happened in many ways. Just look at how many websites use sophisticated models to recommend purchases or movies to you, or how your phone knows that you are likely thinking about heading home at the end of the day and tells you what the traffic will mean for your commute. However, I think there is still significant progress to be made in getting the right information to the right person at the right time; we spend a lot of time developing better predictions, but it's just as important to be thoughtful about how we can help people make the best use of those predictions to accomplish their goals. For example, this seems particularly important in clinical settings, where practitioners may not have time to review a lengthy report of statistical predictions, regardless of how accurate they are.

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From the modeler's perspective (rather than the user's), the ability to quickly try out a wide array of advanced modeling techniques on an enormous data set without waiting for days of computer time will have profound consequences. Of course, depending on your definitions of "enormous" and "quickly," you might argue that this future is also already here. This ability to try new ideas and receive near-immediate feedback is very powerful, and will accelerate the pace at which we improve our models. To me (a guy who grew up playing around with DOS machines in the 80s), it feels like I imagine it felt to people who were used to calculating spreadsheets with pencil and paper the first time they saw one recalculate automatically on a computer screen.

***PMN:*** *What path did you take to your present position, starting right out of college? Was it the career path you envisioned when you started?*

**HKL:** I would never have expected to end up where I am (a Principal and Consulting Actuary at Milliman) if you'd asked me back when I was a double major in math and creative writing in college. At that point, I expected to become a professor researching theoretical math (my field was algebraic topology), and I wasn't particularly interested in applications of the theory. Fast forward a few years, and I found once I got my doctorate that I was becoming much more interested in applying math in the real world. I talked to every actuary I could get ahold of, and interviewed at a number of firms before deciding on Milliman. With my academic background, I liked the focus on peer review and research I saw at Milliman. I was very lucky to arrive just in time to help build the first predictive models for the Milliman Advanced Risk Adjusters product, which has been a part of my work ever since.

***PMN:*** *What occupies a typical day or week for you? What functions, activities and workload are you typically engaged in?*

**HKL:** My responsibilities include managing consulting projects, bringing in new business, helping to manage the Minneapolis Health & Life office of Milliman and helping to manage the MARA product. In the spring, the lion's share of my time is spent helping clients with rate filings under the Affordable Care Act and bids under the Medicare Advantage program. A typical day might include several hours of meetings with my team to review their analysis, several hours of calls with clients and, if I'm lucky, a little time to actually do some analysis myself or work on a writing project. I am also a frequent speaker at professional meetings, as well as at local universities and actuarial clubs.

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