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From the Editor . . .

L. Robin Keller
Operations and Decision Technologies, The Paul Merage School of Business, University of California, Irvine, Irvine, California 92697, lrkeller@uci.edu

This issue begins with two articles on probability scoring rules, "Some Comparisons Among Quadratic, Spherical, and Logarithmic Scoring Rules" by J. Eric Bickel and "The Parimutuel Kelly Probability Scoring Rule" David J. Johnstone. Next, Mats Danielson, Love Ekenberg, Jim Idefeldt, and Aron Larsson describe their multiple attribute approach to aiding public decision making in Sweden in "Using a Software Tool for Public Decision Analysis: The Case of Nacka Municipality." Finally, Sandra Hoffman, Paul Fischbeck, Alan Krupnick, and Michael McWilliams present their method for gathering and characterizing multiple experts' judgments and apply it to food safety risks in the United States in "Eliciting Information on Uncertainty from Heterogeneous Expert Panels to Improve Risk-Based Decision-Making: A Demonstration from Food Safety."

Key words: decision analysis; probability elicitation; probability scoring rules; Kelly betting; vague preferences; expert judgment; multiple attribute; food safety; infrastructure decisions; editorial

"The best we can do is size up the chances, calculate the risks involved, estimate our ability to deal with them, and then make our plans with confidence."

Henry Ford

A key component in aiding decision making is dealing with uncertainties, as highlighted by the quote above from Henry Ford. An overarching theme of uncertainty runs through all of the papers in this issue, as represented by probabilities for possible states of nature and by vague information on probabilities or preferences over multiple attributes.

First, J. Eric Bickel examines properties of scoring rules used to assess how well a probability assessor does in making probability judgments. Weather forecasting is a typical case where scoring rules can be used, because probability judgments are made frequently and outcomes can be observed; other examples include medical diagnoses and auditing judgments. Bickel examines the properties of different quadratic, spherical, and logarithmic scoring rules from both an ex ante perspective (encouraging probability assessors to report truthfully what they believe) and an ex post perspective (evaluating performance). He concludes that a logarithmic scoring rule is superior under certain conditions and illustrates differences in rules using data from Stanford University students who stated their probability that multiple choice answers are correct. (*Trivia question*: Judge the probability that each of the possible answers is correct: Henry Ford became Chief Engineer of which Michigan company in 1893? (a) Edison Illuminating Company, (b) Ford Motor Company, (c) Kellogg Company.[1]

Our second article, by David J. Johnstone, also examines probability scoring rules, in particular, analyzing the connections among the standard logarithmic scoring rule, a competitive logarithmic scoring rule developed by Marc Kilgour and Yigal Gerchak (published in *Decision Analysis* in 2004), and the concept of Kelly betting from finance. The results provide a bridge between work on scoring rules and the finance literature. Johnstone introduces a modification of the Kilgour-Gerchak score, called the Parimutuel Kelly probability scoring rule, and shows how rewarding a cohort of probability forecasters with such a scoring rule can be reframed from the perspective of each forecaster's dynamic investment decision problem.

Our third article, by Mats Danielson, Love Ekenberg, Jim Idefeldt, and Aron Larsson, presents their

[1] *Trivia answer*: (a) Ford became an engineer with the Edison Illuminating Company in Detroit in 1891, and was promoted to Chief Engineer in 1893. Ford Motor Company was founded in 1903 with Henry Ford as Chief Engineer and Vice President (Henry Ford Museum, http://www.hfmgv.org/exhibits/hf/default.asp).

multiple attribute decision analysis approach and applies it to aiding public infrastructure decision making in Sweden in "Using a Software Tool for Public Decision Analysis: The Case of Nacka Municipality." Their approach enables construction of a rank ordering (or partial ordering) of possible municipal improvement projects (a new water and sewer system, a new road plan, and a new commuting marina) even when there is imprecise (unavailable, incomplete, or vague) information on probabilities, values (utilities), and weights on criteria (attributes). Previous papers in *Decision Analysis* which have applied a multiple attribute decision analysis approach (without a focus on imprecise information) to municipal or regional planning include Merrick et al. (2005a) on watershed planning in the Eastern United States and Feng and Keller (2006) on U.S. planning for protection from radioactive iodine in the event of nuclear incidents.

In our final article, Sandra Hoffmann, Paul Fischbeck, Alan Krupnick, and Michael McWilliams present a novel approach for assessing probability judgments from a large panel of experts with different scientific expertise and then using multiple measures to characterize the results (including variability in the experts' judgments, agreement between experts' assessments and prior data-based estimates, individual experts' uncertainty about their own assessments, and variability in their uncertainty across experts). Different patterns of results on these measures carry implications for the type of suitable regulatory actions. They apply their method to foodborne illnesses in the U.S. In the past year, there have been a number of food safety outbreaks in the U.S., including E. coli in spinach and recent pet food contamination, so food safety in the event of outbreaks as well as sporadic events is an on-going concern. Hoffmann et al. conducted a survey to elicit the percentage of foodborne cases of human illnesses related to specific pathogens (such as E. coli) caused by eating different foods, such as shellfish, dairy products, beef, etc. Previous articles in *Decision Analysis* by Winkler and Clemen (2004) and Merrick et al. (2005b) covered related work involving multiple experts' judgments.

Our vision for *Decision Analysis* is to serve the needs of both academics and practitioners of decision analysis, as well as potential future decision analysts and users of decision analysis. Our editorial objectives and audience are printed on the inside of the back cover of every issue. I strongly encourage submissions of manuscripts from the wide array of decision research fields. Whenever topics from a broadly related field are aimed for the journal, the focus should be on potential contributions to prescriptive decision analysis. Such manuscripts should include a discussion of implications of the work for aiding decision making, and a literature review to demonstrate how the manuscript's field relates to the decision analysis literature.

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