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Call for Papers – *Risk Analysis*
"*Special Issue to Commemorate the Work of Daniel Kahneman*"

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Important Dates:
Submission Deadline: February 1, 2025
First-Round Reviews (target): May 31, 2025
Special Issue Published (target): Winter 2025

Background and Focus

This special issue is dedicated to commemorating Daniel Kahneman, who recently passed away. As one of the pioneering figures of Prospect Theory, he profoundly influenced many aspects of public health, safety, and environmental (HS&E) risk analysis. Examples of his impact include studies that employ loss-gain framing in health risk communications (Ratcliff et al., 2019), explore the interplay between risk perception, heuristic, and systematic information processing during the COVID-19 pandemic (Wong et al., 2021), and examine the relationship between continued preoccupation and likelihood outcomes in the context of natural hazards (Siegrist & Gutscher, 2006). Kahneman's work has fundamentally reshaped our understanding of human decision-making under risk. Prospect Theory, a seminal framework in behavioral science (and later in other multi-disciplinary areas) introduced by Daniel Kahneman and Amos Tversky in 1979, revolutionized the study of decision-making under risk by challenging expected utility theory. This work, along with contributions from *Paul Slovic* and *Baruch Fischhoff* - both past Presidents of the Society for Risk Analysis - transformed our understanding of risk perception and psychology. *Risk Analysis* will publish a special issue in honor of Kahneman, inviting contributions from collaborators and researchers in related fields to reflect on his lasting impact and the continued relevance of his work.

Topics of interest include but are not limited to:

This special issue invites submissions from risk analysts, behavioral economists, risk modeling specialists, management academics, and policy practitioners who empirically and/or experimentally examine Kahneman's theories as they apply to HS&E risks. The objective is to publish innovative work on a range of his core theories set out in the topics section below:

- We encourage modeling and validating health, safety, and environmental (HS&E) risk models based on Kahneman's theories. Submissions should consider comparison views; critically assess the applicability of Prospect Theory, Cumulative Prospect Theory, and related methods to HS&E risks; and demonstrate relevance to specific HS&E disciplines and real-world decision-making.
- This special issue is open to exploring the scope of Big Data, AI, Machine Learning, Deep Learning, and Natural Language Processing (NLP) techniques rooted in Kahneman's legacies, aiming to test the boundaries of his theories or apply them to HS&E areas.
- Theoretical, empirical, and experimental research papers, case studies, surveys, and longitudinal studies that reflect the influence of Kahneman's theories in HS&E risk analysis are welcome. We encourage submissions that employ comparative analyses, meta-analyses, or structural equation modeling. Contributions must undergo rigorous peer review to ensure they constructively build on Kahneman's legacies.
- Submissions may consider interdisciplinary approaches across health, safety, and environmental (HS&E) fields rather than focusing on a single area. Studies solely analyzing health risks (or environmental risks), such as perceptions, attitudes, psychology, or communication, should include links to Kahneman's theories to be considered.
- This special issue invites contributors to submit papers focused on policy, demonstrating how risk analysis has effectively guided and enhanced policy decisions and processes based on Kahneman's theories and concepts. This may encompass discussions on global risks, risk management policies, and outcomes in fields like infrastructure risk analysis, HS&E risks in supply chains, import/export hazards, and the risk analysis of cybercrime and cyber-physical hazards,

which have a strong background and framework from Kahneman's legacies. Additionally, submissions that strengthen the connection between risk analysis and benefit-cost analysis are welcomed.

Relevant literature and scope

People value gains and losses differently, leading to irrational decisions when expected outcomes are relatively certain (Kahneman & Tversky, 1979); however, this descriptive model does not always accurately predict choices and assumes a level of cognitive processing that may not be applicable in all decision-making contexts. Although extended studies have provided further insights into risk analysis and decision-making (Tversky & Kahneman, 1992; Kahneman, 2003; Kahneman, 2011), these theories still face challenges from empirical data and exhibit complex mathematical structures (Wang & Fischbeck, 2004; Rieger & Wang, 2008). They primarily serve as conceptual frameworks rather than predictive tools. Furthermore, as broad summaries, they lack the depth of empirical or experimental studies. This body of literature (Thaler & Sunstein, 2008; Camerer & Loewenstein, 2004; Barberis, 2013) highlights the role of '*nudges*' and behavioral economics in improving decision-making, tracks the integration of psychology with economics, evaluates Prospect Theory's explanatory power over three decades, and showcases papers that advance and assess the impact of behavioral economics on economic decisions. However, these studies have faced criticism for its oversimplification of complex social behaviors and the ethical concerns surrounding the concept of 'nudging' individuals towards specific behaviors. Although comprehensive, it might not equally cover all subfields and could reflect the authors' biases on the development of the field.

The special issue will focus on public health, safety, and environmental (HS&E) risk analysis. While numerous studies, including Ruggeri et al. (2020); Montibeller & Von Winterfeldt (2015); Keller & Wang (2015), have validated Kahneman's work on a broad scale, this special issue aims to emphasize research papers that demonstrate critical real-world applications of risk analysis. These applications should be grounded in the exceptional contributions of Kahneman and his collaborators, showcasing their relevance and impact in HS&E contexts instead of focusing on single-disciplined topics. Therefore, the goal of this special issue is to expand the Kahneman's theories in HS&E risk analysis contexts, explore their potential implications for future research or develop the novel methodologies or emerging evidence that may offer new perspectives on Kahneman's theories.

(i) Risk perception and risk psychology: Risk as analysis and risk as feelings: reflections on affect, reason, and the interplay between risk and rationality (Slovic et al., 2004). This emerging perspective highlights our dual process of thought, famously categorized by Kahneman (2011) as fast and slow. Fast thinking ("System 1") operates on intuition, instinct, and prior learning. It is deeply influenced by emotions, imagery, narratives, and firsthand experiences. Slow thinking ("System 2"), which underpins risk analysis, is methodical and logical, drawing on reasoned arguments and quantitative evidence. Emotions also play a role in this analytical mode, albeit at a later stage, such as in evaluating the 'rightness' of an analysis. The existing literature underscores the strengths and limitations of both cognitive approaches in risk management, emphasizing the need for their harmonious integration to balance rational thought against the intense emotions triggered by specific risks. This integration also aims to address the challenge of infusing essential emotional understanding into situations where a lack of such insight could lead to decisions marked by an overly detached rationality. Hence, this special issue invites submissions that empirically or experimentally explain the impact of rationality (and its limits) and emotion on risk analysis, particularly in the contexts of public health, safety, and environmental concerns. For example, numerous health risks stem from individuals consciously making choices that attempt to balance health with other considerations. Therefore, the question can be raised of how (ir)rational thinking or psychological feelings might influence risk perceptions of public health concerns (behavioral responses to pandemic, the choices of having vaccines or fatality, etc.) (Fischhoff, 2013), safety choices (from the managerial decisions), or decisions to cope with the challenge of minimizing losses from natural disasters amid climate change (Kunreuther, 2020). Furthermore, this special issue invites contributions that broaden our understanding of the connections between risk analysis and benefit-cost analysis.

(ii) Broader uses of health, safety, and environmental (HS&E) risk analysis: Pressing societal challenges require innovative, robust, and adaptive risk analysis methods for improving decision-making under uncertainty in applications ranging from climate change to disease management and facility safety. Our special issue seeks advancements over traditional models and practical examples. For example, AI and machine learning have both leveraged and enriched classical decision analysis by integrating real-world complexities. This is also our interest in the special issue; Therefore, this special issue seeks academic works with practical applications, focusing on enhancing risk management by demonstrably improving risk assessment, modeling, validation; understanding risk perception; improving risk communication and deliberation; and refining decision-making, policy formulation, and evaluation in health, safety, and environmental contexts.

Submission guidelines: Articles submitted must be unpublished and not under consideration for publication elsewhere. Authors should familiarize themselves with the submission guidelines available at the Wiley online library site for *Risk Analysis*, https://onlinelibrary.wiley.com/page/journal/15396924/homepage/forauthors.html. Each manuscript will undergo a thorough review process. Furthermore, authors should *prepare their cover letter to clearly demonstrate the relevance of their work to Kahneman's contributions and explain how it addresses broader topics of public interest that could benefit from risk analysis* methods and insights. Finally, the papers should clearly articulate how the themes are connected to your research topics.

References

Barberis, N. C. (2013). Thirty years of prospect theory in economics: A review and assessment. *Journal of Economic Perspectives*, 27(1), 173-196.

Camerer, C., & Loewenstein, G. (2004). Behavioral economics: Past, present, future. Advanced in Behavioral Economics, *Princeton University Press*, 4-51.

Cox, L.A. (2023). AI-ML for Decision and Risk Analysis: Challenges and Opportunities for Normative Decision Theory, *Springer Cham*.

Cox, L.A., Jr. (2012), Confronting Deep Uncertainties in Risk Analysis. *Risk Analysis*, 32: 1607-1629.

Cox, T. and Lowrie, K. (2021), Improving Risk Management of Complex Systems. *Risk Analysis*, 41: 1-2.

Fischhoff, B. (2013). Risk perception and communication. In Risk analysis and human behavior. *Routledge*.

Kahneman, D. (2003). Maps of bounded rationality: Psychology for Behavioral Economics. *American Economic Review*, 93(5), 1449-1475.

Kahneman, D. (2011). Thinking, fast and slow. *New York: Farrar, Straus, & Giroux*.

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, 47(2), 263-291.

Keller, L. R., & Wang, Y. (2017). Information presentation in decision and risk analysis: Answered, partly answered, and unanswered questions. *Risk Analysis*, 37(6), 1132-1145.

Kunreuther, H. (2020). Risk management solutions for climate change–induced disasters. *Risk Analysis*, 40(S1), 2263-2271.

Montibeller, G., & Von Winterfeldt, D. (2015). Cognitive and motivational biases in decision and risk analysis. *Risk Analysis*, 35(7), 1230-1251.

Ratcliff, C. L., Jensen, J. D., Scherr, C. L., Krakow, M., & Crossley, K. (2019). Loss/gain framing, dose, and reactance: A message experiment. *Risk Analysis*, 39(12), 2640-2652.

Rieger, M. O., & Wang, M. (2008). Prospect theory for continuous distributions. *Journal of Risk and Uncertainty*, 36, 83-102.

Ruggeri, K., Alí, S., Berge, M.L., Bertoldo, G., Bjørndal, L.D., Cortijos-Bernabeu, A., Davison, C., Demić, E., Esteban-Serna, C., Friedemann, M., Gibson, S.P., Jarke, H., Karakasheva, R., Khorrami, P.R., Kveder, J., Andersen, T.L., Lofthus, I.S., McGill, L., Nieto, A.E. and Pérez, J. (2020). Replicating patterns of prospect theory for decision under risk. *Nature Human Behavior*, 4(6), 622-633.

Siegrist, M., & Gutscher, H. (2006). Flooding risks: A comparison of lay people's perceptions and expert's assessments in Switzerland. *Risk analysis*, 26(4), 971-979.

Slovic, P., Finucane, M., Peters, E., & MacGregor, D. G. (2004). Risk as analysis and risk as feelings: Some thoughts about affect, reason, risk, and rationality. *Risk Analysis*, 24(2), 311–322.

Thaler, R. H., & Sunstein, C. R. (2009). Nudge: Improving decisions about health, wealth, and happiness. *Penguin Books*.

Tversky, A., & Kahneman, D. (1992). Advances in Prospect Theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5, 297-323.

Wang, M., & Fischbeck, P. S. (2004). Incorporating framing into prospect theory modeling: A mixture-model approach. *Journal of Risk and Uncertainty*, 29, 181-197.

Wong, J. C. S., Yang, J. Z., Liu, Z., Lee, D., & Yue, Z. (2021). Fast and frugal: Information processing related to the coronavirus pandemic. *Risk Analysis*, 41(5), 771-786.