



**Università
Bocconi**

DEPARTMENT
OF DECISION
SCIENCES

informs. DECISION ■ ANALYSIS ● SOCIETY ◀

PROGRAM

**ADVANCES
IN DECISION
ANALYSIS
2019**

**19 – 21 June 2019
Bocconi University
Milan**

ADVANCES IN DECISION ANALYSIS

Advances in Decision Analysis is a conference series organized by the Decision Analysis Society of INFORMS. The 2019 edition—the third of its kind— is held June 19-21, 2019 at Bocconi University, Milan, Italy. The conference series aims to bring together scientists working in decision analysis, broadly defined, providing a platform for interdisciplinary discussions on the recent advances in the discipline. It includes talks by researchers in decision analysis, behavioral economics, judgment and decision-making, machine learning, statistics, and other related disciplines with a prescriptive focus.

THE DECISION ANALYSIS SOCIETY

The Decision Analysis Society promotes the development and use of logical methods for improving decision-making in public and private enterprise. Such methods include models for decision-making under conditions of uncertainty or multiple objectives; techniques of risk analysis and risk assessment; experimental and descriptive studies of decision-making behavior; economic analysis of competitive and strategic decisions; techniques for facilitating decision-making by groups; and computer modeling software and expert systems for decision support. Our members include practitioners, educators, and researchers with backgrounds in engineering, business, economics, statistics, psychology, and other social and applied sciences. The Decision Analysis Society is a subdivision of INFORMS, the Institute for Operations Research and the Management Sciences. INFORMS is the world's largest organization of operations researchers and management scientists, with over 12,000 members. The Decision Analysis Society is among the largest of INFORMS' subdivisions, with more than 1000 members.

CONFERENCE VENUE

BOCCONI UNIVERSITY was established as a private, independent, non-profit university in 1902, through a philanthropic gift from Ferdinando Bocconi in memory of his son Luigi, lost in war. Bocconi was the first Italian institution of higher education to grant a degree in economics and management, and has played an important role in Italy's social and economic modernization. Today it is considered one of the leading European universities in economics, management, finance, data science, law and political science. Bocconi University appears in the most prominent rankings which cover its areas of expertise, steadily positioned among top European institutions. The University has a growing reputation as a global research institution in the social sciences, with a worldclass faculty and a diverse student population. Besides its 14,000 students, Bocconi has a global network of 100,000+ alumni, 270+ partner schools, and 600+ employers. By virtue of these strong ties with firms/institutions and individuals, Bocconi is able to ensure a remarkable career impact: employment rate one year after graduation is in fact above 95%.

DEPARTMENT OF DECISION SCIENCES

The Department of Decision Sciences is a vibrant community of scholars carrying out cutting-edge research in the mathematical, statistical and computational sciences. The Faculty stands out for its theoretical and methodological achievements, which are also essential to devise effective tools for modeling and analyzing biological, economic, physical and social phenomena.

The Department of Decision Sciences is also committed to train students according to the highest educational standards. They offer a wide array of courses, ranging from introductory to doctoral level, and mentor many brilliant MSc and PhD students. The Department plays a key role both in the BSc program in Economics, Management and Computer Science and in the MSc programs in Data Science and Business Analytics and in Economic and Social Sciences. Another fundamental building block of the Department's research and teaching activity is the Ph.D. program in Statistics, which attracts top students.

PROGRAM

19 June			
8:00am-5:00 pm	Registration	Bocconi University- via Röntgen 1	
8:30am-9:00am	Welcome	Emanuele Borgonovo, John Butler, Yael Grushka-Cockayne, Karen Jenni, Melissa Kenney, Jason Merrick, Jay Simon	
9:00am-10:30am	Parallel Sessions		
Room AS01 Topic: Finance	Chair: <u>Alessandro Sbuelz</u>	Anna Battauz	American Options and Stochastic Interest Rates
		Giorgio Consigli	A Partial Stochastic Dominance Ordering with Application to Portfolio Theory
		Filippo Massari	On the Survival of Traders that Underreact to Information
		Alessandro Sbuelz	Bail-in vs Bail-out: Bank Resolution and Liability Structure
Deutsche Bank Room (AS02) Topic: Sequential Decision	Chair: <u>Morvarid Rahmani</u>	Sudhakar Deshmukh	To Be the First or to Be the Best: Innovation Competition
		Ahti Salo	Decision Programming for Optimizing Multi-Stage Decision Problems Under Uncertainty
		Sasa Zorc	Empirical Stopping Rules for Search
		Morvarid Rahmani	The Effect of Flexibility in Delegating Innovation
10:30am-10:45am	Coffee Break		
10:45am-12:15pm	Parallel Sessions		
Room AS01 Topic: Society and Decision Analysis	Chair: <u>Jay Simon</u>	Rakesh Kumar Sarin	Just Society: A Decision Theoretic Approach
		Ying He	Risk Sharing and Resource Allocation Equality in Group under Social Comparison Effects
		Jay Simon	Modeling Altruistic Preferences
Deutsche Bank Room (AS02) Topic: Behavioral Decision Analysis I	Chair: <u>Manuel Baucells</u>	Yan Bai	Back to the Future: Can Awareness of Previous Unintentional Unethical Decisions Improve Subsequent Intentional Ethical Decisions?
		Alessandra Cillo	What Drives the Magnitude Effect?
		Manel Baucells	Range Utility Theory for Risk and Time
		Sreyaa Guha	Risky Choice in Dynamic Decision Environments
12:30pm-1:15pm	Keynote Speech Room N01	Cynthia Rudin	Secrecy, Criminal Justice, Variable Importance, and Decision Trees
1:30pm-2:30pm	Lunch Break		

2:30pm-4:00pm	Parallel Sessions		
Room AS01 Topic: Forecast Aggregation	Chair: <u>Yael Grushka- Cockayne</u>	Steffen Keck	Enhancing the Wisdom of the Crowd with Cognitive Process Diversity: The Benefits of Aggregating Intuitive and Analytical Judgments
		Ville Satopaa	Automatic Bayesian Aggregation of Predictions
		J. Todd Swarthout	Belief Distributions, Overconfidence and Bayes Rule
		David P. Soule	Skill Based Forecast Combination
Deutsche Bank Room (AS02) Topic: Behavioural Decision Analysis II	Chair: <u>Peter P. Wakker</u>	Daniel Feiler	From Noise to Bias in Linked Decisions: An Experimental Examination
		Peter Wakker	Belief Hedges: A New and Easy Tool for Directly Measuring Uncertainties of Application-Relevant Events if Probabilities are Unknown
		Kirsten Rohde	Intertemporal Correlation Aversion
Room AS03 Topic: Multiattribute	Chair: <u>Ali E. Abbas</u>	Robert Bordley	The Reference Point Effect in Utility Assessment
		Shashwat M. Pande	Individual Differences in MCDM Choice: The Interplay Between Attentional Control, Selection Strategy and Information Structure
		Giacomo Marangoni	An Integrated Multi-objective Appraisal of Mitigation and Climate Engineering Under Uncertainty
		Ali E. Abbas	Archimedean Utility Copulas with Polynomial Generating Functions
4:00pm-4:15pm	Coffee Break		
4:15pm-5:45pm	Parallel Sessions		
Room AS01 Topic: Behavioural Decision Analysis III	Chair: <u>Jack Soll</u>	Henning Cordes	Dynamics of Risk Aversion: Stock Market Developments and Emotions
		Jack Soll	Preferences for "Blinding": Why People Want Information They Know They Should Not Have
Deutsche Bank Room (AS02) Topic: Forecasting	Chair: <u>Florian Artinger</u>	Yael Grushka-Cockayne	Using Prediction Interval Skewness to Improve Forecast Accuracy
		Asa Palley	Expert Selection Within a Single Judgment Problem
		Florian Artinger	Recency: Predicting with One Data Point
Room AS03 Topic: Behavioural Decision Analysis IV	Chair: <u>Valentina Ferretti</u>	Jeeva Somasundaram	Habit Formation in Energy Conservation
		Riccardo Mogre	Paying More to Get It Faster: When Should It Be Considered?
		Valentina Ferretti	"If You Don't Know Where You Are Going... You Will Probably End Up Somewhere Else": Insights from Behavioral Decision Analysis in Action
5:45pm-6:30pm	Keynote Speech Room N01	Massimo Marinacci	

20 June

20 June			
9:00am-10:30am	Parallel Sessions		
Room AS01 Topic: Decision Making Under Ambiguity I	Chair: <u>Juho Roponen</u>	Ilke Aydogan	Three Layers of Uncertainty and the Role of Model Misspecification: An Experiment
		Ayse Onculer	The Future Ambiguity Effect
		Juho Roponen	Adversarial Risk Analysis under Partial Information
Deutsche Bank Room (AS02) Topic: Behavioral + Loss Aversion I	Chair: <u>Philippe Delquie</u>	Richard Larrick	Descriptive and Prescriptive Implications of Scale Expansion
		Vulnet Sejdiu	St. Petersburg Paradox vs. Allais Paradox: How Cumulative Prospect Theory is torn between the two most famous Paradoxes in Decision Theory
		Philippe Delquie	Estimating Risk Attitude by Indifference Points vs. Most Preferred Points
10:30am-10:45am	Coffee Break		
10:45am-12:15pm	Parallel Sessions		
Room AS01 Topic: Forecasting	Chair: <u>Han Bleichrodt</u>	Xiaochun Meng	Scoring Functions for Forecasts of Multivariate Distributions and Quantiles
		Erin Baker	Comparing In-person and Online Modes of Expert Elicitation
		Jens Witkowski	The Robust Bayesian Truth Serum
		Han Bleichrodt	Truth-Telling Incentives Reduce Biases in Surveys
Deutsche Bank Room (AS02) Topic: Behavioral + Loss Aversion II	Chair: <u>Renato Frey</u>	Johannes Müller-Trede	Risky Sure Things and Reference-Dependent Risk Attitudes
		Antonio Rosato	Expectations-based Loss Aversion in Common-value Auctions: Extensive vs. Intensive Risk
		Renato Frey	Assessing Risk Preference with a Battery of 39 Risk-taking Measures
		Spyros Zoumpoulis	Efficiently Evaluating Targeting Policies

09:00am - 12:15pm	Parallel Sessions		
Room AS03 Topic: Environmental Symposium	Chairs: <u>Karen Jenni</u> and <u>Michael Runge</u>	Terry Walshe	Taboo Trade-offs and a Burning Issue
		Laurent Drouet	Appropriate Time Discounting in Low Carbon Pathways Requires Earlier Emission Reductions and Less Carbon Budget Overshoot
		Brenadan A. Wintle	Spatial Conservation Action Prioritization when Choices Aren't Black and White
		Melissa Kenney	Improving the Design of Forecast Visualizations to Improve Public and Private Sector Environmental Decision-making
		Libby Rumpff	Understanding Critical Uncertainties to Develop Research Priorities. Or, How to Avoid Trouble in a Room Full of Passionate Scientists
		Andrea Watson	Renewable Energy Data, Analysis, and Decisions Viewed Through a Case Study in Bangladesh
		Karen Jenny	Decision Analysis without Decision Makers
		Michael C. Runge	Eliciting Patterned Sets of Parameters from Experts
12:30pm- 1:15pm	Keynote Speech Room N01	Robin S. Wilson	The role of Decision Science in Effective Policy Making
1:30pm- 2:30pm	Lunch Break		

2:00pm- 3:00pm	Poster Session- Gallery	
	Anna Abatayo	A Geoengineering Experiment
	Christoph Becker	Experiencing Risk: (Higher-order) Risk Attitude in Description and Experienced Based Decision
	Giovanni Bruno	In- group Cooperation in Ethical Decision making: The Social Dillema of Self - Driving Cars
	Giovanni Burro	Sky's the Limit: An Empirical Investigation of Maximum Price and Its Effect on Regret and Trading Decisions
	Yee Siang Chng	Change is The Only Constant in Life: Human Reinforcement Learning in Static vs Dynamic Environments
	Xueqi Dong	Statewise Monotonicity, One Switch Independence, and Linear Preferences
	Dale Griffin	Validating measures of Individual Differences in Risk Attitudes under Prospect Theory
	Shuoli Liu	Ordinal One-switch Independence In Multi-attribute Utility
	Genevieve Marignac	Analysis of Solutions to Ethical Dilemmas Proposed to 3rd Year Veterinary Students Before and After the Use of Diagnosis Based Decision Aid Tool
	Shenming Song	Incentivizing Catastrophe Risk Sharing
	Edward W. Sun	Algorithmic Decision Making with Big Industrial Data for Scrutinizing Deficiency in Energy Production
	Wenjie Tang	Size Matters, So Does Duration: The Interplay Between Offer Size and Offer Deadline
	Yitong Wang	How Original Brand Advertising Influences Preferences for Copycats and Counterfeits Differently
	Merle Werbeloff	The Role of Statistical Numeracy in Algebraic Models of Risky Choice
	Onesun Steve Yoo	Economic Behavior of Information Acquisition: Impact on Peer Evaluation in MOOCs
	Sepideh Kaffash	An investigation of Massachusetts Higher Education Institutes Efficiency

3:00pm- 4:30pm	Parallel Sessions		
Room AS01 Topic: Risk/Uncertainty + Scoring Rules	Chair: <u>Ilia Tsetlin</u>	Simon French	So You Think that You Understand Uncertainty ?
		Neil A. Hamlett	Differentiated Decision-Making as a Basis for Competitive Advantage
		Ilia Tsetlin	Ranking Distributions when only Mean and Variance are Known
Deutsche Bank Room (AS02) Topic: Risk Measurement, Risk Aversion	Chair: <u>Erin Baker</u>	Simone Cerreia Vioglio	Robust Mean-Variance Approximations
		Aurelien Baillon	Discrete Arrow-Pratt Indices for Risk and Uncertainty
		Tommi Ekholm	Multiple Beliefs, Multi-stage Decisions and Dynamic Consistency
Room AS03 Topic: Bayesian Statistics	Chair: <u>Nicholas Polson</u>	Ehsan S. Soofi	Bayes Risks of Fisher Information and Mean Excess
		Refik Soyer	Augmented Probability Simulation for Bayesian Design of Life Tests
		Tevfik Aktekin	Staffing in Service Systems with Dependent and Uncertain Rates
		Nicholas Polson	Bayesian Decisions vis Reinforcement Learning
4:30pm- 4:45pm	Coffee Break		

4:45pm-6:15pm		Parallel Sessions	
Room AS01 Topic: Elicitation	Chair: <u>Alec Morton</u>	Alec Morton	Quantifying Uncertainty about Future Antimicrobial Resistance: Comparing Structured Expert Judgment and Statistical Forecasting Methods
		David Budescu	Estimation of Subjective Probability Distributions with Ratio Judgments and Scaling (RJS) Methodology
		Philippe Colo	What's the Science? Communication Under Model Uncertainty
Deutsche Bank Room (AS02) Topic: Time, Stages	Chair: <u>James Hammitt</u>	Debarun Bhattacharjya	Proximal Graphical Event Models
		James K. Hammitt	Premature Deaths and Statistical Lives: Toward Clearer Quantification and Valuation of Environmental Mortality Risks
		Dharma Kwon	Game of Variable Contribution to Common Good under Uncertainty
Room AS03 Topic: Behavioral Decision Making	Chair: <u>Pamela Giustinelli</u>	Christian Wernz	Public Reporting of Hospital Quality Data and Its Impact on Physician and Hospital Decisions
		Pamela Giustinelli	Precise or Imprecise Probabilities? Evidence from Survey Response
		Andrea Hupman Cadenbach	Understanding Decisions with Conflicting Incentives: A Behavioural Experiment
7:30pm-8:30pm	Foyer via Röntgen 1	Concert	
8:30pm-10:30 pm	Aula Magna via Röntgen 1	Dinner	

21 June

08:30am-10:00am	Parallel Sessions		
Room AS01 Topic: Decisions and Preferences	Chair: <u>Eva D. Regnier</u>	Gregorio Curello	The Lattice Structure of Preference Comparison
		Eva Regnier	Ex Ante Evaluation of R&D Projects
		Elena Verdolini	What Do We Know About the Environmental, Technological, Competitiveness and Social Outcomes of Policy Instruments for the Low-Carbon Transition
		Alessandro Mancuso	Selecting Risk Mitigation Actions for Industrial Systems Based on Uncertain Measurements
Deutsche Bank Room (AS02) Topic: PhD Incubator I	Chair: <u>Benjamin Tereick</u>	Ying Han	A Quantile Method for Evaluation of Aggregated Forecasts
		Xiaojia Guo	Bayesian Ensembles of Unlabeled Forecasts
		Benjamin Tereick	The Wisdom of Self-Aggregating Crowds
Room AS03 Topic: PhD Incubator II	Chair: <u>Patrick Schmidt</u>	Matteo Madotto	Heterogeneous Awareness in Financial Markets
		Jingni Yang	Giving According to Agreement
		Giovanni Rabitti	Studying Interactions in Multiattribute Utility Theory
		Patrick Schmidt	Elicitation of Ambiguous Beliefs with Mixing Bets
10:00am-10:15 am	Coffee Break		
10:15am-11:45am	Parallel Sessions		
Room AS01 Topic: Sensitivity Analysis	Chair: <u>Xuefei Lu</u>	Elmar Plischke	Managerial Insights for Simulation Studies: Sensitivity Visualization using CUSUNORO Curves
		Emanuele Borgonovo	Sensitivity Analysis via Information Density
		Xuefei Lu	Bayesian Estimation of Probabilistic Sensitivity Measures for Computer Experiments
Deutsche Bank Room (AS02) Topic: PhD Incubator III	Chair: <u>Victor Gallego</u>	Edoardo Tosoni	Generalized Measures of Risk Importance for Bayesian Networks
		Victor Gallego	Markov Decision Processes under Threats
		Chung-Huey Wu	Biodiversity Conservation: Incorporating Costs, Flexibility and Re-planning Improves Investment Decisions in a Changeable World
Room AS03 Topic: PhD Incubator IV	Chair: <u>Giacomo Lanzani</u>	Nicolò Bertani	Fast and Simple Elicitations Using an Adaptive Procedure: Application to Probability Weighting
		Peter Wikman	An Axiomatization of Time-consistent and Reference-dependent Preferences
		Giacomo Lanzani	An Axiomatic Approach to Salience Theory of Choice
12:00pm-1:00pm	Aula Magna via Röntgen 1	Panel Session-Ramsey Medalists and Closure	

ORGANIZING COMMITTEE

Emanuele Borgonovo, Bocconi University
John Butler, MSComb School of Management
Yael Gruschka-Cockaine, Darden Business School
Karen Jenni, U.S. Geological Survey
Melissa Kenney, University of Maryland
Jason Merrick, Virginia Commonwealth University
Jay Simon, American University

ORGANIZATION STAFF

Martina Ercoli (Bocconi University), **Paulette Bronis** (INFORMS), **Cassie McKay** (INFORMS), **Elizabeth Wood** (INFORMS), **Beth West** (INFORMS).

SCIENTIFIC COMMITTEE

Ali Abbas (University of Southern California), **Terje Aven** (University of Stavanger), **Erin Baker** (University of Massachusetts Amherst), **Manuel Baucells** (University of Virginia), **Aurellien Baillon** (Erasmus University), **Tim Bedford** (University of Strathclyde), **Debarun Bhattacharjya** (IBM), **Han Bleichrodt** (Erasmus University), **Enrico Diecidue** (INSEAD), **James Dyer** (University of Texas Austin), **Gordon Hazen** (Northwestern University), **L. Robin Keller** (UC Irvine), **Victor Jose** (Georgetown University), **Casey Lichtendahl** (University of Virginia), **Kevin McCardle** (UCLA), **Alec Morton** (University of Strathclyde), **Bob Nau** (Duke University), **David Rios Insua** (ICMAT), **Ahti Salo** (Aalto University), **Rakesh Sarin** (UCLA), **Ross Shachter** (Stanford University), **Refik Soyer** (George Washington University), **Roman Slowinski** (Poznan University of Technology), **James Smith** (Duke University), **Jack Soll** (Duke University), **Ilia Tsetlin** (INSEAD), **Canan Ulu** (Georgetown University), **Peter Wakker** (Erasmus University), **Bob Winkler** (Duke University), **George Wu** (University of Chicago), **Jun Zhuang** (University at Buffalo), **Enrico Zio** (Centrale Supélec Paris).