



Management Science

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Call for Papers—Management Science—Special Issue on Data-Driven Prescriptive Analytics

Kay Giesecke, Gui Liberali, Hamid Nazerzadeh, J. George Shanthikumar, Chung Piaw Teo

To cite this article:

Kay Giesecke, Gui Liberali, Hamid Nazerzadeh, J. George Shanthikumar, Chung Piaw Teo (2018) Call for Papers—Management Science—Special Issue on Data-Driven Prescriptive Analytics. Management Science 64(6):2972-2972.
<https://doi.org/10.1287/mnsc.2018.3120>

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Call for Papers

Management Science—Special Issue on Data-Driven Prescriptive Analytics

Coeditors: Kay Giesecke,^a Gui Liberali,^b Hamid Nazerzadeh,^c J. George Shanthikumar,^d Chung Piaw Teo^e

^aStanford University, Stanford, California 94305; ^bErasmus University, 3062 PA Rotterdam, Netherlands;

^cUniversity of Southern California, Los Angeles, California 90089; ^dPurdue University, West Lafayette, Indiana 47907;

^eNational University of Singapore, Singapore 119245

Contact: giesecke@stanford.edu (KG); liberali@rsm.nl (GL); nazerzad@marshall.usc.edu (HN); shanthikumar@purdue.edu (JGS); bizteocp@nus.edu.sg (CPT)

<https://doi.org/10.1287/mnsc.2018.3120>

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Data-science algorithms and models changed the way we search for information on products and services, make payments, procure and trade, and along the way, changed how firms use individual-level consumer data, and how business transactions are created, documented, regulated, and analyzed.

The emergence of data-intensive environments and algorithms also challenges management science research in many ways. It affects how knowledge is organized, produced, and assessed; how we search for answers to management questions, analyze information or validate insights and findings; and it challenges how we discover, design, describe, motivate, and replicate solutions. More importantly, it demands new theory to enable the development of models that exploit the type and volume of data available.

The Special Issue on Data-Driven Prescriptive Analytics seeks to publish papers that leverage predictive and descriptive analytics to (i) derive effective solutions to business problems, or (ii) develop new methods associated with the integration of data and models in decision problems. To be considered, papers should examine significant decision making problems in any of the application areas represented by *Management Science* such as finance, healthcare, marketing, and operations, including—but not limited to—financial technology, online advertising, consumer search, product recommendations, dynamic assortment and pricing, clinical trials, experimental design, portfolio management, website design, product ranking, and others. For example:

- Pharmaceutical firms running clinical trials face methodological and ethical challenges when developing sampling models to balance patient mortality and identification of the optimal policy.
- Retailers making complex profit-maximizing within-season assortment decisions while learning and further reducing uncertainty about consumer preferences, making full use of possibly limited amount of data available.
- Regulators deciding whether independent pricing algorithms are colluding, and how to intervene.
- Manufacturing firms applying policies that can adapt to changing environment, make inferences from

data to provide information about disruption risks in their supply chains, or find mitigation strategies to minimize the impact of disruptions.

Alternately, the papers could develop innovative solution based on novel methods that harness advances in areas such as machine and reinforcement learning, optimization, computation, and algorithms; and validate results empirically in actual application settings. Some examples include the following:

- New approaches to address practical challenges, such as the curse of dimensionality, curse of serendipity, scalability, or latency (in online problems) when computing, approximating, and learning optimal and near-optimal policies
- Algorithmic development addressing the multiarmed bandit trade-off between exploration and exploitation
- Novel prescriptive methods based on causal inference about the role of individual- and social-media behavior in population-level causata such as voting, product ratings, and opinion aggregation
- Partially observable Markov decision processes (POMDPs) with different types of rewards (e.g., terminal or cumulative), state (in)dependence, and policies
- Statistical contributions to assess optimality and convergence properties that are relevant to management science problems
- Methods based on algorithmic approaches including regret minimization, dynamic allocation indices, confidence bound, dynamic programming, sequential experimentation, look-ahead, abstract dynamic programming, natural language processing, data streaming, and others

Submission. To be considered for the Special Issue on Data-Driven Prescriptive Analytics, submit your manuscript online via <https://mc.manuscriptcentral.com/ms>. Select “Special Issue” as the Manuscript Type in Step 1 and select one of the issue’s coeditors (listed above) in Step 5. Manuscripts will be assigned to one of the Associate Editors for this issue, but you may also recommend guest Associate Editors. Deadline for submission is March 31, 2019.