INFORMS Health Applications Society

Spring 2018 Newsletter

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From the President

Greetings members!

The entire HAS Board, myself included, hope this Spring 2018 edition of the HAS Newsletter finds you all productive and well. This issue of the newsletter summarizes the goings on of the society since the 2017 INFORMS Annual Meeting in Houston and previews HAS’ presence at this year’s Annual Meeting to be held in Phoenix November 4-7.

Also, new in this issue are two “Research Spotlights.” We hope to continue to use the newsletter as a means of showcasing members’ work in this or a similar fashion. Have you recently completed a practice-centric research project? Drop us a line and the next issue could shine the spotlight on your work.

Please join me in extending a heartfelt thank you to our outgoing President, Vikram Tiwari, whose organization and leadership has left the society in excellent “health.” Many thanks, too, to our returning board members Jackie Griffin (Secretary) and Tinglong Dai (Communications & Outreach Coordinator) for producing this issue of the newsletter. Additional kudos to Tinglong for organizing the HAS Track at the INFORMS 2018 International Meeting which took place in Taiwan.

Refer to the final page of the newsletter for a full list of the current HAS Board Members, including incoming Vice President Ebru Bish, returning Treasurer Mariel Lavieri, and our two new Council members. Are your leadership skills just what the “doctor” ordered to keep HAS “alive and well?” Let us know if you would like to become more involved and/or potentially serve in an officer position.

The calls for submissions for the Bonder Scholarship (chaired this year by Burhan Sandikci) and the Pierskalla Award (jointly chaired this year by Sze-Chuan Suen, Margaret Brandeau and Jeremy Goldhaber-Fiebert) recently came to a close and drew many outstanding applicants. Check out pages four and five to learn more about last year’s winners of these competitive awards.

Also, be on the lookout this summer for announcements regarding the 2019 HAS Student Paper Competition (chaired this year by Tim Chan and Nicos Savva). The winner(s) of this award will be announced at the next INFORMS Healthcare Conference taking place in July 2019 in Boston, MA. Mark your calendars now!

This year’s Annual Meeting theme is Smart City and Sustainable Communities – very relevant to health applications. Looking forward to seeing you all in Phoenix!

Kind regards,

Lisa Maillart
Professor
Department of Industrial Engineering
University of Pittsburgh

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HAS Activities at 2017 INFORMS Annual Meeting

The Society once again had an active presence at the 2017 INFORMS annual meeting. The cluster had a total of 52 sessions. There were also several contributed sessions related to healthcare applications. These sessions occupied four parallel tracks on all four days of the conference. In addition to many excellent presentations by academics, HAS sessions included also several talks delivered by practitioners.
2017 Bonder Scholarship for Applied Operations Research in Health Services

As announced at the HAS business meeting, the 2017 Bonder Scholarship was awarded to Justin James Boutilier from the University of Toronto for his research on “Ambulance Emergency Response Optimization in Developing Urban Centres.” Justin’s research advisor is Timothy Chan.

Many thanks to this year’s award committee chair, Murat Kurt.

About the Bonder Scholarship: The purpose of the Bonder Scholarship for Applied Operations Research in Health Services is to promote the development and application of operations research analyses to health care design, delivery, and operations. The scholarship provides funding of $5,000 to support the development of promising new researchers in healthcare operations research.
2017 Pierskalla Award

As announced at the HAS business meeting, the 2017 Pierskalla Best Paper award goes to Sze-chuan Suen, Margaret L. Brandeau, and Jeremy D. Goldhaber-Fiebert for their paper, “Optimal Timing of Drug Sensitivity Testing for Patients on First-line Tuberculosis Treatment.”

The two runner-ups and two finalists were:

- Wenqi Hu, Carri Chan, and José R. Zubizarreta, “An Examination of Early Transfers to the ICU Based on a Physiologic Risk Score” (runner-up)
- Hrayer Aprahamian, Douglas R. Bish, and Ebru K. Bish, "Optimal Risk-based Group Testing in Public Health Screening“ (runner-up)
- Saša Zorc, Stephen E. Chick, and Sameer Hasija, "Outcomes-based Reimbursement Policies for Chronic Care Pathways“ (finalist)
- Anil Aswani, Philip Kaminsky, Yonatan Mintz, Yoshimi Fukuoka, and Elena Flowers, “Non-Stationary Bandits with Habituation and Recovery Dynamics” (finalist)

Congratulations to the winners and all the finalists for this important achievement! Many thanks to co-chairs Moshen Bayati and Hamsa Bastani for serving on the prize committee, and to all of the judges involved.

About the Pierskalla Best Paper Award: The Pierskalla Award recognizes research excellence in the field of health care management science. The award includes a $1,000 honorarium for the best paper presented in a Health Applications Section sponsored session at the annual INFORMS conference. The award is named after Dr. William Pierskalla to recognize his contribution and dedication to improving health services delivery through operations research. Dr. Pierskalla is a Distinguished Professor Emeritus at the Anderson School at UCLA and the Ronald A. Rosenfeld Professor Emeritus, The Wharton School, University of Pennsylvania, and serves as an editor on numerous operations research journals.
Two HAS members, Tinglong Dai (Johns Hopkins University) and Hui Zhao (Pennsylvania State University), chaired the Healthcare Systems and Applications cluster at the 2018 INFORMS International Meeting, June 17-20, in Taipei, Taiwan. The cluster consisted of 10 sessions, covering a variety of topics, including data-drive analytics in health service design, recent advances in emergency medical service management, health policy modeling, innovations in healthcare, managing patient flows, stochastic modeling of healthcare operations, and behavioral, incentive, and policy issues in healthcare systems.

The session chairs included Joel Goh (National University of Singapore), Shasha Han (National University of Singapore), Yi-Chin Lin (Hofstra University), Naoru Koizumi (George Mason University), Yong-Hong Kuo (University of Hong Kong), Susan F. Lu (Purdue University), Huiyin Ouyang (University of Hong Kong), Eric Park (University of Hong Kong), Xiaolei Xie (Tsinghua University), Ying Xu (Singapore University of Technology and Design), and Shinyi Wu (University of Southern California).
Research Spotlight: Tinglong Dai

Tinglong Dai (Johns Hopkins University), along with Professors Soo Hoon Lee and Phillip Phan, his colleagues at the Carey Business School, is working with Department of Anesthesiology and Critical Care Medicine at the Johns Hopkins Medicine to characterize organizational, behavioral, and operational drivers underlying one of the most vexing issues in surgical operations—Operations Room availability. They have collected extensive data covering all the surgical procedures across the Hopkins facilities over the past several years. Using a combination of econometrics, machine learning, and operations research techniques, the team is identifying drivers of over- and under-scheduling, quantifying their clinic and economic impacts, and developing an incentive scheme aimed to induce lower operational deviations and better patient outcomes.
Research Spotlight: Vikram Tiwari

Vikram Tiwari (Vanderbilt University), along with Professor Avinash Kumar (Vanderbilt University School of Medicine) used the Linear Programming technique of Data Envelopment Analysis (DEA) to rank medical doctors enrolled in the Critical Care Fellowship of the Anesthesiology Department at Vanderbilt University School of Medicine. The ranking helped analyze what didactic aspects of the fellowships might have had the highest influence on a fellows overall performance. While there exist several techniques for measuring healthcare providers and trainees’ performance, these techniques measure performance against a non-existent ideal. On the other hand, Data Envelopment Analysis develops a relative ranking by comparing peers against each other, and factors in both the effort (the inputs) and the performance (the output). They find\textsuperscript{1} that fellows that receive higher evaluations from faculty and as well score higher in the board exam (Multidisciplinary Critical Care Knowledge Assessment Program), are those that had more rigorous rotations (that is, did more self-reported procedures during their duty hours). Interestingly, they report that the attendance at the ‘required research seminars’ was not statistically significantly different between the higher ranked and lower ranked fellows. This has important ramifications for fellowship programs across the nation as they decide what didactic aspects to emphasize in their graduate medical education programs.

Publishing research in medical journals using operations research techniques is challenging but also has higher potential for influencing practice. Therefore, Vikram was especially pleased to read the laudatory editorial\textsuperscript{2} that accompanied the publication. The editorial notes, “By relating the use of education resources to educational outcomes, DEA is an attractive technique to fulfill the emerging needs of education research. Accordingly, Tiwari and Kumar were able to mathematically explain the differing efficiency levels of fellows sharing the same learning environment, resources, and opportunities”. “Tiwari and Kumar are to be applauded for recycling old methods and concepts into new uses for the benefit of assessment in graduate medical education”.

NRL Special Issue on Health Care Operations Management

The journal *Navy Research Logistics* has announced a special issue on Health Care Operations Management. The objective of the special issues is to archive an eclectic collection of high quality and state-of-the-art research related to health care operations management. Papers focusing on all health care OM topics ranging from care-process optimization to care coordination to strategic decisions at system, state, national and global levels are welcome. The following topics are of particular interest:

1. Provider payment innovations
2. Health care supply chains
3. Integration of data into care processes
4. Point of care and mobile technologies

Papers must feature original research contributions. Papers dealing with either theoretical or empirical analyses, or both, and those that rely on data-driven model formulations and analyses are of particular interest.

The submission window is July 1, 2018 through December 31, 2018. More information about the special issue and submission procedures can be found at [https://onlinelibrary.wiley.com/journal/15206750](https://onlinelibrary.wiley.com/journal/15206750).
Health Applications Society Officers

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