

Statistics Seminar  
Department of Mathematical Sciences

## Interdisciplinary Dean's Speaker Series in Data Science

RSVP at <http://bit.ly/DS-TAE-RSVP>.

<b>DATE:</b>	Thursday, April 2, 2020
<b>TIME:</b>	1:15pm - 2:15pm
<b>LOCATION:</b>	UU W324
<b>SPEAKER:</b>	Xuming He, University of Michigan
<b>TITLE:</b>	Selected Subgroups in Clinical Trials: Is this Data Snooping?

### Abstract

As we look deeper into data, there is a natural risk of data dredging and data snooping. When existing clinical trial data suggest a promising subgroup, we must address the question of how good the selected subgroup really is. The usual statistical analysis applied to the selected subgroup, assuming that the subgroup is chosen independent of the data, will lead to overly optimistic evaluation of the selected subgroup. In this talk, we address the risk of greedy subgroup pursuit and propose quantitative analysis protocols that can help evaluate the potential of selected subgroups. In particular, we discuss a simple screening tool for subgroup pursuit and a new bootstrap-based inference procedure for the best selected subgroup effect. We demonstrate the merit of our proposed method by re-analyzing the MONET1 trial and show how the subgroup is selected post hoc should play an important role in any statistical analysis.

**Short Bio:** Xuming He is H.C. Carver Professor of Statistics at the University of Michigan. His prior appointments include faculty positions at National University of Singapore and University of Illinois at Urbana-Champaign. His research interests include theory and methodology in robust statistics, semiparametric models, quantile regression, data depth, dimension reduction, and subgroup analysis. His interdisciplinary research aims to promote the better use of statistics in biosciences, climate studies, concussion research, and social-economic studies.

Xuming He is a Fellow of the American Association for the Advancement of Science, the American Statistical Association, the Institute of Mathematical Statistics, and the International Statistical Institute. He served as Program Director of Statistics at the National Science Foundation, USA, Co-Editor of the Journal of the American Statistical Association, and Chair of the Scientific Program Committee, 2013 World Statistics Congress. He was IMS Medallion Lecturer and Keynote Speaker at the 2007 Joint Statistical Meetings, Plenary Speaker at the 21st International Conference on Computational Statistics (COMPSTAT 2014), and IASC President Invited Lecturer at the 62nd ISI World Statistics Congress in 2019. In 2015, he received the Distinguished Achievement Award from the International Chinese Statistical Association. He recently chaired an NSF project "Statistics at a Crossroads: Who is for the Challenge?" that discusses the challenges and opportunities for the statistics profession in the data science era; see [https://www.nsf.gov/mps/dms/documents/Statistics\\_at\\_a\\_Crossroads\\_Workshop\\_Report\\_2019.pdf](https://www.nsf.gov/mps/dms/documents/Statistics_at_a_Crossroads_Workshop_Report_2019.pdf).

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- Department of Biological Sciences
- Department of Mathematical Sciences
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- Data Science Transdisciplinary Area of Excellence

For questions, contact Xingye Qiao.

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