



Seminar Hora Informaticae

Institute of Computer Science, Prague

Tuesday, December 20, 2022, **exceptionally 15.00 – 16.30 (3 - 4:30 PM) CET**

Meeting room 318, Address: Pod Vodárenskou věží 2, Prague 8

ZOOM:

<https://cesnet.zoom.us/j/95478234977?pwd=dXoyekFHbDJ0MkNrTjVVS3F2STZqUT09>

Meeting ID: 954 7823 4977 , Passcode: 712564

David Kaplan, University of Wisconsin - Probabilistic Forecasting with International Large-Scale Assessments: Applications to the UN Sustainable Development Goals

In 2015, the Member States of the United Nations (UN) adopted the Sustainable Development Goals. With regard to education, the UN identified equitable, high-quality education, including the achievement of literacy and numeracy by all youth and a substantial proportion of adults, both men and women, as one of its global SDGs to be attained by 2030. To analyze education policies such as these, it is critically important to monitor trends in educational outcomes over time. Indeed, as educational systems around the world face new challenges due to the COVID-19 pandemic, monitoring trends in educational outcomes could help identify the long-run impact of this unprecedented health crisis on global education. To this end, international large-scale assessment programs such as PISA are uniquely situated to provide population-level trend data on literacy and numeracy outcomes. The purpose of this talk is to describe a new project in collaboration with the University of Heidelberg and funded by the US Institute of Education Sciences. This project proposes a methodology applicable to international large-scale assessments, and PISA in particular, to monitor and forecast changes in gender equity and to relate changes over time in gender equity to policy-relevant predictors and exogenous events such as the coronavirus pandemic. We utilize a Bayesian workflow to account for uncertainty in all steps in the modeling process, including uncertainty in the parameters of the model as well as model uncertainty in the choice of policy-relevant predictors. A proof-of-concept using data from the United States NAEP program provides a demonstration of the ideas.

References:

Kaplan, D., & Huang, M. (2021). Bayesian probabilistic forecasting with large-scale educational trend data: A case study using NAEP. *Large-scale Assessments in Education*, 9(1), 1-31.
<https://doi.org/10.1186/s40536-021-00108-2>

Kaplan, D., & Jude, N. (2021). Trend analysis with international large-scale assessments: Past practice, current issues, and future directions. In *International Handbook of Comparative Large-Scale Studies in Education: Perspectives, Methods and Findings* (pp. 1-14). Cham: Springer International Publishing.
https://doi.org/10.1007/978-3-030-88178-8_57

David Kaplan (<https://cde.wisc.edu/staff/kaplan-david/>) is the Patricia Busk Professor of Quantitative Methods in the Department of Educational Psychology at the University of Wisconsin – Madison. Dr. Kaplan holds affiliate appointments in the University of Wisconsin's Department of Population Health Sciences and the Center for Demography and Ecology. Dr. Kaplan's program of research focuses on the development of Bayesian statistical methods for education research. His work on these topics is directed toward applications to large-scale cross-sectional and longitudinal survey designs. Dr. Kaplan is an elected member of the National Academy of Education and served as the chair of its Research Advisory Committee. Kaplan is a recipient of the Samuel J. Messick Distinguished Scientific Contributions Award from the American Psychological Association (Division 5); a past-President of the Society for Multivariate Experimental Psychology and President-elect of the Psychometric Society; a fellow of the American Psychological Association (Division 5); a recipient of the Alexander Von Humboldt Research Award; and a fellow of the Leibniz Institute for Educational Trajectories; and was a Jeanne Griffith Fellow at the National Center for Education Statistics. Dr. Kaplan received his Ph.D. in education from UCLA in 1987.

HORA INFORMATICAЕ (meaning: TIME FOR INFORMATICS) is a broad-spectrum scientific seminar devoted to all core areas of computer science and its interdisciplinary interfaces with other sciences and applied domains. Original contributions addressing classical and emerging topics are welcome. Founded by Jiří Wiedermann, the seminar is running since 1994 at the Institute of Computer Science of the Czech Academy of Sciences in Prague.

<https://www.cs.cas.cz/horainf>