Statistical Disclosure Control and Differential Privacy
Master Class e-learning by Natalie Shlomo

Statistical Area
June 22nd 2020
14.30-16.00

Abstract

The master class aims to provide an overview of statistical disclosure control from the perspective of the statistical agency up until now. I focus on traditional forms of statistical data: microdata from social surveys and tabular data from censuses, surveys and registers, and discuss the types of disclosure risks, statistical disclosure control (SDC) methods and the quantification of disclosure risk and data utility. However, these traditional forms of statistical data and their confidentiality protection rely heavily on assumptions that may no longer be relevant. In recent years, we have seen the digitalization of all aspects of our society leading to new and linked data sources offering unprecedented opportunities for research and evidence-based policies. These developments have put pressure on statistical agencies to provide broader access to their data. On the other hand, with detailed personal information easily accessible from the internet, traditional SDC methods may no longer be sufficient and this has led to the opposite effect of statistical agencies restricting and licensing data as an SDC method. To meet the demands and challenges for disseminating more open and accessible data through for example web-based platforms where outputs are generated and protected on the-fly without the need for human intervention, statistical agencies have been investigating more rigorous data protection mechanisms to incorporate into their SDC tool-kit. One such mechanism is Differential Privacy, a mathematically principled method of measuring how secure a protection mechanism is with respect to personal data disclosures. In this master class, we present some future dissemination strategies under considered by statistical agencies and the potential for Differential Privacy to protect the confidentiality of data subjects with well-defined privacy guarantees.

Trainer

Natalie Shlomo (BSc, Mathematics and Statistics, Hebrew University; MA, Statistics, Hebrew University; PhD, Statistics, Hebrew University) is Professor of Social Statistics at the School of Social Sciences, University of Manchester. Before that, she was on faculty at the School of Social Sciences, University of Southampton from 2007 to 2012 and a methodologist at the Israel Central Bureau of Statistics from 1981 to 2007. Her areas of interest are in survey statistics, adaptive survey designs, data linkage and integration, statistical disclosure control and small area estimation. She is an elected member of the International Statistical Institute (ISI) and a fellow of the Royal Statistical Society. She served as Vice-President of the ISI 2017-2019 and is currently serving as an elected council member until 2021. She also serves on several national and international methodology

advisory committees. She is the UK principle investigator for several collaborative grants from the 7th Framework Programme and H2020 of the European Union, all involving research in improving survey methods and dissemination. She was also principle investigator for the Leverhulme Trust International Network Grant on Bayesian Adaptive Survey Designs 2015-2018 and an ESRC Research Grant on Theoretical Sampling Design Options for a New UK Birth Cohort 2019.

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Info

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