



# IASE 2016 Roundtable Conference

*Promoting understanding of statistics about society*

19 – 22 July 2016, Berlin, Germany

[HOME](#) [THEME & PAPERS](#) [PROGRAM](#) [ABOUT](#) [LOCAL INFO](#) [REGISTRATION & SUBMISSION](#) [NOTICES](#)

## Conference Theme: *Promoting understanding of statistics about society*

Data on important societal topics are becoming increasingly accessible to the general public and to individual citizens or social action groups, on a huge range of topics such as migration, employment, social (in)equality, demographic changes, crime, poverty, access to services, energy usage, living conditions, health and nutrition, education, human rights, and many others. Understanding of such issues is essential for civic engagement in modern societies, but *involves statistics that often are open, official, multivariate in nature, and/or dynamic*, which are usually not at the core of regular statistics instruction. health hazards, income inequality . However, making sense of these data requires the ability to explore, understand, and reason about complex *multivariate* data, because social phenomena do not happen in a vacuum, and their understanding requires awareness of how variables co-vary, or affect each other, or are situated in a network of causal factors and may change over time in complex ways. Understanding statistics about society is not easy. In many countries, the statistics curriculum at high school and university does not prepare students to reason from such data or to deal with statistical ideas and methods that are used to analyse or report about such data.

The Roundtable will bring together people from diverse backgrounds to map out new core skills, share teaching experiences using large data sets, explore pedagogical issues, explore emerging technologies for data exploration and display, and will address challenges and needed educational innovations. We encourage submissions by colleagues from diverse backgrounds, including from researchers, graduate students, statisticians and educators in universities and other academic or R&D institutions, high-school teachers and trainers, professionals from official statistics agencies, public agencies and the media, and technology developers.

Our ambition is to promote curriculum reform in statistics education that will broaden the skills that students acquire, in order to make them not only better as statisticians or in understanding statistics (if they are non-majors and only taking an introductory course), but also more empowered citizens who can take an active or more informed role in civic life.

The Roundtable will focus on five specific topics outlined below, which are separate but related. Applicants are asked to focus their "expression of interest" (i.e., submission) on one of the five topics listed further below, and **choose one of four roles** for their submission, from the following:

- Paper presenter (long or short oral talk);
- Workshop teacher or Demonstration Lesson teacher (see specific suggestions under Topic 2)
- Poster;
- Discussant or Workgroup leader.

Note that the [Guidelines for Submissions](#) and the Key Dates under [Program menu](#) specify separate deadlines and different submission stages for the four roles listed above.

Below is a broader explanation about each of the five topics. **The text below is tentative and will be updated by 20 September 2015.**

### Topic 1: Key concepts, issues, barriers, and research findings related to understanding of statistics and data about social phenomena that can guide curriculum design and educational planning

Understanding multivariate statistics about society requires skills and modes of thinking that are different from statistical analyses of uni- or bivariate small sample experimental data. Multivariate data involves, among other things, dealing with: measurement issues and operationalization of variables; metadata and data provenance; non-linearity; understanding interactions; correlations; understanding Simpson's paradox; conditional probability; learning to read and critique novel complex graphs and visualisations. This theme explores the big statistical ideas pertaining to the knowledge and concepts needed to understand social statistics. Also, a good deal is known about misconceptions in mathematics, science, and reasoning with data (exemplified by the pioneering work of Tversky and Kahneman). We welcome presentation of results from studies (whether empirical or conceptual) on this important theme.

### Topic 2: Reflective reports on teaching experiences and lesson plans (at the tertiary/college and high-school levels) using rich and authentic data or large datasets (e.g., from official agencies) that are relevant to understanding of social topics and civic phenomena as explained above

Under this topic (and in connection with the role of a "Lesson demonstration teacher" or "Workshop teacher"), we welcome reports and critical/reflective accounts of teaching/learning that are based on class-based experiences of teachers, *with a focus on those teaching statistics at the college (tertiary) or high-school (secondary) levels.*

Some relevant teaching materials based on social data have been developed, e.g. by Statistics Canada, Gapminder Foundation, or the SMART Centre at Durham. Other materials have been published in journals for teachers. What are the challenges, obstacles and proven benefits in using such materials? Have you developed a lesson or a teaching module that rely on open/official data, either using a raw dataset or a "public use" data-file from an official statistics agency or an open source, or aggregate statistics (e.g., a collection of tables and/or graphs) that you have obtained from an external source. These statistics or data should relate to civic phenomena or social trends such as described above.

*Under the role of a "Lesson demonstration teacher":* you can describe, for example, the goals of the lesson, the lesson plan, data source and statistics the students worked with, examples for class dialogue and statistical and other ideas that students developed or engage in, was technology involved and what was the its role in the teaching/learning process, ideas for assessment, etc. Most important, we want to hear your reflective thoughts on what worked or didn't work, suggestions for what and how to improve, and related conclusions.

*Under the role of a "Workshop teacher":* you can address issues that are more focused than a whole-lesson as described above, but are part of it. Among other things, you can propose a workshop on using a specific applet or technology tool that is suitable for teaching about statistics related to social phenomena, illustrating how the tool has been used with actual learners (at the High-school or tertiary levels) and what were the results, discuss implementation issues and lessons learned, etc.

### **Topic 3: Constructions and misuse of evidence and statistics about society in the public domain (e.g., in the media) that learners should be aware of, and effective ways to overcome them**

If we expect our students to become active citizens who can understand the statistics published in the public sphere (by the media, official statistics producers, etc.), they need, among other skills, a sound knowledge base that includes context knowledge, basic mathematics, familiarity with (at least) elementary statistics and appropriate graphical and numerical ways of data representation, along with a capacity for critical thinking and a disposition to engage with evidence. This theme focusses on student understanding of social statistics in the media, and critiquing media accounts.

### **Topic 4: Engaging social data with technology: accessing and managing open data and big data in the classroom, and new data visualisation and other technology-based tools that can improve the understanding of data and statistics about social phenomena**

A great deal of information can be accessed from government resources and other institutions at the national and supra-national level (UN, Eurostat, World Bank, etc.), by NGOs (Gapminder, etc.) and interactive media websites. These include publicly available microdata as well as aggregated macrodata. Powerful tools are available for data visualization that permit users to engage with data in ways that are impossible using static displays. In this theme, we invite reports about experiences in accessing, managing and presenting large data sets in educational contexts, and analyses of the pedagogical and technological requirements to make these tools more accessible to students.

### **Topic 5: Other tools and processes that can support innovation in teaching/learning for understanding statistics about society, e.g., issues in assessment, professional development, etc**

Teaching how to make sense of multivariate data in the context of messy complex real world problems sets high demands on instructors as well as on their students. How can the promises and expectations connected with learning statistics while studying socially relevant complex situations actually be delivered? Curriculum change faces many barriers, such as assessment systems that reward a narrow range of curriculum goals, and the challenges of large scale professional development. We welcome analyses, and reflections on successful innovations.