



## International Association for Statistical Education

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**IASIE Website** <http://www.stat.auckland.ac.nz/~iase>

### The 2007 Session of the International Statistical Institute, ISI-56



#### Lisboa, Portugal, August 22-29, 2007

As it does at each major ISI Session, the IASE will be organizing about 10 statistics education sessions for ISI 56. Please check the website at <http://www.isi2007.com.pt/> for more information.

#### IASE sponsored IPMs, their organisers, speakers, and discussants:

IPM 37 Research on Reasoning about Distribution  
Organiser: Joan Garfield, USA  
Presenters: Rolf Biehler, Germany; Jane Watson, Australia; Chris Reading, Australia  
Discussants: Roxy Peck and Beth Chance, USA

IPM 38 How Modern Technologies have changed the curriculum in introductory courses  
Organisers: Lucette Carter, France; Catherine Pardoux, France  
Presenters: Cecily Peters, Malaysia; Brigitte Chaput, France; Mathilde Mougeot, France  
Discussants: Carmen Capilla, Spain; Robert Gould, USA

IPM 39 Preparing Teachers of Statistics  
Organiser: Allan Rossman, USA  
Presenters: Carmen Batanero, Spain; Penelope Bidgood, UK; Verônica Yumi Kataoka, Brazil; Madhuri Mulekar, USA  
Discussant: Jerry Moreno, USA

IPM 40 Research on the Use of Simulation in Teaching  
Statistics and Probability  
Organiser: Rolf Biehler  
Presenters: Nicolas Christou<sup>1</sup>, Ivo D. Dinov and Juana Sanchez, USA; Joachim Engel, Germany; Andrew Zieffler and Joan B. Garfield, USA  
Discussant: Andrej Blejec, Slovenia

IPM 41 Optimizing Internet-Based Resources for Teaching Statistics  
Organisers: Roxy Peck, USA; Ginger Holmes Rowell, USA  
Presenters: Mary Townsend, Canada; Iddo Gal and Dani Ben-Zvi, Israel; Dennis Pearl, USA  
Discussant: Irena Ograjensek, Slovenia

IPM 42 Observational Studies, Confounding, and Multivariate Thinking  
Organiser: Milo Schield, USA  
Presenters: Donald Rubin, USA; Nancy Wermuth, Sweden and David Cox, UK; James Nicholson, Jim Ridgway, and Sean McCusker, UK; John Harraway, New Zealand

IPM 43 Teaching of Official Statistics  
Organiser: Sharleen Forbes, New Zealand

IPM 44 Teaching of Survey Statistics  
Organiser: Steve Heeringa, USA  
Presenters: Don Royce, Canada; James J. Brown, UK; Marie-Christine Ponsonnet, France; Giulio Ghellini, Italy  
Discussant: Graham Kalton, USA

IPM 45 Studying Variability Through Sports Phenomena  
Organiser: Brian Phillips, Australia  
Presenters: Tim Swartz, Canada; Stephen Clarke, Australia; Phil Everson, USA; Kaznori Yamaguchi, Michiko Watanabe, and Fumitake Sakaori, Japan  
Discussant: Larry Weldon, Canada

IPM 46 Use of Symbolic Computing Systems in Teaching Statistics  
Organiser: Zaven Karian, USA

#### **IASE Organising Committee:**

Allan J. Rossman (USA): [arossman@calpoly.edu](mailto:arossman@calpoly.edu)  
Gilberte Schuyten (Belgium): [gilberte.schuyten@UGent.be](mailto:gilberte.schuyten@UGent.be)  
Chris Wild (New Zealand): [c.wild@auckland.ac.nz](mailto:c.wild@auckland.ac.nz)  
For more information, visit the ISI 56 website at <http://www.isi2007.com.pt/> or contact members of OC.

*Contributed by Allan Rossman*

### **IASE Satellite Conference on Assessing Student Learning in Statistics**

#### **Guimaraes, Portugal, August 19-21, 2007**

Planning for the ISI/IASE Satellite Conference on Assessing Student Learning in Statistics is well advanced. The meeting will be held on 19-21 August 2007 in Guimarães, Portugal, immediately prior to ISI 56 in Lisboa. The fascinating historic city of Guimarães is about 50 km from Portugal's second largest city, Oporto. This Satellite will involve papers on many aspects of assessing student learning in statistics. Over 40 papers will be presented along with a number of posters and discussions of examination questions. Proceedings will be available on CD and free on the publication page of IASE.

The proposed programme is

Sunday evening: Welcome Reception at the Place Vila Flor  
Monday, 9 am - 4 pm: Academic programme  
Monday evening: Dinner Caves Taylor's Winery  
Tuesday, 9 am - 5 pm: Academic programme  
Wednesday: Travel to Lisboa for ISI Session

Non-participants must register by 31 May 2007.

For more information, visit the website at

<http://www.stat.auckland.ac.nz/~iase/conferences.php?show=iasesat07>

Joint Chairs: Brian Phillips and Beth Chance

Local Organiser: Bruno C. de Sousa

*Contributed by Brian Phillips*

### **Statistical Literacy in the Whole World can Benefit from our Being Involved Where We Are. See you in Portugal!!**



Let me remind you first of all that the ISLP is an ongoing project of the IASE. It has as its mission to promote Statistical Literacy around the world; to bring together and promote projects and institutions that work on, or need, statistical literacy resources; and to conduct activities in the countries where statistical meetings take place to exchange ideas on statistical literacy in the field. The forum of the ISLP is a web page at <http://www.stat.auckland.ac.nz/~iase/islp/> which is Wiki based. This web page is currently under development, but it already contains the most comprehensive worldwide database of statistical resources around the world, thanks to the previous Director, Carol Blumberg, who created another version of that page at Winona University.

#### **New Resources on the ISLP Web Pages**

An advantage of having the ISLP participate in statistical literacy initiatives of others around the world is that this participation enriches the database of literacy resources on our web page, and as a consequence all those in the world that do not participate in those activities can benefit from them as well by visiting our website and staying current. Representatives of the CensusAtSchool countries and visitors designed the plan for next year's CensusAtSchool. This took place at a very intensive four-day meeting organised by the Australian Bureau of Statistics' education branch in Melbourne, Australia, in March. The 5 participating countries (Australia, New Zealand, UK, South Africa and Canada) and the three visiting countries (France, US and Singapore) all shared their resources and plans, thereby reaching a common agreement to advance to a unified International CensusAtSchool survey for all countries in the world to share. The participation of the ISLP in this workshop allowed the ISLP page on the CensusAtSchool to become better and to add more resources for the whole world to share (<http://www.stat.auckland.ac.nz/~iase/islp/census>). Participants' affiliations were ministries of education, academics, and National Statistical Offices. So the other pages of the ISLP, such as government offices programmes, articles for the classroom, and resources for teachers and students in school, have also grown as a consequence of this meeting, because everyone was happy to share their excellent resources, curricular programmes and activities with the ISLP. Visit the list of all pages within the ISLP website <http://www.stat.auckland.ac.nz/~iase/islp/list> to get an idea of what is new. On page 19 in this *ISI Newsletter*, you will find more description on this landmark CensusAtSchool workshop in Melbourne and the plans of the ISLP regarding support of this international project, which most sincerely is improving Statistical Literacy around the world.

There is also a new ISLP page on curriculum reform documents. As more and more countries are moving towards the incorporation of statistics and data analysis in their math curriculum, it is important to have documents for all to share.

### Activities in Portugal. Mark your Calendars!

As you all know, the ISLP, in collaboration with the INE of Portugal and many of you, is conducting a statistical literacy game in some schools around the Guimaraes area. Sponsors of this game so far are: Australian Bureau of Statistics, CensusAtSchool, Department of Statistics at UCLA, SOCR Project at UCLA, INE of Portugal, ISI, IASE, the Statistics Education Section of the ASA. There is still room for more sponsors who have pledged to help. The semi-final will take place on Saturday, August 18, in Guimaraes, and all are welcome to attend to cheer the brave teams of students 10-18 years old that are willing to give up some of their precious summer vacation to compete in these games. Several schools from northern Portugal are participating. The finalists of the game will be decided and the location and time will be announced shortly on the ISLP web page. During the Satellite Meeting taking place in Guimaraes from August 19-21, there will be a small presentation on the ISLP and a Poster showcasing how the resources of the ISLP can be used to construct assessment items according to different conceptions of Statistical Literacy in different curriculum reforms. Then we move to Lisboa for ISI 56. There, ISLP will have a booth with IASE/ISLP/SERJ resources and we would like to invite you to stop by and meet some people heavily involved in statistical literacy activities. Different times will be allocated to different projects. Those will also be advertised on the ISLP web page and we will e-mail you about that, too. On Monday, August 27, 11:45-13:15, there will be the Open Meeting of the ISLP to which you all are invited. The topic will be "Actions to Reach the Statistically Illiterate: The Role of the ISLP". Other activities that we plan to do during the meeting will be advertised at the booth and more specifics will be mailed to you closer to the Session. Read more about them on page 19 in this *ISI Newsletter*.

### After Portugal

The ISLP is planning to attend the ICMI/IASE in Monterrey, Mexico in 2008, where we have more activities planned, and the Meeting of the African Statistical Society later this year to plan ISI 57 activities. More on this after ISI 56. See you there!! And don't forget... If you can't afford time or other resources, you can always make a small contribution to the ISLP via the ISI web page. Here are the instructions.

### How to Donate to the ISLP

For electronic donations to ISI earmarked to ISLP/IASE, by credit card, go to the ISI's Secure Electronic Payment Site <http://isi.voce.nl/ms/?get=shop>

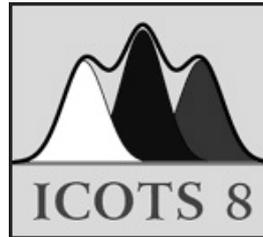
In the window "Membership number" enter "ISLP Donation" if you are not an ISI member. In the section on "Donation" enter "Donation to ISLP".

For donations by cheque, send a cheque (writing in it that it is a donation to ISLP/IASE, to International Statistical Institute  
428 Prinses Beatrixlaan, P.O. Box 950  
2270 AZ Voorburg, The Netherlands

You may request a receipt indicating that your contribution has been made.

*Contributed by Juana Sanchez, Director, ISLP*

## ICOTS 8 Data and Context in Statistics Education: Towards an Evidence-Based Society



Ljubljana, Slovenia,  
11-16 July 2010

The realization that data is preferable to anecdote or intuition as a basis for robust decision-making is spreading through many professions and sections of society. More and more, people want to see "the evidence". Statistical methodology and modelling are increasingly pervading the research fabrics of all fields that advance by employing empirical enquiry. And since the root purpose of statistics is to extract insight and meaning about real contexts using data, statistics educators are increasingly realizing that this cannot be modelled by teachers without the use of rich, real contexts. It is important that data and contexts pervade statistical learning and teaching, to help students understand the nature and value of the statistical sciences, and to facilitate their learning. Successful learning processes involve data and contexts that are meaningful to students. These can be relevant to everyday life or to disciplines as varied as psychology, biology, business, sociology, engineering, the health sciences and statistics itself. However, many questions remain about the myriad of ways in which we can exploit context to achieve our educational goals. We also must look hard at how well we use the data and contexts that should be guiding our own educational practices.

### Evidence-Based Practice in Other Disciplines: Some Examples

Statisticians are often essential contributors in research teams in many disciplines and examples drawn from these contexts can enrich and facilitate the teaching of statistics. Interaction between statistics educators, statisticians and researchers in a relevant specialization can contribute significantly to the rich, real contextual and data resources that are of such value in both motivating and assisting statistical learning. Trends in medicine and other health sciences are governed by data, and evidence-based medicine is now taught in all medical schools. Data from the biological sciences provide information for resolving problems on environmental and ecological issues. The six-sigma revolution uses statistical quality control methods to monitor and improve industrial and engineering processes resulting in evidence-based decision-making in industry. National statistics offices and international agencies contribute to evidence-based decision-making in government and on public policy by collecting, collating, analysing and presenting data to populations at large and to governments in particular.

### Evidence-Based Practice in Statistics Education

Evidence-based practice should also be employed in statistics education itself. How do we use context when teaching about variability, probability, inference and modelling? How do we interpret data from surveys, questionnaires or interviews and how are these related to the research hypotheses? To what

extent are conclusions valid and reliable? Are we dealing with and explaining risk appropriately? Only with the answers to these intriguing questions will we be able to make informed decisions as we strive to reach an evidence-based society. Education ideas are shared on the web, through international and national projects, programmes, workshops and conferences in statistics education where diverse innovations are shared. The impact and relevance of new ideas are assessed and often adopted by others in their own teaching. Reports on the successes of recent statistics education programmes in South Africa and Latin America reflect the impact of the two ICOTS conferences.

International Programme Committee is now about to start the process of formulating the Topics and Sessions for ICOTS 8.

#### **The International Programme Committee Executive**

IPC Chair: John Harraway

Programme Chair: Roxy Peck

Information Manager: John Shanks

Scientific Secretary: Helen MacGillivray

Editor Proceedings: Alan McLean

#### **The Local Organising Committee**

LOC Chair: Andrej Blejec

#### **ICOTS-8 home page**

<http://ICOTS8.org>

*Contributed by John Harraway*

### **RSS News Item**

#### **CensusAtSchool International Workshop**

##### **Australian Bureau of Statistics, Melbourne, Australia, 26-29 March 2007**

The well-established Royal Statistical Society Centre for Statistical Education (RSSCSE) CensusAtSchool project received a major international boost following the recent four-day workshop hosted by the Australian Bureau of Statistics (ABS) in Melbourne, Australia. The meeting brought together statistical educators, government statisticians and teachers from 10 countries with the aims to:

- share ideas and experiences and agree on a common set of criteria for improving statistical literacy in all countries;
- agree on a strategy for a new and coordinated international CensusAtSchool project using common question content between countries over an extended period, with other material, locally written, that can change each time a country runs the project;
- establish a policy for unifying the international databases created, including their output, and devise an evaluation plan that each country can follow;
- develop a strategy to implement an international network of activities for school learners.

The workshop was launched with presentations from Brian Pink and Dennis Trewin, the current and former Australian Statisticians, respectively. Key issues in statistical literacy were discussed by Jane Watson (Tasmania) and Neville Davies (UK), while Michael Evans (Australia) presented a perspective from that country's International Centre of Excellence for Education in Mathematics. Facilitators, presenters and panel leaders for the week included Doreen Connor (UK), Juana Sanchez (USA), Mary Townsend (Canada), Elise Mennie (Canada), Soo Kong (Australia), Desmond Booyson (South Africa), Chris Wild (New Zealand), Jill Charker (Australia), Paul Taylor (Australia), Anthony Harradine (Australia), Ian Wong (Australia), Kerrie Duff (Australia) and Ang Long (Singapore).

Participants presented outlines of what statistical literacy means for each country and how it applies locally. Criteria were agreed on how the project could help improve statistical literacy for school-age learners and others, but the workshop agreed to steer away from trying to tightly define it. Those countries that have already implemented the project presented their aims, objectives and lessons learned. The role of CensusAtSchool as a contributor to motivating learners and teachers about what statistics is, and its role in society, were debated in detail.

It was agreed to write 10-15 purposeful and interesting-to-learners questions that would be asked in countries that take part. This will allow valid comparisons to be made between those countries through setting up real and meaningful problems that need to be solved. At the same time, each country would devise its own questions that could, for example, reflect local traditions or take into account pupil-centred issues, and these would be asked in parallel with the common questions.

The way the collected data, together with associated teaching and learning resources, could be returned to the learners and teachers, was also discussed. The common format of databases and the development of online data interrogation and presentation tools, including recently developed data visualisation methods, were agreed.

Sound scientific methods for evaluating the outcomes of the project for learners, teachers, schools, each country's education departments, national statistics offices, funders, the discipline of statistics and other subjects were considered and a framework to do these were set up.

An International Oversight Committee for CensusAtSchool (IOCC) was established and its terms of reference will be written in due course. Possible funding streams were considered to enable an international website to be created and maintained for the next few years. The site is likely to be hosted by the RSSCSE, with each country 'joining the club' through donating an amount yet to be agreed.

Participants were very enthusiastic about the way the four days had been innovatively organised - this had led to a remarkable amount being achieved. It was tentatively agreed by the IOCC that another similar CensusAtSchool workshop would be organised and run at the University of California, Los Angeles, in March 2008. In the meantime, a number of promotional and informative presentations would be made at international meetings, including the ISI Session in Lisboa in August, which would publicise and promote the project and its aim to improve the statistical literacy of all learners and teachers that take part.

If you would like to find out more and/or become a champion for the international CensusAtSchool project in your country please e-mail a member of the IOCC below.

#### **IOCC**

Desmond Booyson ([booysend@statssa.gov.za](mailto:booysend@statssa.gov.za))

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Chris Wild ([c.j.wild@auckland.ac.uk](mailto:c.j.wild@auckland.ac.uk))

A version of this news item first appeared in the May 2007 issue of RSS NEWS (Royal Statistical Society)

*Contributed by Neville Davies and Soo Kong*

## **The Fifth International Research Forum on Statistical Reasoning, Thinking, and Literacy:**

### **SRTL-5: Reasoning about Informal Inference**

**The University of Warwick, UK, August 11-17, 2007**

The fifth in a series of International Research Forums on Statistical Reasoning, Thinking and Literacy (SRTL-5) is to be held in the UK from August 11 to August 17, 2007. The Centre for New Technologies Research in Education (CeNTRE), the University of Warwick, will host the Forum. In addition, the Forum is sponsored by The Royal Statistical Society (UK), The American Statistical Association's (ASA) Section on Statistical Education, the Institute of Education, University of Warwick, and the School of Education, University of Leicester.

This gathering offers an opportunity for a small, interdisciplinary group of researchers from around the world to meet for a few days to share their work, discuss important issues, and initiate collaborative projects. The Forum's focus will be on informal ideas of statistical inference rather than on formal methods of estimation and tests of significance. This topic is emerging from the presentations and discussions at SRTL-3 and 4 and is a topic of current interest to many researchers as well as teachers of statistics. As new courses and curricula are developed, a greater role for informal types of statistical inference is anticipated, introduced early, revisited often, and developed through use of instructional activities, simulation and technological tools.

We shall be looking at the ways people intuitively make statistical inferences and how their reasoning develops or is revealed through instruction. For example, what is the nature of how people make inferences about a larger group based on single sample of data, how people make inferences about

possible group differences based on two seemingly different samples of data, or, how people judge a sample or sample statistic to be surprising given a particular claim about the population from which the sample was drawn or the model that produced the sample of data. None of this may involve formal statistical inference (P-values, tests of significance, confidence intervals, etc.). However, studies on the nature of this informal, inferential reasoning provide results that have implications for teaching and learning formal methods of statistical inference.

An interesting range of diverse research presentations and discussions have been planned and we all look forward to a stimulating and enriching gathering. These papers will address reasoning about informal inference at all levels of education including the professional development of elementary and secondary teachers. One outcome of the Forum will be publication of a CD proceedings as well as a special issue of SERJ on *Reasoning about Informal Reasoning*.

The structure of the scientific programme will be a mixture of formal and informal sessions, small group and whole group discussions, and the opportunity for extensive analysis of video-taped research data. There will also be a poster session for exhibiting current research of participants on additional topics related to statistics education. The Forum is co-chaired by Dani Ben-Zvi (University of Haifa, Israel) and Joan Garfield (University of Minnesota, USA), co-organized by Janet Ainley (The University of Leicester, UK) and Dave Pratt (University of London, UK), and planned by a prestigious international advisory committee. For more information, visit the SRTL website at: <http://srtl.stat.auckland.ac.nz/>.

*Contributed by Dani Ben-Zvi*