



CensusAtSchool
2nd International Workshop
 UCLA, Los Angeles, California
 July 28-29, 2008



<http://censusatschool-california.stat.ucla.edu/index.html>

Hosted by the Department of Statistics at UCLA

Workshop Organizer: Juana Sanchez, UCLA Statistics

Workshop Theme

CensusAtSchool - "Data Handling and Chance Activities that Promote Statistical Literacy in school children "

Statement of Purpose:

To provide an opportunity for participants to:

- achieve common understanding of the International CensusAtSchool project <http://www.censusatschool.ntu.ac.uk/> and other efforts of countries to impact statistical literacy in schools.
- acquire experience with CensusAtSchool country-specific data handling activities and resources for teachers and students;
- learn about census-like projects not coordinated with CensusAtSchool;
- further promote and increase students' and teacher's interests in statistical literacy globally.
- Increase awareness of the efforts made in the United States and other countries to improve statistical literacy in school children.
- Share existing hands-on curriculum materials in the US and other countries.

The meeting will:

- present a large amount of data handling, hands on activities based on the resources of the different CensusAtSchool projects in Canada, South Africa, UK, Australia and New Zealand, and in particular new activities created around the new International questions;
- present overviews of the state of statistical literacy in US schools and share hands-on activities that have been successful in the classroom.
- Inform on efforts made in the USA and other countries to impact statistical literacy (efforts other than CensusAtSchool efforts).
- give K-12 teachers curriculum materials to use in their classrooms.

Outcomes

- Common understanding of each country's projects and experience in creating and promoting statistical literacy activities.
- Increased appreciation of the efforts made in the USA and other countries to increase statistical literacy in schools

Confirmed Invited Speakers

(See biographies and abstracts of presentations after the program pages)

International

- Kazuhiro Aoyama, INCET, Naruto University of Education, Japan
- Pip Arnold, University of Auckland, New Zealand
- Yvan Clermont-Assistant Director of Culture, Tourism and Centre for Education Statistics, Statistics Canada
- Neville Davies - Royal Statistical Society, United Kingdom and CAIC
- Jean Claude Girard - IUFM de Lyon, Université Claude Bernard Lyon-1, France
- Themba Mohoto, Special Project, HCD, Statistics South Africa.
- Mbulaheni Nthangeni, Executive Manager, Human Capacity Development, Statistics South Africa and CAIC
- Paul W. Taylor - Education Services, Australian Bureau of Statistics and CAIC
- Mary Townsend - Education Outreach, Statistics Canada/Statistique Canada and CAIC
- Michiko Watanabe- Tokyo University and Japan Statistical Society
- Chris Wild – Statistics Department, University of Auckland, New Zealand and CAIC

United States

- Martha Aliaga, Program Director, American Statistical Association
- Cynthia Clark – Administrator of the National Agricultural Statistical Service (NASS), U.S. Department of Agriculture
- Ivo Dinov, UCLA Statistics and LONI
- William Finzer – Fathom Software, KCP Technologies
- Renée Jefferson-Copeland, Chief, Census In Schools, U.S. Census Bureau Suitland, MD
- Dennis Pearl- CAUSEweb and Statistics, Ohio State University
- Roxy Peck, Cal Poly, San Luis Obispo
- Allan Rossman- President of the International Association for Statistics Education (IASE), Cal Poly, San Luis Obispo

Exhibitors

United States Bureau of the Census, American Statistical Association, IASE, Statistics Canada, Australian Bureau of Statistics, UCLA Center for the Teaching of Statistics, Royal Statistical Society, Key Curriculum Press.

Sponsors

College of Physical Sciences, UCLA Department of Statistics, IASE (International Association for Statistics Education), Center for the Teaching of Statistics, SOCR, Cengage Publishing, UCLA Bookstore, Minitab.

AGENDA**Facilitators: Juana Sanchez, UCLA Statistics, and Workshop organizer****DAY 1 – Monday 08/28/2008**

- **Facilitators: Morning, Rob Gould, UCLA Center for the Teaching of Statistics. Afternoon, Alberto Candel, California State University**

Location: Kinsey Pavilion 1240B (All day)**8:00 AM-5:00 PM Registration and/or bag pick up at the door**

9:00 am -9:15 Welcome by Allan Rossman
9:15 am-9:30 Welcome by Neville Davies
9:30 am -9:45 Official opening by Jan Deleeuw, Chair of Statistics Dept.

Session Title	Session No. 1	Time	Presenters/Panel Leaders	Notes
Broad Statistical Strategies	1.1 Fundamental ideas of Statistics and how they affect the training of teachers.	9.45am - 10.30am	Martha Aliaga	Invited speaker
		10.30am - 10.45am	MORNING TEA	
	1.2 Statistical Literacy and Survey Education at the Elementary and Intermediate School level	10.45am - 11.30am	Cynthia Clark	Invited speaker
	1.3 New Zealand's statistical literacy strategies and the role of CensusAtSchool in them.	11.30am- 12.15pm	Chris Wild and Pip Arnold	Invited speakers
	1.4 Canada's Statistical Literacy Strategies and the role of CensusAtSchool in them	12.15pm - 1.00pm	Mary Townsend	Invited speaker
		1.00pm - 2.00pm	LUNCH	
	1.5 Census in School, United States Census Bureau	2:00pm- 2:45 pm	Renée Jefferson-Copeland	Invited Speaker
	1.6 Growing Scatterplots, hands on activity	2:45 pm- 3:30 pm	Pip Arnold	Invited Speaker
		3.30pm - 3.45pm	AFTERNOON TEA	
	1.7 Australia's Broad statistical literacy activities for schools and the role of CensusAtSchool in them	3.45pm – 4:30pm	Paul Taylor	Invited Speaker
	1.8 International Surveys on Literacy	4:30pm 5:15pm	Yvan Clermont	Invited Speaker
	Registration only for dinner: Faculty Center Sequoia Room	5:30- 6:00pm		
		6.00pm- 8:00pm	WORKSHOP DINNER – Location: Sequoia Room Faculty Center Dinner speaker: Roxy Peck Title: Teaching Statistics-The Second Most Important Lesson I Have Learned Registration ticket required	

Day 2 – OPEN Meeting Tuesday 7/29/2008

**Facilitators: Morning, Viniagumal (Peggy) Govender, Alexander Hamilton HS
Afternoon, Juana Sanchez, UCLA**

Location: Morning, Kinsey Pavilion 1220B; Powell, 320C, afternoon

Registration: 8:00am-5pm

Session Title	Session No.	Time	Presenters/Panel Leaders	Notes
Statistics Literacy in other parts of the world	2.1 France's Statistical Literacy Activity for Schools	9:00am-9:30am	Jean Claude-Girard	Invited speaker
	2.2 Current Situation and next direction of Japan's Statistics	9:30am-10:00am	Presenters: <u>Kazuhiro Aoyama</u> and Michiko Watanabe	Invited Speaker
		10.00am - 10.15am	MORNING TEA	
----- - CensusAtSchool, Technology and the world	2.3 CAUSEweb and DANSER: Building an Infrastructure for Statistics Education	10.15am - 11.00am	Dennis Pearl	Invited speaker
	2.4 The future of CensusAtSchool .	11.00am-11:45pm	Presenter: Neville Davies	Invited speaker
	2.5 The 2001 and the 2008 CensusAtSchool in South Africa	11:45pm – 12:30pm	Presenters:Mbulaheni Nthangeni and Themba Mohoto	Invited speakers
		12:30pm – 1:00pm	LUNCH	
	AFTERNOON SESSION IS IN POWELL 320C-CLICC CLASSROOM-LAB C			
You-do-it-with-us sessions	2.6. The CensusAtSchool Project for K-12 learners. Hands-on activities	1:00pm – 2:00pm	Presenters:	Invited Speakers
	2.7. Exploring Census Data with Fathom	2:00-3:00pm	Presenter: Bill Finzer	Invited Speaker
		3:00pm – 3:15pm	AFTERNOON TEA	
----- - Other web based resources that promote understanding of statistics and statistical literacy	2.8. Using SOCR to motivate simulation experiments in Middle and High School	3:15-4:00 pm	Presenter: Ivo Dinov	Invited Speaker
	2.10. Introducing concepts of statistical inference and closing of the meeting.	4:00-4:50pm	Presenter:Allan Rossman	Invited Speaker
7:00 PM PARTY WITH FOOD AND CLOSURE OF THE MEETING Registration ticket required at all times.				

Biographies of Invited Speakers

Martha Aliaga, PhD

Martha@asa.org

Martha Aliaga is the director of programs for the American Statistical Association (ASA). During her tenure there, she has originated several educational programs, including Meeting Within a Meeting, STEW, and the Educational Ambassadorship Program. Previously, she was a professor in the statistics and mathematics departments of the University of Michigan, Ann Arbor, where she received several Excellence in Education awards. She also received the First Prize in Statistics for Innovative Programs Using Technology (INPUT) and was awarded several NSF grants for teacher enhancement and preparation.

Aliaga is a Fellow of the ASA and elected regular member of the International Statistical Institute (ISI). She also served as vice president of the Inter-American Statistical Institute (IASI), elected council member for ISI(2009-2013), and board member for CAUSE and TODOS. She is co-author of Interactive Statistics and has given multiple national and international presentations about statistical education, most recently in Santiago, Chile.

Kazuhiro Aoyama

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Kazuhiro Aoyama is assistant professor at the International Cooperation Center for Teacher Education and Training in Naruto University of Education. In this position, he has advanced many projects to train mathematics teacher in developing countries. His Ph.D. thesis in Tsukuba University was titled "Investigating a Hierarchy of Students' Graph Interpretation". He is a member of the Special Committee of Statistics Education in the Statistical Society of Japan.

Pip Arnold

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Pip Arnold is Secondary Mathematics Facilitator with Team Solutions at the University of Auckland. This involves working with high school mathematics and statistics teachers throughout the northern region of New Zealand providing professional development and support. Pip also has a lead role in developing resource and exemplar material to further define and support the implementation of New Zealand's new mathematics and statistics curriculum (particularly the statistics strand) and has taken over the leadership of the resource writing and teacher outreach activities of CensusAtSchool New Zealand. Pip was previously Head of Mathematics at Auckland Girls Grammar School, a large urban high school.

Cynthia Clark

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Cynthia Clark is the Administrator of the USDA's National Agricultural Statistical Service (NASS). See the announcement of her appointment by Agriculture Secretary on June 27th, and more details of her professional career at http://www.nass.usda.gov/Newsroom/2008/06_27_2008.asp. She served for three years as Executive Director for Methodology at the U.K. Office for National Statistics and prior to that as Associate Director for Methodology and Quality at the U.S. Census Bureau since 1996. Her professional interests are in quality and reliability of official statistics, statistical literacy and education at all levels including within a professional workforce, and economic, demographic, and environmental statistics.

Yvan Clermont

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Mr. Yvan Clermont is the Assistant Director of the Culture, Tourism and the Centre for Education Statistics Division at Statistics Canada. In this position, Mr. Clermont heads several sections responsible for the design and implementation of various education surveys and for the analysis and dissemination of education indicators. Mr. Clermont also was the Chief of Household Survey Development in Education for a period of two years. Prior to that assignment, Mr. Clermont was the International coordinator of the Adult Literacy and Life Skills Survey that took place in several Organisation for Economic Co-operation and Development (OECD) and non-OECD countries. Mr. Clermont has specialized in the design and conduct of large-scale ad hoc surveys to meet emerging public policy issues. His own work has included studies in test implementation of large-scale surveys in an international setting, in research and in the design of children and youth development indicators. He also has written articles in the field of skills assessments and criminology. Mr. Clermont graduated from the University of Montréal in economics in 1987 (Bachelor of Science) and from Les Hautes Études Commerciales in applied economics in 1990 (Master of Science).

Neville Davies, BSc, MSc, PhD, CStat

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Neville Davies is Professor of Applied Statistics and Director of the Royal Statistical Society Centre for Statistical Education at Nottingham Trent University, UK, and Deputy Director of the UK Higher Education Academy Mathematics, Statistics and OR Network. He has taught and carried out research in statistics for over 35 years, and has held visiting positions at universities in the United States and Australia. He has published papers in statistical modelling, time series analysis and forecasting and, more recently, in statistical education.

He is the originator of the Internet-based *CensusAtSchool* project, which is designed to raise awareness about population censuses and provide learning and teaching material in statistics and handling real data for learners and teachers.

Ivo Dinov

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Ivo Dinov (<http://www.stat.ucla.edu/~dinov>) is an Assistant Professor of Statistics and the Chief Operations Officer of the Center for Computational Biology (CCB) at UCLA. Dr. Dinov's research blends the development of new probability and statistics educational resources and development of advanced mathematical and statistical models for representation, analysis and visualization of biomedical data. Dr. Dinov is the Director of the Statistics Online Computational Resource (<http://www.SOCR.ucla.edu>), which provides interactive Internet-based access to a variety of tools for statistical computing and statistics education.

William Finzer

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Bill is Senior Scientist at KCP Technologies where he leads the Fathom Dynamic Data™ Software development team. His experience includes software development, curriculum development, research into programming tools, teacher professional development, classroom teaching, and research on learning statistics. He has been principal investigator of several NSF/SBIR funded projects, most recently "Census Microdata in the Mathematics Classroom." Prior to working at KCP Technologies, he served as Educational Technology Director at Key Curriculum Press where, in addition to starting the Fathom project, he conducted research and development of materials to support implementation of The Geometer's Sketchpad and led the NSF/SBIR-supported effort to start a professional development center.

Bill's experience as a software developer began in 1978 at San Francisco State University working with Diane Resek to create curriculum and computer environments for Statistics without Fear, Computers without Fear, and Computers in the Classroom. With Resek, he co-authored the Mirrors on the Mind software series and was co-PI of the Math Worlds project and the Computer Curriculum Cadre project. His research with Laura Gould at the Xerox Palo Alto Research Center culminated in the development of a Smalltalk-based authoring environment called Programming by Rehearsal. At the Lawrence Hall of Science in Berkeley, he led the team that developed DataRelator, an early hypertext relational database. Bill's current interests center on developing software and curriculum to prepare students and teachers to make intelligent use of the data deluging our society.

Jean Claude Girard

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Jean Claude Girard has been a teacher of mathematics in a training college (IUFM) at the Université Claude Bernard, Lyon, France since 1991 after having taught mathematics many years in a secondary school and statistics at different levels (in a business school, a technological institute and at the university in Science of Education).

At the same time, he has been working at the Research Institute for the teaching of Mathematics (IREM) of Lyon and within the national Commission Inter-IREM about the concept of Teaching-Learning of Probability and Statistics. In this context, he took part in training courses for teachers and wrote papers and booklets dedicated to the teaching of these two topics. Moreover, he got involved in the writing of school text books of mathematics for high school pupils.

Renée Jefferson-Copeland

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Renée Jefferson-Copeland is the newly appointed Chief of the Census Bureau's Census in Schools Branch, a unit of the Customer Liaison Marketing Services Office in the Census Bureau's Communications directorate.

Prior to assuming her current position, Ms. Jefferson-Copeland was the Chief of the Census Bureau's State and Governmental Programs Branch. From 1997 through 2008, Ms. Jefferson-Copeland served as the administrator for the Census Bureau's nationwide network of data dissemination partners, the State Data Centers. She also administered programs for the Census Bureau's liaisons for the nation's governors, the Census Bureau's Depository libraries and its national governmental partners. These partners included Regional Planning and Development Councils, Small Business Development Centers, national governmental organizations, libraries, academia and representatives of state and local governments. Her responsibilities included organizing and disseminating, data to inform the public about the Census Bureau's programs, products and data dissemination tools. Prior to this position, she served as the project manager for several large-scale demographic surveys and as an information specialist for the 1990 decennial census.

Ms. Jefferson-Copeland's prior public sector work has included administration of a federally funded program designed to obtain educational and occupational opportunities for "at-risk" youth. She managed the staff, budget, implementation, expansion, enhancement and operation of this countywide program.

Ms. Jefferson-Copeland holds a Bachelor's of Arts degree in Psychology from Hampton University in Hampton, Virginia. She has also attained certification in Project Management from George Washington University in Washington, DC.

Dennis K. Pearl

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Dennis Pearl is professor in the Department of Statistics at The Ohio State University. He is also currently the director of the Consortium for the Advancement of Undergraduate Statistics Education

(CAUSE), an associate director of the Mathematical Biosciences Institute (MBI), and director of the Initiative for QUantitative Education Research Infrastructure (INQUERI). His research interests include the statistical analysis of nucleotide sequences and phylogenetic trees, simulation-based estimation, statistical education, modeling biological phenomena, and problems in neuro-oncology.

Roxy Peck

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Roxy Peck has been a professor of statistics at Cal Poly, San Luis Obispo, California, since 1979, serving for six years as Chair of the Statistics Department and currently in her tenth year as Associate Dean of the College of Science and Mathematics. Nationally known in the area of statistics education, Roxy was made a Fellow of the American Statistical Association in 1998 and in 2003 she received the American Statistical Association's Founders Award in recognition of her contributions to K-12 and undergraduate statistics education. In addition to co-authoring the textbooks *Introduction to Statistics and Data Analysis* and *Statistics: The Exploration and Analysis of Data*, she is also editor of *Statistics: A Guide to the Unknown*, a collection of expository papers that showcase applications of statistical methods. Roxy served from 1999 to 2003 as the Chief Faculty Consultant for the Advanced Placement Statistics exam and she is past chair of the joint ASA/NCTM Committee on Curriculum in Statistics and Probability for Grades K-12 and of the ASA Section on Statistics Education.

Allan Rossman, BS, MS, PhD

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Allan Rossman is a Professor in the Department of Statistics at Cal Poly in San Luis Obispo. His work has focused on developing curricular materials to support active learning approaches to teaching introductory statistics. With Beth Chance, he is co-author of the *Workshop Statistics* series of coursebooks and also of *Investigating Statistical Concepts, Applications, and Methods*. He and Dr. Chance have also co-edited *STATS* magazine and the *Proceedings of the Seventh International Conference on Teaching Statistics*. Dr. Rossman has chaired the ASA's Section on Statistical Education and the ASA/MAA Joint Committee on Undergraduate Statistics. He is currently President of the International Association for Statistical Education and was the 2007 Program Chair for the Joint Statistical Meetings. Dr. Rossman was selected as a Fellow of the ASA in 2001.

Paul Taylor

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Paul is the Director of the Education Services Unit in the Australian Bureau of Statistics (ABS). Paul graduated with an honours degree in Mathematical Statistics from Monash University in 1984, and has spent the following 20 years working in various areas across the ABS. These have included the Statistical Consultancy section where Paul provided consultancy services to government and business on data collection issues, the Service Industries section where Paul ran a number of national economic surveys, the Business Register section that maintains the business frames for ABS Economic Surveys and the Population Surveys section which produces the national employment figures. Paul has been the Director of the ABS Education Services unit for the last 2 years.

Mary Townsend

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Mary Townsend is Chief of Statistics Canada's Education Outreach Program which won the 2003 IPAC (Institute of Public Administration in Canada) Gold Award for Innovation and Knowledge Management. Since 1996, Ms. Townsend has managed the activities of this program that is founded on two pillars, the Learning Resources website and a Network of champions dedicated to encouraging the development of statistical literacy skills in youth. Mary is a member of Canadian government e-learning, education and partnership groups and the advisory committee of the International Statistical Literacy project.

Ms. Townsend is the producer of several key data management school resources including the Teachers Guide to Data Discovery and the CensusAtSchool project in Canada.

Chris Wild

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Professor Chris Wild (<http://www.stat.auckland.ac.nz/~wild>) is a member of the Department of Statistics at the University of Auckland where he was Head of Department from 2003 to 2007, is a former President of the International Association for Statistical Education, a Council Member of the International Statistical Institute, and a Fellow of the Royal Society of New Zealand. He is currently an Associate Editor of the *International Statistical Review*, and has been an Associate Editor of *Biometrics*, the *Statistics Education Research Journal* (SERJ), and the *Australian and New Zealand Journal of Statistics*. His main research interests are in developing methods for modelling response-selective data (e.g. case-control studies) and missing data problems, and statistics education with particular emphasis on statistical thinking and reasoning processes. He co-led the University of Auckland's first-year statistics teaching team to a national Tertiary Teaching Excellence Award in 2003 and has been Co-director of the New Zealand CensusAtSchool project since its inception in 2003.

Abstracts of Presentations

Fundamental ideas of Statistics and how they affect the training of teachers

Martha Aliaga, American Statistical Association, USA

The central idea of evidence-based education- that education policy and practice ought to be based on what is known from rigorous research- offers a compelling way of approaching reform efforts. How to make a decision with statistics is a topic that exposes the students to the major ideas and themes of statistics that they will use throughout life. How to best present this to teachers as well as an early coverage of sampling and experiment design will be discussed at this presentation, where it will be argued that teaching statistical decision making early on and using the topic throughout the year will reinforce the learning so the subject becomes natural to the teachers and their students. This discussion is based on a previous analysis of teaching statistics and training teachers in the United States and several educational initiatives by the American Statistical Education (ASA).

Current situation and next direction of Japan's Statistics education

Kazuhiro Aoyama & Michiko Watanabe, Naruto University and Tokyo University, Japan

There are a few statistical contents in the elementary school curriculum and no contents in junior high school curriculum in Japan at the current moment. But the national curriculum has been revised this year, and they decided to put more contents in elementary and junior high school. On the other hand, the "Law of Statistics" has also changed in 2007, reflecting a change of the nature of national statistics from government oriented (policy making) to citizen oriented (to know well about society).

Japan's Statistics education stands at a great turning point now. It is needed to consider curriculum contents and urgent to develop effective materials. The CensusAtSchool project is really suitable for our situation. A Special Committee of Statistics Education in Japan's Statistical Society is advancing the preparations to participate in this project.

The Future of *CensusAtSchool*

Neville Davies and Doreen Connor, Royal Statistical Society Centre for Statistical Education,
Nottingham Trent University, UK

First we briefly summarise our experiences with setting up, running and maintaining *CensusAtSchool* within the UK since 1999. In that time it has become established as a useful way to help raise levels of statistical literacy in schools.

The project's success stems from providing motivational activities that spark in learners and their teachers enthusiasm about many aspects of basic statistics. The heart of the project is in the real data collected and stored in more than 12 databases on the RSSCSE web site. However, these remain a largely untapped resource which could be exploited for further activities across all educational levels.

In the December 2007 issue of *The International Statistical Review* (ISR), several authors, (for example: Darius, Portier and Schrevers; Nolan and Temple Lang; Wild; and Cobb) present new, visionary and exciting proposals for teaching and learning statistics using dynamic and interactive ICT methodology. Nolan and Temple Lang show how archival secondary data can help with dynamic, active learning and Cobb (2007) proposes a frame for experiential learning using (i) archival; (ii) simulated and (iii) activity-based data.

The *CensusAtSchool* project produces easily accessible archival data that have been produced by well-defined activities. Using these, and building from the ideas in the ISR, we propose some new directions for the development of the *CensusAtSchool* project that could form the basis of an open-source environment for teaching, learning and professional development in statistics.

Finally we set out our plans for working with the Office for National Statistics (ONS) on a new version of the project that will integrate it with national preparations for the UK population Census in 2011.

References

Darius, P. L., Portier, K. M. and Schrevens, E. (2007). Virtual Experiments and Their Use in Teaching Experimental Design. *International Statistical Review*, 75, 3, 281 – 294.

Nolan, D. and Lang, D. T. (2007). Dynamic, Interactive Documents for Teaching Statistical Practice (2007). *International Statistical Review*, 75, 3, 295 – 321.

Wild, C. (2007). Virtual Environments and the Acceleration of Experiential Learning. *International Statistical Review*, 75, 3, 322 – 335.

Cobb, G. W. (2007). One Possible Frame for Thinking about Experiential Learning. *International Statistical Review*, 75, 3, 336 – 347.

Using SOCR to Motivate Simulation Experiments in Middle and High School.

Ivo Dinov, UCLA Statistics and LONI, USA

The specific aims of this session are to discuss the use of the free and integrated Internet-based SOCR Resources for: Data download and Data Generation, Virtual Experimentation and Simulation, Exploratory Data Analysis, and Common Statistical Analyses. For each of these topics we will go over several examples that illustrate the process from data acquisition to analysis and visualization. The emphasis will be on utilization of the www.SOCR.ucla.edu resources in various science and quantitative disciplines in the middle and high school curricula.

Exploring Census Data with Fathom

William Finzer, Fathom Software, KCP Technologies, USA

In this hands-on workshop we'll use Fathom Dynamic Data Software first to explore US census microdata, sampling from millions of individuals from each of the US decennial censuses back through 1850. Access to these microdata is provided by Fathom through a simple, integrated interface that might serve as a model for access to C@S data. Second, we'll use Fathom to explore C@S data from Australia and consider the kinds of learning activities that Fathom facilitates. Finally, we'll look at use of TinkerPlots software for use in grades 5-8 as a tool for working with C@S data.

Census in Schools

Renée Jefferson-Copeland, U.S. Census Bureau, Suitland, MD, USA

The Census Bureau's Census in Schools program provides educators with the tools to bring the census to life for students and to explain the importance and benefits of the census. Our goals for the program are to increase public participation in the 2010 Census and to offer tools that teachers can use to increase statistical literacy among students in the United States and its Insular Areas.

CAUSEweb and DANSER: Building an Infrastructure for Statistics Education

Dennis K. Pearl, Ohio State University, USA

This presentation will discuss two projects that are attempting to build key components of the infrastructure needed to support statistics educators and statistics education researchers. CAUSEweb.org is a digital library hosted by the Consortium for the Advance of Undergraduate Statistics Education (CAUSE). It provides seven to nine thousand unique visitors per month with access to more than 1700 items in the resources collection, more than 2800 items in the statistics education research literature collection, and hundreds of items providing services or miscellaneous enhancements to community members (calendar entries; job opportunities; archival audio, and video presentations from other CAUSE programs; and collections of statistics fun items for free use in courses are all examples). The Database for Assessment of National STEM Education Research

(DANSER) is an emerging project geared toward developing a multi-disciplinary STEM education research environment supporting teachers, assessment instrument authors, and education researchers.

Teaching Statistics—The Second Most Important Lesson I Have Learned

Roxy Peck, Calpoly, San Luis Obispo, California, USA

Teaching statistics in school or at the college level is more complicated these days than when I first started teaching. Lecturing at the “bored” is being replaced by pedagogies that require students to be more actively involved in the learning process. But is student engagement enough? In this short and only semi-serious after dinner talk, I will explore this question.

Introducing Concepts of Statistical Inference

Allan Rossman, President of IASE and Cal Poly, San Luis Obispo, USA

Drawing reasonable conclusions from a study, and making sound evidence-based decisions, requires an understanding of basic ideas of statistical inference. In this presentation I offer some ideas and activities for introducing students to these ideas. Scenarios addressed include binomial trials and 2x2 tables. Issues of data collection designs and scope of conclusions will also be introduced. The activities are based on simulation methods and use genuine data from scientific studies. The focus is on developing an intuitive understanding of the concept of statistical significance and helping students to appreciate the applicability of statistical inference.

Creating Little Statisticians through Statistics Canada’s CensusAtSchool project

Mary Townsend , Statistics Canada, Canada

The CensusAtSchool project is an important component of Statistics Canada's Education Outreach program, which plays an active role in improving the statistical literacy of Canadian students. CensusAtSchool supports math and technology curricula in elementary and secondary schools and provides ongoing awareness of the national census and its benefits. It also builds an interactive online community of interest among participating teachers.

Developed in partnership with Canadian teachers, the project helps students understand the power of data by involving them in activities that statisticians undertake on a daily basis- gathering, compiling and analyzing data. Through personal participation, students learn how to do a survey, how to apply fundamental data concepts, how to analyze data and use supporting software and how data can be used to inform decision-making. These are important skills in today's information society.

This presentation will report on the development, promotion and growth of the CensusAtSchool project in Canada over the past five years and highlight teacher professional training activities along with examples of student learning outcomes and project work.

CensusAtSchool NZ: a Means to Many Ends

Chris Wild and Pip Arnold, The University of Auckland, New Zealand

CensusAtSchool NZ is a valuable educational initiative that engenders excitement about statistics in teachers and learners. Its significance is much greater than this, however. So while we will start by telling the story of *StatisticsAtSchool* in New Zealand, the main emphasis will be on why it is much more than just another educational project.

CensusAtSchool NZ is aligned with, and often in advance of, a drive to revolutionise statistics education in New Zealand. New Zealand is a small country but one that sometimes has big ambitions; statistics education is a case in point. Operating in a small country makes curriculum change easier to initiate but also makes the development of the necessary support materials and professional development for teachers harder to resource. So we have to be smarter and more efficient than others to make up for the small numbers of people with the skills and background necessary for doing the work.

Our projects have to reinforce one another. We have to utilize scarce time from scarce people and leverage off that as efficiently as possible. In short, we have to get good at putting our ducks in a row and despatching them with a single shot.

CensusAtSchool NZ is co-funded by New Zealand's national statistical agency Statistics New Zealand. We will discuss synergies between the interests of government agencies, reform agenda's for statistics education, and *CensusAtSchool*. We will discuss *CensusAtSchool NZ* as a relationship builder for relationships between teachers, academics and statistical professions, and for educational relationships between countries. We will discuss the flow-on benefits from teachers, academics and statistical professions working together on a common project. And we will also discuss the benefits *CensusAtSchool NZ* has brought to a university statistics department.

Finally we will discuss the *CensusAtSchool NZ* site, some of the materials and the overarching design and delivery principles embodied either in them or planned developments.