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ISLP Newsletter is the newsletter of the International Statistical Literacy Project of IASE - the International Association for Statistical Education.

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Promoting statistical literacy in Spain

by Ana Serradó Bayés



Two new initiatives have been developed in the last months with the aim of promoting Statistical Literacy in Spain. Those are [aprenestadística.gencat.cat](#) and [Divestadística](#).

[Aprenestadística.gencat.cat](#) is a webpage developed by the Catalanian Institute of Statistics. The webpage is addressed to teachers and students of Secondary School from grade 7 to 12. In these pages they can find three kinds of resources.

The first one is an introduction to the aim and meaning of statistics and the process of statistical investigation. We can also find a link to a glossary. This glossary has the meaning of statistical and thematic terminology. Both glossaries acquire importance when the students are involved in solving the activities proposed. The activities use the real data obtained by the Catalanian Institute of Statistics, and propose the students to investigate about some significant problems for them related with demography, society, economy, services and environment.

The second initiative is [Divestadística](#). [Divestadística](#) is a project of scientific spreading developed by

the “Andalusian School of Public Health”, public enterprise created in 1985 for the developing of activities for learning, researching and consultancy in the field of Public Health. The aim of the Webpage is disseminating the Statistical knowledge using an accessible language to access to the whole population including those experts in non-scientific areas of knowledge.

Educators and researchers in Mathematics and Statistics continuously improve the information of [Divestadística](#). They work together with ICT developers with the aim of improving the Webpage. The Webpage has many sections with multimedia content, papers, videos, glossary, images and large amount of utilities oriented to broadcast the usefulness of the Statistics. In the Webpage we can find terms as learn, enjoy, reflect, progress, discover, investigate... words that reflect the aim of [Divestadística](#) in promoting the Statistical Literacy. Both projects have the aim of improving statistical literacy of Spanish citizens, students and adults, and work in collaboration with the ISLP project.

divestadística

A Spanish project aimed at promoting statistical literacy for all people

By Ricardo Ocaña-Riola

Statistics is a key science for decision-making in uncertain environments. Currently, its use has gone beyond the scientific field and is part of everyday aspects, including information transmitted through the media. Therefore, knowing the fundamentals of this science and making a correct interpretation of results is not only essential for the evolution of scientific knowledge, but also for the cultural development of society.

Sensitive to this need, the Andalusian School of Public Health (Granada, Spain) launched in January 2011 the *Divestadística* project (www.divestadistica.es), an initiative popularizing science on the network that is aimed at disseminating statistical knowledge understandable to all people, including professionals of other fields that are not specialists in statistics.

The website is composed of 23 sections that are grouped into seven thematic multimedia blocks. The contents are actualized periodically and they are all made by professionals in Mathematics or Statistics. It also has the support of professionals in the Information Technology and Communication and a journalism scientist who completed a multidisciplinary team capable of carrying out a project for the dissemination of statistical culture with these characteristics. All members belong to the Andalusian School of Public Health. However, there is the cooperation from outside professionals who have shown interest in this initiative.

After just over a year since its launch, *Divestadística* has managed to be the first entry in Google when you specify the Spanish term «divulgación estadística». According to the report from Google Analytics, the site has received during this period over 27,000 visitors, of which 60% comes from Spain, 39% from Latin America and 1% from other European countries.

The presence of *Divestadística* in social networks has been rapid. During the first month only, the first 35 messages on Twitter were read by 4,867 people, getting 170 new followers. Since then the number of followers has increased progressively, with currently about 700 in Twitter and 300 in Facebook.

During this first year, the media have picked up the birth and evolution of *Divestadística*, especially those related to scientific communication. However, daily newspapers have also published press releases and articles that have helped to disseminate the project between the citizens.

In June 2011, the *Divestadística* project received an Honorable Mention by the International Programme of Educational Innovation and Scientific Outreach named «Science in Action». In the words of the jury, the award was received for «bringing this science to the general public in a rigorous, elegant and useful form through a magnificent portal for the dissemination of statistic».

The welcome received and achievements during the first year could be a success cooperation between people, media and professionals to disseminate science. Perhaps, this acceptance has contributed to place *Divestadística* in good stead to achieve its consolidation as a theme disclosure channel.

The continuity of this project and the dissemination of its contents in other languages could boost the transfer of statistical knowledge, promote scientific culture, improve critical capacity of the population concerning statistical information and promote the creation of collaborative networks for statistics promotion and dissemination. In addition, the horizontal nature of the statistical methods promoting this project may be of interest to researchers who need knowledge in this area to understand the contributions of a science that is present in all aspect of the life.

Statistical literacy in Russia*

by N. Dmitrieva, M. Balakhnev/
Federal State Statistics Service
(Rosstat) regional office in Orel
region

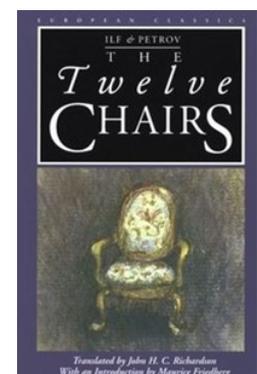
Perhaps, nowadays there is no man who has not heard the cliché about 'lies, blatant lies and statistics'. However, it is necessary to figure out where such an offensive saying for a professional statistician came from, and why such an assertion that has become a semi-anecdote and semi-aphorism, is so loved and quoted by the press. A root cause is obvious – the lack of the confidence in the statistics because of ignorance and misunderstanding, or to be exact, because of the low statistical literacy of the population so people tend to reject and deny all that is unclear. In the public mind only “clear” official statistics is “fair” and trustworthy. Statistical organizations all over the world have gained considerable experience in improving the economic and statistical literacy and the popularization of statistics. Despite the nearly 20-year history of research and the implementation of various projects in the field of statistical literacy, this has not received sufficient attention and spread yet in Russia. First of all, in our opinion, because of the almost

complete lack of information on this subject written in Russian. For example, let's have a simple test – the search system www.google.ru on the request “СТАТИСТИЧЕСКАЯ ГРАМОТНОСТЬ” gives approximately 397 000 pages, and on the request “statistical literacy” – 14 400 000 pages. The search with the Russian search engine www.yandex.ru shows a no less demonstrative result – 1 706 pages and 115 000, respectively. Russia inherited from the Soviet Union a well-educated population and a fairly high percentage of people with higher education. However, with regard to statistical literacy, a very small proportion of citizens understand, interpret correctly and operate with statistical data freely. Enhancing statistical literacy of citizens of Russia – “Statistical literacy campaign” – must be a nation-wide project, possibly as part of the general the information society. The basis of the project could be the International Statistical Literacy Project (ISLP) adapted for modern Russian conditions or Russia's own concept of what improving the statistical literacy of the population of Russia can be. Of course, the initiative for



improving the statistical concept of literacy must come from the **Federal State Statistics Service (Rosstat)**, as it requires a serious professional approach. It is necessary to develop a common ideology and content, to detail the Concept in the form of specific projects, to establish clearly the stages and mechanisms of the implementation, to determine the direction and control of information flows and waves, the thematic lines of education (general information, motivational and counterphobia), as well as many other issues. Official statistics should be understandable to citizens, not cause doubt and mistrust. The reputation of statistics should be immutable, but this is achievable only through the elimination of statistical illiteracy. Under the conditions of the declared globalization and economic modernization, citizens must not only speak modern foreign languages and have command of computer technologies, but also it is important to orientate freely in the information field, and to understand the socio-economic and political processes in the country and in the world. The authors of the famous novel “**The Twelve Chairs**” I. Ilf and E. Petrov, at the beginning of the last century noted: “statistics knows all ...”. A century later, this statement has not lost its relevance. Today it is just as important for every educated person to know about statistics.

* Full version in Russian: N. Dmitrieva, M. Balakhnev, *Question of statistical literacy of population of the Russian Federation*, *Voprosy Statistiki*, 7, 2012



2013 International Year of Statistics

What should we be doing to celebrate the International Year of Statistics?

by Ronald L Wasserstein

Up to date, there are 515 organizations from 81 countries signed on as participating organizations at the 2013 - International Year of Statistics. This includes 90 professional societies, 184 universities, 83 government agencies, 47 business, 39 secondary schools, 15 research institutes, and 57 subgroups of the ASA. If you have colleagues who would like to receive these updates directly, encourage them to go to <http://statistics2013.org> and click on the "Get the Newsletter" button. We are excited to launch an international video contest to help launch the worldwide celebration in 2013 of the positive impact of statistical science!

We invite videos of four minutes in length or less that illustrate how statistics impacts individual lives, improves society, or in general makes the world more a better place; how statistical thinking can be brought to bear on important issues of our day; interesting careers in statistics (tell the world why your job in statistics is a great job, or why it is interesting and fun to be a statistician). Cash prizes of \$250-\$1000 US will be offered for the best videos with special prizes for the best videos by a person or persons 18 years of age or less and the best non-English language videos. (Providing us with a written translation or providing English subtitles would be especially helpful.)

Entries will be judged on their statistical content and their entertainment value. All submissions must be the original design and creation of the entrants and must not infringe anyone else's copyright protections. Submissions must be posted on YouTube with a link sent to Tom Short, chair of the Statistics2013 Video Contest review committee, tshort@jcu.edu, by October 31, 2012. Winning and honorable mention videos will be posted on the International Year of Statistics website throughout 2013.

We are developing posters to be used during 2013. At <http://www.amstat.org/misc/IYSTATPoster.pdf> you will see one such poster idea. Would you please consider sending me a note with one example of an important contribution statistics has made in your part of the world? Our plan is to select examples from around the world, put them in the "bubbles" on the poster, and make them available for translation into many other languages.



Please note these bubbles are placed just to illustrate the idea of the poster, and will be moved around as needed.

Many people are asking "What should we be doing to celebrate the International Year of Statistics?" There are many activities you could undertake. Here are a few examples:

- Have a special conference, or add a component on the International Year of Statistics to your conferences already planned
- Hold special workshops or symposia on important topics in statistics for your area
- Host events that promote to young people careers in statistics
- Spread the word in your area about the positive impact of statistics (get in your local news, write blogs on the web, distribute brochures -whatever works best for you)
- Have special editions of your journals or magazines related to Statistics2013
- Use the opportunity to make new partnerships and new friends

We're sure you'll come up with many other interesting ideas. Send me a note about your planned activities, and I will share them with everyone, to help you spread the word and to help others come up with ideas. That's it for now. Thank you for your support of the International Year of Statistics.

Ron Wasserstein, Executive Director, ASA, on behalf of the International Year of Statistics Steering Committee

Richard Emsley, International Biometric Society
 Adam Jakubowski, ISI/Bernoulli Society
 Denise Lievesley, Royal Statistical Society
 David Madigan, Institute of Mathematical Statistics
 Vijay Nair, International Statistical Institute
 Sastry Pantula, American Statistical Association
 Ada van Krimpen, International Statistical Institute

Professional statistics in Colombia

by Liliana Mendoza

In Colombia, there are four universities offering undergraduate statistical programs. During 2001–2010, 498 students graduated in statistical programs. That is, an average of 52 per year. On the other hand, in the same period, 1 272 490 students have graduated from all the undergraduate programs offered in the country, i.e. 127 249 per year. These numbers imply that you have one statistician for every 2 555 professionals, which is an indicator of the importance of the support that statistics could give different professions.

In particular, the four universities that offer undergraduate statistics are as follows:

Institution:	Graduates	%
UNIVERSITY OF CORDOBA	39	8
UNIVERSITY OF VALLE	137	24
NATIONAL UNIVERSITY OF COLOMBIA	322	65
Total	498	100

Source: Labour Education Centre (Observatorio Laboral de Educación) 2012.

The Santo Tomas University in Bogota opened the program in 2009 so it has not had any graduates yet.

The oldest program is provided by the National University of Colombia, which opened in 1958. On average, the number of applicants seeking a place each semester in this university is between 110 and 180, of which between 60 and 80 students are accepted. However graduates number between 13 to 18 per semester.

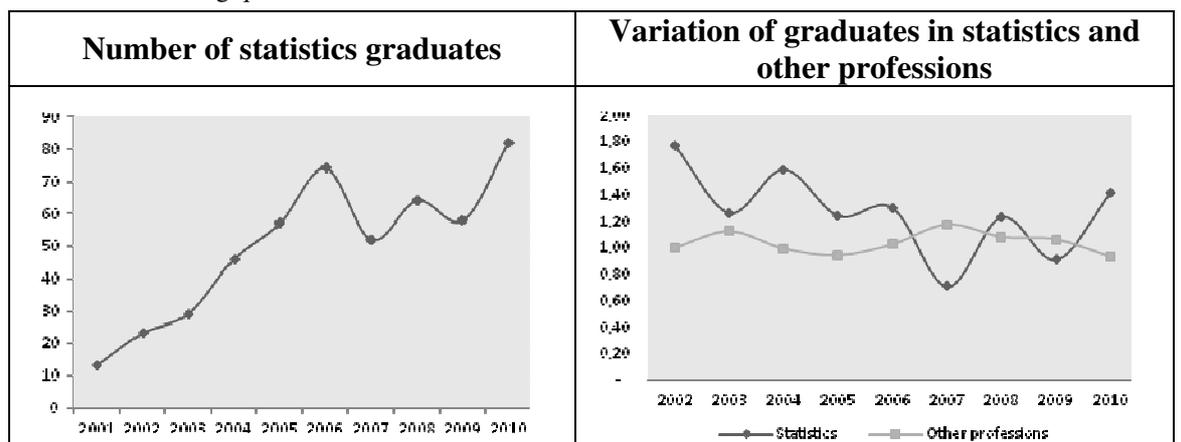
Additionally, the National University has the largest supply of study places, although it rejects between 44% and 55% of the students. Of the total admitted, after five years, only between 22-23% graduate. This means that the labor market loses about 97 and 167 potential statisticians per year. If you attended to this demand, the level of statistical support for other professions would be between 706 and 1 156 professionals for each statistician.

During 2001–2006, the curve of graduates in statistics has increased year after year. In 2007, the number of graduates began to decrease. In comparison, the number of graduates in other professions is constantly growing. The graph shows an apparent negative relationship between the number of graduates in statistics and the number of graduates in other professions.

The analyzed behavior seems to support that statistics will grow even more. However, we must take into account the following questions:

Are the professionals from other disciplines fully capable of dealing with statistical studies in research and new developments?

As support in inference and hypothesis testing is low, what is the quality of the new developments occurring in Colombia?



Promotion of statistical literacy in Burkina Faso: a fundamental need!

by YAMEOGO W. Grégoire



The promotion of statistical literacy is a world challenge. But this issue is crucial in developing countries, such as Burkina Faso, a west African country, where the literacy rate remains very low (28.7% according to the last census conducted in 2006). During the past decade, efforts have been made to enhance the capacities of the National Statistical system but more efforts need to be made in statistical literacy promotion. In the past, activities addressing this issue can be summarized as:

- The annual meeting of the “Conseil National de la Statistique”, an institution that deals with the country’s national plan for statistics. But this remains too much formal and doesn’t allow the “Burkinabè lambda” to know more about statistics.
- The Annual African Statistical day, organized jointly by the “National Institute of Statistics and demography” and the “Association of statisticians and demographers of Burkina Faso”. Apart from the formal meeting with government officials some social activities took place (football matches and reforestation campaign), and more recently a paper competition was initiated. The coverage of these activities through the press helps make the population aware about statistics.

For the next years, the country’s efforts should be oriented towards the promotion of statistical literacy at the basis, especially since primary school and taking account of people excluded from the scholar system. It is time that statisticians leave their offices to meet populations where they are. This is inevitable if we want populations to support official statistics.

Finland

Statistics Finland invests in advancing statistical literacy worldwide

Minka Rissanen

(minka.rissanen@stat.fi) worked as an intern in Statistics Finland's Information Services unit during July, August and September 2012. Her primary tasks involved organizing the International Statistical Literacy Competition 2012–2013 together with her mentors, ISLP Director Reija Helenius and Finland's ISLP Country Coordinator Minna Leinonen. The competition is run by the International Statistical Literacy Project (ISLP).

Minka has just finished her fifth year in University of Helsinki. She is studying general and adult education as her major subject in the Faculty of Behavioural Sciences and is planning to graduate with her master's degree in the spring of 2013. Her minor subjects are political science, media and communication studies, work psychology and leadership in the Aalto University School of Science and Technology.

Minka says she is excited about finally being able to utilize her education-based skills and knowledge in real work assignments. "University studies tend to be more theoretical in nature", she stated. Statistics Finland was a natural place for internship for her, because working there with the ISLP Project she could combine many of her passions:



From left to right, Minna, Kaisa and Minka

education, information and communication technology, statistics and the English language. In addition to Minka, there have already been three other interns working with the previous ISLP Projects during past years.

Minna Leinonen

(minna.leinonen@stat.fi) became an ISLP Country Coordinator this spring. Finland's other Country Coordinators are Senior Statistician Katri Soinne (Statistics Finland) and Professor Seppo Laaksonen (University of Helsinki). Organizing the National and International ISLP Competition 2012–2013 is one of Minna's tasks and she is the contact person for competition registration. She will be the secretary of the national poster competition's jury in Finland.

Minna came to Statistics Finland in August 1996. First, as a Course Secretary in a Customer Training team organizing courses on statistical topics then four years ago she changed position and is now Administrative Secretary of the Information Services unit.

She participates in promoting the ISLP Competition, for example at Statistics Finland's stand on the annually held autumnal training days for

Mathematics Teachers' Union which this year takes place in Pori on the 5th–7th October.

Kaisa Mäntysaari

(kaisa.mantysaari@stat.fi) works with the ISLP and Statistics Finland's eCourse in Statistics this summer. Some people might remember her as Pitkänen, when she worked three years ago as a trainee in Statistics Finland. She has studied mathematics, statistics and computer science and nowadays her education is a mathematics teacher. E-learning is her special interest.

Statistics Finland is developing contents and technical system of eCourse in Statistics in 2012–2013. Kaisa's job is to make a pilot with the course "How to read and use statistics". After that, courses "National accounts" and "Indices" will be renewed. At first, the courses will be only in Finnish, but they will be translated in English in the future. Statistical experts in Statistics Finland create the course contents.

If you have anything to ask about this project, please contact Kaisa until the end of August. After that, please contact Minna Leinonen.



ISLP Poster Competition 2011-2012



WHAT'S NEW IN THE ISLP?

by Minka Rissanen

Initiatives to promote statistical literacy in the near future...

New statistical literacy competition is launched soon

The next International Statistical Literacy Poster Competition is under way. The previous competition in 2010–2011 had 4 891 participants from 30 countries across the world. We hope that the number will be even bigger this year!

The objective of the competition is to improve students' ability to describe their environment with the help of statistics and to use statistics as a tool for learning about their lives on a daily basis. Like previous poster competition, teams of two to three students will design and make statistical posters focusing on their selected topic under the broader theme which this year is agriculture. The competition has two categories: 1) students born 1997 and younger (upper comprehensive school: 14-15 years old) and 2) students born in 1994 or younger (upper secondary school: 17-18 years old).

The competition is conducted in three phases. First, schools choose the best posters locally, and then national juries choose the best posters nationally. Finally, the winners of the national competitions are displayed at the international final. The international jury will then choose the winners from the national representatives. The winners will be

announced at the 59th World Statistics Congress in Hong Kong, China, which is held during 25–30 August 2013.

Registration for the competition starts at September, 3 and more information about the competition is available on the ISLP website

<http://www.stat.auckland.ac.nz/~iase/slp/competition-second>

We will inform Country Coordinators about launching the competition with a special newsletter coming out soon. For further information, please contact ISLP Project member Minka Rissanen (minka.rissanen@stat.fi) or ISLP Director Reija Helenius (reija.helenius@stat.fi).

ISLP Strategy Project 2012

The ISLP Strategy Project is in action. The objective of the Strategy Project is to extend teaching of statistical literacy to other spheres of life (citizens and the media, decision makers, universities and research institutes, national statistical offices and libraries) than just school students, which has been the target group ISLP has been focusing on. The purpose is to develop models and share good practices that can be utilized all over the world. You can find more information about the Strategy Project, including the members and target groups of different strategy groups, on the ISLP website

<http://www.stat.auckland.ac.nz/~iase/slp/islp-strategy-project>

If you are interested in the activities of a specific strategy group, please contact the chair of the group or ISLP Director Reija Helenius (reija.helenius@stat.fi).

International Year of Statistics 2013

IASE and ISLP organize various events during the International Year of Statistics 2013. Our important event is the International Statistical Poster Competition. You can find more information about the International Year of Statistics on <http://www.statistics2013.org/> and on the ISLP website

<http://www.stat.auckland.ac.nz/~iase/slp/international-year-of-statistics-2012>, including tips about activities that you and your organization or community can do to celebrate the International Year of Statistics 2013.

Best Cooperative Project Award

We are once again awarding a prize this year for the best cooperative practices. The competition starts soon. You can find more information on the ISLP website

<http://www.stat.auckland.ac.nz/~iase/slp/best-cooperative-project-award-2013>



The International Conference on Teaching Statistics (ICOTS) is held every four years in different parts of the world. This conference is organized by the IASE. The main purpose of ICOTS is to give statistics educators and professionals around the world the opportunity to exchange information, ideas and experiences, to present recent innovation and research in the field of statistics education, and to expand their range of collaborators.

The 2014 Conference will be held in the Flagstaff, Arizona, USA.

For more information visit <http://icots.net/9/>

Bulgaria

Statistical literacy greetings
from Bulgaria

by Minka Rissanen and Nadezhda
Tsvetanova Tsankova

We are glad to announce that Bulgaria has made further efforts to improve statistical literacy among students. On 18th and 19th of May 2012, the Faculty of Economics in The St. Cyril and St. Methodius University of Veliko Turnovo celebrated its 20th anniversary with a jubilee science conference. The theme of the conference was "Twenty years investing in the future".

Included in the conference was a student poster session called "Models for the development of statistical literacy", organized by Nadezhda Tsvetanova Tsankova, Assistant professor of Department of Finance and Accounting. The participants in the poster session were first year students in Bachelor's Degree in Accounting and Control, Finance, Marketing, and International Economic

Relations. The students formed 42 teams of two to three members interested in similar issues in Statistics. The prepared posters were introductory work for their class in Statistics. Fifteen of the teams qualified for participation in the conference. Of course, all the participants of the poster sessions received certificates.



Какво правят студентите по време на сесия?

Проведено е емпирично изследване за това как в средата на студентите от МНО първи курс 2012 година (общо 20 на брой), които цел е да помисли какво правят по време на учебните сесии. След обработката на отговорите от анкестите се получиха следните резултати:

Метод

Избор на данни чрез анкета, обработване на данните чрез преглед и изготвяне на отчетната статистика – обобщаване чрез сравнително изследване на структурата чрез относителни дялове. Визуализация на получената информация чрез графични статистически изображения.

Какво правят студентите по време на сесия?

Как почиват между часовете за учене?

40% от студентите си почиват от учене, докато използват телефоните си за:

Плъщане на снимки 8%

Глеждане 6%

20% Търсене на информация

8% Търсене на информация

8% Социални мрежи

Къде учат?

20% Учи

40% Стои пред компютъра

10% В кабината

17% Под на диското

Какви помощни средства за преписване на изпит ("пишкови") подготвят дори и да не ги използват?

27% 1%

25% 2%

25% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

20% 2%

Във всички

От проведеното изследване установихме, че почти половината от анкестите студенти учат в кабината, като цяло използват компютър (или телефон) за информация от Интернет. Половина от половината (50%) използва телефоните си за писане на SMS-и и за говорене извън кабината. 27% от анкестите не използват никакви помощни средства по време на изпит.

Изследване: По време на Сесията с МНО първи курс, 2012 година

IAOS Conference on Official Statistics

Getting Our Messages Across - Strategies and Best Practices to Ensure the Use of Statistics in Decision Making



Kiev, Ukraine, 12-14 September 2012.

More information at: <http://iaos2012.ukrstat.gov.ua/>

Poster made by Simona Somov and Janica Yakimova during the poster session

by Bruno de Sousa, Dulce Gomes, Regina Bispo, Elisa Duarte, Paulo Rodrigues

Radical Statistics

Radical Statistics is a project promoted by the Portuguese Statistical Society (SPE) geared towards high school students and teachers. It aims to advance statistics through various activities, emphasizing the importance of treating real data in the learning process as well as raising awareness of the importance of statistics in daily life. Several statistics-based activities for each of the different phases of the project and how they can be incorporated in a Mathematics curricular program will be presented, and some results and feedback from teachers and students will be provided in this study.

A series of curriculum reforms in Mathematics in Portugal have led to the introduction of an increasing number of subjects related to statistics into these curricula, ranging from general concepts to simple linear regression. Radical Statistics is a hands-on project directed at both high school students and teachers with its main objective being to introduce statistics via a series of activities which students can relate to, thus heightening their awareness of the importance of statistics in their daily life. Some of the activities, such as "Black Eyed Peas", have the main goal of introducing concepts like "Population versus Sample", while others are designed with real data collected and analyzed by the students. Over 60



students and teachers from different regions of Portugal participated in all three phases of Radical Statistics, namely the Online Competition, the Adventure Camp and the Teachers Training Session. The activities for Radical Statistics are meant to be complementary to each school year's curriculum and are planned in such a way that they can be easily incorporated into a class. With this project, we hope to expand, promote and reinforce the need for Statistics in Portugal and its importance in each person's daily life.

The Online Competition

From late 2011 to early May 2012, several teams of high school students from grades 10 and 11 in Portugal participated in an online competition consisting of eight levels of difficulty where students were tested on the different statistical subjects covered in mathematics. The winning teams were given a further challenge to participate in an Adventure Camp, held from 11 to 13 May 2012.

Adventure Camp

Over the course of one full weekend, students and teachers participated in various activities in which they had to solve statistical challenges. The activities comprised a variety of different sports such as slide, high ropes, and old mine, just to mention a few. Students had to solve questions in every activity to move to the

next challenge.

Teacher Training Session

The project also included a 25-hour training course for teachers entitled "Radical Statistics: a different way to teach statistics" whose main objective was to show teachers different ways to use their skills in order to improve and deepen their knowledge in statistics and present them with different strategies on how to solve statistical problems in their daily practice. The training sessions were planned using R, a free software which could then be used in their classrooms.

Final Comments

By presenting Radical Statistics as an activity for both students and teachers, we hope to attain an excellent symbiosis between theoretical concepts and how they can be applied in real life situations. This is accomplished by dealing and working with real data sets in conjunction with smaller activities that entice students to reflect upon the wide range of concepts involved.

Working with real data sets will give students a deeper awareness of how important it is to know more about the population in which they live, how studies can be made, and the impact and relevance of statistics in their every day life.

Visit <http://www.isi2013.hk/>



The 59th World Statistics Congress

Hong Kong, China

25-30 August 2013



Sweden

Children and statistical thinking

by Joakim Malmdin

What is statistical thinking? What is statistical thinking for young people? The first question may be answered by reference to variation. Variation is all around us and by using statistical thinking we can attempt to control for awkward surprises. A key for understanding statistics is to realize that statistics will not give exact results or figures, rather an explanation of the variation.

The reality is even more complex for small children – even if they are not aware of it! The concept of variation may be too abstract for a child, but not correlation (or should we call it patterns here?) explained by examples. Dark clouds – rain, fire – heat, and so on. As soon as we are able to perceive patterns, we are also capable of quantitative thinking. To see patterns is to quantify what happens in the surroundings. Children are also making use of everyday probability when saying: Dark clouds means it will rain. But sometimes it doesn't!

Statistical literacy may start with introduction of the concept of general conclusions – from the single observation to the whole, without generalizing in absurdum. Children in the ages 12-15 could do their own reports by asking questions to friends randomly drawn from a hat. In order to understand that the results will somehow reflect, or represent, the whole group, the classical example of tossing a dice is a perfect tool. How many times will six dots turn up – on average? Probably about 1/6 of the times. If 1/3 of the students plays soccer, how often will a soccer player be randomly drawn?

Another important subject when talking about statistical thinking is how we manage to understand large numbers. Or small numbers. One example is risk. If the risk for something is doubled by something, it may sound scary. But we often forgot to ask about the initial risk, which may be one in a million and the doubled risk is then twice in a million. Extreme figures, small or large, are of course hard for children to understand. The more important is it to learn to understand proportions. “Half of the...” or “a small amount of...” or “most of the...” may be a good start. So, when a child says “most of the time it will rain when there are dark clouds” means that the child has grasped essential parts of statistical thinking: conclusion from an empirical pattern quantified by a probability statement with proportions!

The new IASE president

John Harraway's profile

John Harraway was elected President of the International Association for Statistical Education and Chair of the Advisory Board for the International Statistical Literacy Project in Dublin in 2011. He is a Senior Lecturer in Statistics in the Department of Mathematics and Statistics at the University of Otago, Dunedin, New Zealand. He was Scientific Coordinator for the International Conference on Teaching Statistics 7 in Brazil in 2006 and Chair of the International Programme Committee for ICOTS 8 in Slovenia in 2010. About 10 years ago John had discussions with Carol Blumberg in the early stages of the Statistical Literacy Project at meetings at the ISI in Seoul.

John has taught first year university classes in statistics for up to 1000 students over 30 years in the areas of the biological sciences, biostatistics and business. At higher levels he has concentrated on teaching multivariate statistics and advanced regression

modeling for students specializing in statistics or for students in a wide range of applied disciplines which use statistics. He has found students enjoy statistics when they see recent successful and relevant applications of the subject. Four recent studies used in his teaching have involved collaboration with colleagues in human nutrition identifying the profile of New Zealand women who would consume alcohol when pregnant, collaboration with marine science postgraduate students modeling dolphin-human interactions and dolphin habitat selection, collaboration with chemists on trace element analysis in order to identify food origin, and collaboration with the Higher Education Development Centre at the University of Otago measuring the changing attitudes of students in different subjects to sustainability as a result of their university experience. He received a teaching excellence award in 2010 at the University of Otago.

Recently John has been involved with the teaching of Official Statistics with Professor Sharleen Forbes, Deputy Director of the ISLP and a member of staff at Statistics New Zealand. A second project has involved the introduction of new, free, menu-driven statistical software at all New Zealand Schools in conjunction with Vision International. This project has the ability to reach out to many areas of society as the software can be used freely at home with project answers submitted electronically to school for marking.

John is a supporter of the next ISLP Poster Competition with the theme of Agriculture about to be launched.. Reija Helenius, the ISLP Director, has been appointed by IASE as their representative on the ISI Year of Statistics Committee since the Poster Competition with a wide network of Country Representatives has the ability to take the methods of Statistics to most parts of the world.

The other issue John is keen to see resolved is the update and redesign of some of the pages on the ISLP website.

After no change for several years moves are being taken to appoint several page administrators using contacts in the IASE and a redesign of the IASE website itself.

