



ISLPNewsletter

in brief...

World Statistics Day is every day! [Reija Helenius]

'Better Data, Better Lives'
[Ada van Krimpen]

IASE Satellite' 2015 [Pedro Campos]

Increased worldwide emphasis on the
importance of data and data literacy
[Helen MacGillivray]

Statistically, everything is possible
[Katarzyna Łogwiniuk]

Statistics and Lamp-posts: For Support
or For Illumination? [Peter van de Ven]

Australia joins theInternational statistical
literacy project and continues to expand
in 2015 [Peter Howley]

Establishing a Diploma in Official
Statistics for Policy Evaluation [John
Dunne]

Eurostat's mission in improving
statistical literacy [Marleen Desmedt]

Cooperative Learning in Statistics: Our
Experience in Uruguay [Susana Pilon
and Roberto Volfovicz-Leon]

AtivEstat - A site to facilitate access to
statistical activities [Marcos Nascimento
Magalhães]

Importance of statistics in scientific
projects [by Pinar Cetin]

ISLP Resources pages to reopen [James
Nicholson]

Stats + Stories = statistical literacy [John
Bailer and Richard Campbell]

"Education is not the filling of a bucket,
but the lighting of a fire [Eoin MacCuirc]

Presenting 'Sweden in figures' to the
public

Poster Competition Judging Process
[Alejandra Sorto]

Apps and e-learning Resources for
training in Official Statistics [John
Harraway]

Chile participa en ISLP [By Soledad
Estrella y Guido del Pino]

Exploristica – Adventures in Statistics
[Conceição Rocha]

World Statistics Day is every day!

We celebrated the World Statistics Day on 20 October 2015. The day was special for all working with statistics and statistical science. The day is also special for the ISLP project, whose primary task is to promote statistical literacy all over the world and on all fronts.

The activity of the ISLP would not be possible without a large network of country coordinators and other cooperation partners. That is shown by the produce of this newsletter as well. The ISLP wishes to thank warmly all its cooperation partners.

At the ISI2015 World Statistics Congress, evidence of our work and the positive impact of our activities was clear. A record number of young people took part in the Statistical Literacy Competition for young people - a total of 8,026 schoolchildren from 22 countries. The applications for the ISLP Best Cooperative Project in their part bear witness to the amazing development work in different countries to promote statistical literacy.

Statistics are part of life every day – whether wanted or not.



The media are flooded with statistics and statistics are used in different contexts from everyday events to difficult decision-making situations. Here the task of the ISLP network is to support the use of up-to-date, high-quality and understandable data in various ways.

Let statistical literacy be our mission. Let us promote it together!



Reija Helenius
ISLP Director

Message from the ISI President



I have recently taken over from Prof. Vijay Nair as ISI President, and this is my first chance to write to you in this capacity. I am both honoured and happy to do so.

As you know, the Mission of the ISI is “to promote the understanding, development and good practice of statistics worldwide”. I see the role of the ISLP as crucially important in promoting the understanding of Statistics, and therefore, to the fulfilment of the ISI’s Mission. Therefore you can count on my enthusiastic support for the ISLP and its initiatives. As you may have seen or heard on the news, on September 27th 2015, 193 world leaders meeting in New York for the United Nations General Assembly committed to 17 Global Goals to achieve 3 extraordinary things in the next 15 years: end extreme poverty; fight inequality & injustice, and fix climate change.

In the wake of this extraordinary event, let me share with you news of an exciting development affecting our fie Partnership for Sustainable Development Data (GPSDD) was launched in New York on September 28th. Quoting from the partnerships website (<http://www.data4sdgs.org/>): “The Global Partnership on Sustainable Development: Data works together to achieve these goals in our first year:

- Improve the Effective Use of Data;
- Fill Key Data Gaps;
- Expand Data Literacy and Capacity;
- Increase Openness and leverage of Existing Data;
- Mobilize Political Will and Resources.”

As you can see, one of their goals refers to expanding data literacy, something which the ISLP has been working on for a long time.

The ISI has joined this partnership as one of its champions, and we are excited about the opportunities that are emerging for us to work together with many others in pursuing the goals enumerated. By working together with others in the partnership, we hope to be able to do more and faster in advancing our mission.

If you have ideas and suggestions for projects or initiatives that might fit in with our engagement in this partnership, do get in touch. I and the ISI leadership will be delighted to hear from you.

Keep up the good work, and help achieve the ambitious goals set by the world’s leaders.

Pedro Silva



‘Better Data, Better Lives’

Ada van Krimpen, ISI Director

The second World Statistics Day (WSD) was celebrated on 20 October 2015. The theme of the WSD 2015 was ‘Better Data, Better Lives’.

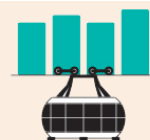
On this day, the global statistical community has showcased its achievements and on-going work that is helping to better the lives of people around the world. It was an excellent opportunity to display national and regional activities to the users and wider public.

This year’s WSD was the second one in its history; from now on it will be celebrated every 5 years. The WSD activities went beyond official statistics. Statistical societies, academic and research institutions, businesses and schools are all involved in planning activities. Campaigns are taking up shape in many countries throughout the world. Examples of activities and creative ideas such as the mugs from Japan, balloons from Russia and competitions like the Best Data Visualization Competition are already available online (worldstatisticsday.org). All organizations and societies are encouraged to publish their events on this website.

Last, but not least, the Royal Statistical Society (RSS), American Statistical Association (ASA) and the International Statistical Institute (ISI) have issued a statement about the importance of statistics in the international development process. The statement is launched with the new Sustainable Development Goals and will be posted soon on the websites of the WSD and the three societies.

IASE Satellite’ 2015

By Pedro Campos* and Bruno Simões**



IASE 2015



The IASE 2015 Satellite Conference was held in Rio de Janeiro between 22 and 24 July. The Satellite brought together a group of experts, scholars, practitioners, and researchers, representing as many different countries as possible, to discuss views and approaches related to the Conference theme: Advances in statistics education - developments, experiences, and assessments. Four topics are the focus of the conference : (1) **Motivating teachers and students**; (2) **Big data, official statistics and statistics education**; (3) **Advancing Statistical education using technology and mobile devices**, (4) and **Statistics education in the age of social networking and distance education**.

Proceedings are available at: http://iase-web.org/Conference_Proceedings.php?p=Advances_in_Stats_Education_2015

*IPC chair and **Local chair

Increased worldwide emphasis on the importance of data and data literacy

Helen MacGillivray*



On 27th September, during the 70th session of the United Nations General Assembly, 193 world leaders committed to 17 Global Goals to achieve 3 extraordinary things in the next 15 years. End extreme poverty. Fight inequality & injustice. Fix climate change. This ambitious plan for world development from 2016-2030 is known as the Sustainable Development Goals (SDG) <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>. You may have seen advertisements intended to raise awareness of the SDG's whose 17 goals have 169 targets and more than 300 indicators to monitor progress.

During preparation of the Sustainable Development Goals and their launch, it became very clear that working towards such goals cannot happen without reliable and full data, and that major gaps in data have inhibited past progress. Just one example given by the US Deputy Secretary of State for Management and Resources (see http://www.huffingtonpost.com/heather-higginbottom/unlocking-progress-with-data_b_8180780.html?ir=Australia) is that 1 in 3 children under the age of 5 have not had their birth registered.

Arising from a report by a high-level panel set up by the UN Secretary-General, the Global Partnership for sustainable Development data (GPSDD) was set up in July 2015 and launched at the UN General Assembly on 28th September. The GPSDD brings together governments and public sector organisations, international agencies, non-government organisations, the private sector and many more, to openly share data, to identify and fill data gaps, to make data more useful and accessible, and to support capacity building and learning by data users and producers.

The GPSDD membership consists of Anchor Partners and Champions. The International Statistical Institute is proud to be one of the first GPSDD Champions. You can see more about GPSDD, its members and their commitments, at <http://www.data4sdgs.org/>.

At a GPSDD members' meeting in early September to prepare for the UN launch and plan strategies, the chair expressed the following vision for GPSDD:

- A world in which timely, accurate, and high quality data (official statistics, big data, open data, citizen-generated data, and more) is harnessed to significantly contribute to achieving and measuring sustainable development - leaving no one behind...

- A world in which statistics and data are rigorously produced, organized, shared, and used in an environment of trust, inclusiveness, creativity, and efficacy...

- A world in which "the right data is available to right people at the right time for the right outcomes".

The meeting discussed priorities, plans and actions under the topics of: improve data use, fill data gaps, expand data literacy and capacity, increase openness and leveraging of existing data, mobilize resources.

A joint statement on statistics for sustainable development, with signatories the ISI, RSS and ASA, was also released on World Statistics Day (<https://worldstatisticsday.org/>) whose motto is

Better Data, Better Lives.

The Sustainable Development Goals will hold particular appeal to the aspirations and interest – both idealistic and practical – of young people, and the emphasis on the importance of high quality, full data and its understanding will provide opportunities for engagement, discussion and activities at all levels of education. Anyone who has worked with students allowed and encouraged to decide what to investigate and to select or access their own data, knows how much students are engaged and motivated to learn by ownership of both topics and data. Students also tend to choose topics familiar to them through everyday experiences or of social or life interest – *their lives*. The ISLP poster competition has demonstrated the variety of interesting topics which appeal to students under a general socially-relevant title.

Students also tend to want to investigate and access/collect data about complex situations and many variables – which will be in abundance in the work of the GPSDD and the data needed to tackle the SDG challenges, meet targets and monitor progress. The world-wide publicity on the SDG's and the key roles for data, the work of the GPSDD and the increase in open data and access to data, can assist in the teaching of, and resources for, statistical thinking, with particular emphasis on the following:

- Investigation, exploration and visualisation of data, avoiding the traps of single questions and simplistic 'answers';
- Rich, complex and many-variable real datasets, using extracts for simpler/smaller examples, avoiding the traps of 'toy' datasets and simplistic restrictions to one- or two-variable situations;
- Asking, researching and discussing how data were collected, avoiding the traps of simplistic textbook examples which imply that the practicalities of random sampling occur by mere application of theory.

Hans Rosling's Gapminder has also long provided examples of the above, including excellent discussion on how the data are/were collected and the difficulties in obtaining such socially-relevant data – see

<http://www.gapminder.org/data/documentation/>. Advocates of preparation of students for 'big data' also emphasize points such as the above. None of the above is a new point, and all can be applied appropriately to curricula across all levels of education but their penetration into teaching seems to have been limited by fear and addiction to 'old ways', with too much emphasis on new ways to teach old content, rather than reflection and examination of the content itself.

Another excellent aspect of the SDG's and the GPSDD is the potential for discussion with learners of the vital roles of the work of national statistical offices and the practical and ethical challenges of producing the "right data for the right people at the right time for the right outcomes". Recent political difficulties for high-level official statisticians in countries such as Argentina and Greece demonstrate just how important high quality and full data are for all countries and progress towards sustainable development for all. Discussion of the SDG's and the GPSDD vision and purpose is indeed fitting in learning statistical thinking for Better Data, Better Lives.

* President-elect, International Statistical Institute

Statistically, everything is possible

Katarzyna Łogwiniuk *

The Polish second eliminations for The International Statistical Literacy Project were organized in Białystok in the 2014/2015 school year. It was a great success.

A stunning performance was produced by Adam Bajguz and Mateusz Markiewicz. Both of them attend III K. Baczyński Secondary School in Białystok. They prepared a poster titled "Changes in the activity of influenza virus in the Podlaskie Voivodeship in Poland in the years 2009 and 2013". The poster was awarded third place in the worldwide category for secondary schools. The certificate confirming the achievement was brought to Poland by Professor Janusz Witkowski (CEO of Central Statistical Office in Warsaw) from the 60th World Statistics Congress – International Statistics Institute 2015.

The aim of the contest is to develop students' abilities to describe their surrounding environment with the help of statistics and to use statistics as a tool to learn about everyday life. These aims are consistent with the compulsory Polish syllabus for all types of schools as some elements of descriptive statistics are used in secondary schools syllabii for geography, history, information technology, mathematics and civics.

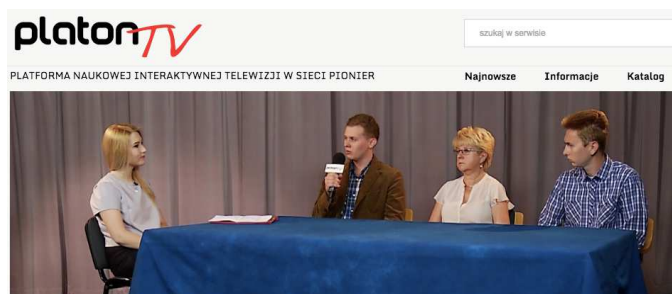
268 students enrolled on the 2nd elimination of the contest of which 65 attend middle school and 203 are from secondary school. Their task was to conduct research on any chosen subject and then to present their findings on a poster.

The jury chaired by professor Ewa Roszkowska, from the University of Białystok, awarded the winners and announced the honoured students. In 1st place (Middle School) - Julia Filianowicz, Michał Gruszeński, Wiktor Krukowski for their poster "The distribution of acid rain in the Podlaskie Voivodeship". 1st place (Secondary School) - Adam Bajguz, Mateusz Markiewicz for their poster "Changes In the activity of influenza virus in the Podlaskie Vivodeship in Poland in the years 2009 and 2013". The jury of this year's contest commended both the high quality of the statistics contained in the posters but also students ability to clearly present their findings.

This years winners came to Białystok in order to present their analyses at a glamorous gala at Faculty of Economics and Management at University of Białystok on 19 June 2015. 81 people were present at the event. A lot of distinguished guests attended: Robert Jozwik – Vice President of Białystok; Professor Marian Szamatowicz - Chair of Podlaskie Regional Assembly; Professor Grazyna Laska - Professor at Białystok University of Technology and Vice Chancellor for Student and Didactic Affairs; Wojciech Janowicz - CEO of Education Department in Białystok; MSc Ewa Kamińska – Gawryluk - CEO of The Statistic Bureau in Białystok. The gala was led by Marta Kowalczyk – Walendziak.



Thanks to the kindness of Scientific Interactive TV HD Platon TV one can watch short interviews with all the laureates of the contest (<http://goo.gl/vKWIA1>). The interviews were conducted by Weronika Matwiejczuk a member of Białystok Youth Town Council.



The Polish laureates of the contest were awarded, during the glamorous gala. They were given admission free entrance to some Polish universities: The University of Białystok, The Technical University of Białystok and The Medical University of Białystok.

Some participants got an invitation for a study visit to Brussels from 27 June to 1 July, 2015. The invitation came from a deputy to the European Parliament Professor Barbara Kudrycka. The Marshal Office of the Podlaskie Voivodeship also awarded participants with Kindle 7 Touch e-book readers.

Before the study visit to Brussels, two laureates Adam Bajguz and Mateusz Markiewicz, presented their work at the 10th Białystok International Medical Congress for Young Scientists organised by the Medical University of Białystok allowing them share their conclusions with other young scientists from all around the world. It was a great honour and privilege for them.

The organizers congratulate the winners and their teachers. They also want to say thank you to the rest of the participants and their teachers for their hard work and effort. They encourage more students to take part in next edition of this international competition.

All information connected with Polish edition of the contest can be found on www.islp.edu.pl and www.facebook.com/feinMKS

* Country Coordinator of Poland (Anna Brzęś – Translation)

Statistics and Lamp-posts: For Support or For Illumination?

Peter van de Ven*

An unsophisticated forecaster uses statistics as a drunken man uses lamp-posts - for support rather than for illumination (Andrew Lang)

Introduction

For communication purposes, politicians and policy makers often prefer simple and unambiguous messages. Statistical indicators seem to be able to provide such clarity. A government deficit of more than 3% of GDP is “bad”, a government deficit less than 3% is “good”. Government debt of more than 60% of GDP: bad! Less than 60%: good! The economic reality, however, is often more ambiguous and less clear cut than what can be derived from such headline indicators. Even worse, in some cases, a too strong focus on specific indicators may actually harm appropriate evidence based policy.

In addition, in these and other areas, one can also observe a certain lack of understanding regarding commonly applied statistical concepts. Even the most frequently used indicators like economic growth or Gross Domestic Product (GDP) often prove to be rather abstract notions for many users, also in the case of “more experienced” ones, often leading to an inappropriate use and interpretation of headline indicators.

So, the question is what can be done in terms of communicating statistics? What can be done to improve the statistical literacy of politicians and policy makers/advisors? What are the possibilities to enhance the appropriate use of the wealth of information that is provided by the statistical world? What, more generally speaking, can be done so that statistics are used for illumination instead of for support?

Government debt and deficit as an example

The use of certain macro-economic indicators, like government deficit and debt, for rather specific purposes of monitoring, is a prime example of a more general tendency to use national accounts data for so-called “administrative purposes”. Another example of administrative use concerns Gross National Income (GNI) to determine a country’s contribution to the budget of international organisations. This type of use of statistical data has become more and more widespread, most prominently within the European Union, and tends to put special (political) attention and a very one sided focus on certain indicators that can be derived from macro-economic statistics, with clear advantages and disadvantages as a consequence.

On the one hand, the special focus on

certain macro-economic aggregates has clearly resulted in an improvement of the relevant indicators in terms of their reliability and their international comparability. Because of the public attention and the increasing auditing of the underlying statistics, statisticians have moved resources into the compilation of these indicators. The administrative use has also brought to the fore the importance of having adequate statistics for evidence based policy making.

On the other hand, however, there are also potentially negative consequences. Looking at the focus on the two headline indicators on government finance, while it may provide a single and clear message on the status of public finances within the EU to the politicians and the public at large, it has also created great incentives for governments to implement policies that lead to “good” figures on deficit and debt, instead of pursuing policies that would actually reflect a superior economic rationale. Without going into the specific details of the relevant issue, because of the negative impact some pension reforms had on government deficit, countries like Poland and Hungary, for example, decided to stop or even reverse pension reforms, in response to growing pressures on their deficit and debt after the economic and financial crisis. Another example of these side effects of focusing on single headline indicators relates to the use of government deficit, instead of savings. As expenditures on public infrastructure have a negative impact on government deficit, the limitations posed by the Excessive Deficit Procedure (EDP) have created their own counterforce to a more accommodating and less pro-cyclical government policy regarding investments, not to mention the more structural positive effects such investments could have brought to economic growth and productivity in the private sector on the longer term.

Furthermore, the one sided focus on headline indicators has also led to a clear tendency to continuously look for “grey areas” to manipulate the relevant indicators, in order to stay within the stipulated deficit and debt limits. Examples relate to the emergence of public-private partnerships, and the questionable decisions on the recording of public defeasance structures after the crisis. This kind of moral hazard has substantially increased in popularity since the start of the financial crisis during which significant pressures on government finance emerged, amongst others by the direct and indirect effects of the economic downturn and the bailouts of banks.

It should be noted however that it’s not only the users that should be blamed. The very

same focus can also be observed among the producers of the relevant statistics. The “administrative use” of national accounts data has clearly given impetus to what I often describe as being “exactly wrong instead of being approximately right”. One becomes more inclined to be against the application of a certain concept that, from an economic point of view, is to be preferred, simply because it may create additional problems related to the precise measurement of the relevant concept or definition. A recent relatively straightforward example relates to the discussion on the definition of gross debt for EDP purposes, more specifically to whether or not to include “other accounts payable” into the debt definition, whose inclusion from a conceptual point of view would clearly be preferable. Yet, statisticians from quite a number of countries expressed their doubts, mainly because of problems related to the compilation of high quality, internationally comparable measures for this item. However, even in the case of lower quality estimates, one could argue that the inclusion would lead to a more comprehensive measure of the indebtedness of a country’s government, to an improved comparability of debt over time, and to an improved international comparability of country data. Related to this is the more general concern of political interference, implicit or explicit, into the process of defining and interpreting international standards for the compilation of national accounts.

Taking it one step further

The above can also be seen as a magnification of the discomfort between producers and users of statistics, in this case macro-economic statistics such as national accounts. Perhaps, the single most important message coming from the above analysis is that an almost exclusive focus on headline indicators may indeed provide a single and clear message for communication purposes, but that it also provides a too narrow view on economic phenomena, and even gives rise to less adequate policy decisions. Users need to have a good understanding of the context in which these indicators are presented to properly use and interpret the data. Often this understanding is missing, or – even worse – in some cases relevant users have conflicting interests and gain from not having them interpreted correctly.

This brings me to a more general issue that is at stake here: the increased lack of statistical literacy amongst users on how to interpret and use the richness of data, and also the growing problems statisticians are faced with to properly communicate the main messages that can be derived from this wealth of information. This more general issue does not only relate to the correct interpretation of certain headline

indicators. One can also notice a more general lack of knowledge of statistical, or better to say economic, concepts and frameworks.

Recently graduated masters in economics, but often also more experienced economists, often only have a quite abstract understanding of main aggregates such as GDP. What is (not) included and why it is (not) included leads to many misunderstandings. An example concerns the countless number of times one observes statements that hidden activities are not included in GDP. (To avoid misunderstandings, these activities are included!). Even the main macro-economic handbooks for university students, which often only include a very limited number of pages on the macro-economic accounting frameworks, manage to contain a variety of mistakes. We seem to create masters in econometrics who have a less than basic understanding of economic concepts, their measurement, and their pros and cons in using them. Yet, these very same statistics are often the primary subject of their study and research.

It gets even more problematic when one goes a couple of steps further down the road, for example the accounting relation between GDP and household disposable income, or the volume and price split in measuring economic activities. How are economic developments adjusted for price changes, what are some of the caveats, how have the relevant measurement tools advanced? An example relates to the widespread misinterpretation of ratios as a percentage of GDP, such as the investment ratio or the share of services in GDP. Often statements are based on developments in current prices, whereas additional analysis of volume and price differentials in the nominator and the denominator would have given additional insights and on various occasions also different conclusions.

To give one more example, more related to the use of indicators in the public domain. National accountants get very nervous when their estimates for quarter-on-quarter economic growth come very close and just under zero. Two quarters of -0.1% immediately lead to headlines that the economy has gone into a recession. When after compiling and adding an additional quarter, one of the prior quarter's "-0.1%" turns into 0.0%, simply because of a rerun of the seasonal adjustment programme, which has nothing to do with revisions of the underlying not seasonally adjusted data for the relevant quarters, the statisticians are often falsely being accused of smoothing away the recession, whether or not for political reasons.

What can be done to address the situation?

The above may be perceived as the complaints of a grumpy old man. I am happy to accept that, although I think that I am generally considered as a happy and

optimistic guy. However, if you think that there may be some truth in the above mentioned issues, you have to agree that it's important to address these issues. So, what can be done?

To start with the example of government debt and deficit, one has to recognise the limitations of the present headline indicators, other indicators actually being more appropriate for the goals that are generally pursued. This calls for a much clearer communication, by the producers of the relevant statistics, about the limitations of the present indicators, and for a more active publication and communication of complementary indicators. Here, for example, net saving may provide additional insights to the numbers on government deficit. The same is true for data on net debt (or net worth) and broader measures of government debt, e.g. including pension liabilities, than the one currently used in the Excessive Deficit Procedure. Monitoring contingent liabilities is another case in point. Altogether, a more nuanced and complete picture can thus be shown on government finance and its sustainability.

In addition, compilers should provide additional written context, which also may include judgements on the relevance and validity of certain indicators to explain economic developments. Here, I sometimes get the feeling that statisticians are somewhat reluctant to communicate this context, the reluctance often being reinforced by researchers and policy analysts who consider statisticians as poorly informed "number crunchers" who should stay away from this line of work. In my opinion, this is totally unwarranted. Statisticians can bring value added to the analysis, if only because of their more in-depth knowledge of the underlying data. Statisticians should be more proud of their work and more confident and extravert in communicating their knowledge.

In communicating to the general public, we could further develop the art of concise and yet well balanced communication. A lot of progress has been made in this area, including more and better visualisations. But more still remains to be done. Here, I would also like to emphasise the importance of explaining inconsistencies between various statistics produced and disseminated on a certain phenomenon. Take the example of disposable income, for which data from micro surveys may differ substantially from those from national accounts, not only when it concerns level estimates but also when it comes to income developments over time. Explaining the underlying reasons for such differences in a clear and understandable way may not be the easiest thing to do, but all the more important, also for the trustworthiness of statistics. I quote Diane Coyle, the author of the excellent book "GDP: A Brief But Affectionate History", whose main message in a keynote speech at the IARIW-OECD Conference on the future of national accounts (Paris, 15-16 April 2015) was: "communicate, communicate,

communicate".

As I see it, statisticians could also put more efforts in to enhancing statistical literacy, by providing more accessible documentation on statistical frameworks. In my view, and not only because I am working at the OECD, the recently updated publication "Understanding National Accounts" is an excellent example of how one can provide enhanced learning opportunities. Because of its success, we have now planned a similar publication with more emphasis on financial accounts. In this respect, statisticians could further promote the inclusion of certain statistical frameworks in the curricula of university programs for economics and econometrics, to stay close to my own turf. Although much more focused to a specific group of students, one can only support initiatives such as the one of Eurostat to create master-programs on statistics.

Having addressed some of the things that compilers of statistics could do, a certain willingness of researchers and policy analysts is also needed to better understand the statistical concepts and notions and to take some time to study the relevant available information. I sometimes make the joke that reading the European System of Accounts (ESA) 2010, the European equivalent of the 2008 System of National Accounts (SNA), the international standards for compiling national accounts, is the best possible medicine for people having problems with sleeping. On the other hand however, the ESA is a very good reference for concise and precise information on the definitions of the various macro-economic concepts. If one also wants to arrive at a better understanding of the systematic framework of national accounts, including background information on the choices made, the 2008 SNA itself provides an excellent point of departure. For those who prefer more digestible information, I would recommend the above mentioned publication "Understanding National Accounts".

To conclude, quite a number of initiatives have been implemented and steps are being taken to further improve the statistical literacy of the various users of statistics and to enhance the correct use of the wealth of information that is provided by the statistical world. But it's clear that more needs to be done. Time will learn whether or not all of this will prove to be successful. In this respect, one also has to realise that there probably will always be drunken men who are only looking for support of their theory, not necessarily wanting to be illuminated by the wealth of statistical information.

**OECD, Paris, France, Head of National Accounts, Peter.VANDEVEN@oecd.org*

Australia joins the International statistical literacy project and continues to expand in 2015

Peter Howley*

Australia

With support from the Statistical Society of Australia Inc (SSAI) and The University of Newcastle, Australia, a pilot of the ISLP's poster competition commenced in Australia in July 2014. The pilot was conducted in the Hunter Region, New South Wales, with a view to expanding nationally in 2015 and beyond.

We set out to inspire projects from all fields (not only Mathematics and the Sciences) with the goal of helping students appreciate how Statistics and Statistical Thinking are not just important but ubiquitous. Similarly, since we as statisticians value the need for applications of Statistics, the competition was conducted in the spirit of disciplinary cooperation, highlighting that disciplines do not work in isolation from one another, but rather rely upon one another. Building cross-disciplinary knowledge, interactions and teamwork is critical.

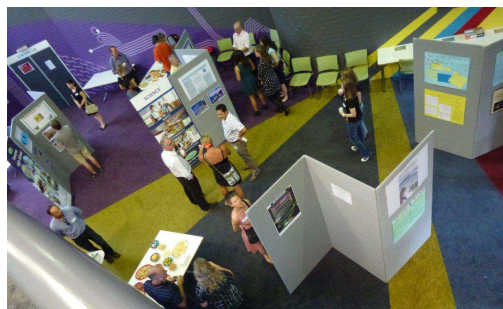
We set several aims for the national initiative (see <http://www.ssaipostercomp.info/>) to support the cross-fertilisation of knowledge and ideas, and to support and develop many 'boundary encounters'. We sought to: support teachers who may not otherwise know how to develop projects; develop strong community-school-university-professional body links; and enable trainee teachers and other undergraduates to develop their experience in leadership and school participation.

The Australian model also offered school teachers the chance to have mentors/assistants attend schools and help facilitate projects – that is, we took a mentored approach – to talk about real-world examples of projects and how the students would be undertaking similar projects (based on a subject matter of interest to them) on a smaller scale. The mentors included university under- or post-graduates (Mathematics, Statistics, Science, Psychology, Business); pre-service (undergraduate trainee) secondary school Mathematics and Science teachers; retired school teachers; local professional society members; academics; and statisticians.

Mentors attended a school for three one-hour visits across a 10-14 week period. The first visit was aimed at inciting interest and describing real examples of investigations and the competition generally, with students then encouraged to identify topics they wished to investigate, before facilitating team creation and the development of aims, hypotheses and consideration of what data may be required. The second visit enabled students to further develop their ideas, with mentors asking what questions students wished to answer in their investigations, how they intended to obtain data and what they needed to consider for their poster creation. The third visit assisted with final development of the poster, or further development of second visit issues as needed. Mentors wouldn't simply provide answers to students, nor direct projects, but instead would ask questions that allowed teams to reflect and develop their own thoughts on what was required or possible to address as part of their investigation.

To further develop community-school-university-professional body links, we hosted a poster

display and awards evening at The University of Newcastle on 5 December 2014. A short audio-visual presentation was also provided to those in attendance describing the field and role of Statistics, as well as the types of activities statisticians are involved with every day. Videos of practitioners describing their work in the field and examples of where Statistics is used were provided. A clear connection was made between the activity of a statistician and the types of projects students undertook in this competition.



Figures 1 and 2: Poster Display at the University of Newcastle



Figure 3: National winners of the Senior Division

As with any event, there were some hurdles with five schools having to withdraw due to unforeseen circumstances; however, there was great interest in the competition with 85 students completing projects and 32 posters submitted and teachers considering how they may embed the competition into the school curriculum in the future. We were heartened by the response to this pilot, particularly considering the relatively short notice schools were provided. Schools were informed from early August and had to submit by late November 2014, so the interest in the competition was phenomenal.

Remarkably, the winner of Australia's 2014 Junior Division, Lisarow High School, won the International Junior Division announced at the World Statistics Congress in Brazil, July 2015, http://iase-web.org/islp/Poster_Competition_2014-2015.php?p=Prizewinners

A school ceremony was held at Lisarow High school on 7 August 2015 where Dr Peter Howley from The University of Newcastle, Australia, attended to present the winning students with their ISLP winning certificates and novelty-sized cheque.



Figure 5: Dr Peter Howley awarding cheque and certificates to Lisarow High School students Tyler Hayter, Taylor Cheetham and Brooke Khoury - winners of both the Australian Competition's and ISLP's Junior Division

Additional publicity surrounded this wonderful achievement, with local newspaper, television and radio stations interviewing the students. The SSAI's Facebook posts usually get about 100 hits; however the article about this achievement got over 800 hits (even though the SSAI has only 574 Facebook friends)!

The initial success of the poster project pilot has spawned further interest in the competition – for example, the CSIRO's Scientists- and Mathematicians-In-Schools Coordinator has offered their program's involvement in the competition providing personnel to act as project facilitators within schools where possible. We also are being promoted through State and National Mathematical Associations. Further, following the successful pilot, the 2015 competition has expanded nationally and attracted sponsorship from SAS and Teachers' Mutual Bank. We presently have over 400 students engaging in over 150 projects from secondary schools across Australia. Considering the competition began in its current form about this time last year we are delighted with such a positive start and incredible growth.

The 2014 pilot helped establish processes and materials that we would like to see utilised elsewhere as we expand the competition. We are aiming to establish multiple 'coordinator sites' around Australia, each replicating the initial Hunter Region experience, including a Poster Display and Awards Night.

In 2016 we will be expanding the competition to include Primary schools. School teachers have greatly appreciated this activity and the associated support that we have provided. They especially welcomed the interaction with practitioners who bring real-world application and insight to the content they teach their students. Integral to our project being so positively received by teachers is that we deliberately sought to integrate existing national curriculum elements into our mentored development of the poster competition – in this way, the competition was seen as consistent with the broader education landscape in which teachers operate. We have begun to collate comments from teachers for our website, see <http://www.ssaipostercomp.info/saying.html>, leading to us being both excited and very optimistic about the future iterations of the Australian competition.

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Establishing a Diploma in Official Statistics for Policy Evaluation

John Dunne*

As I sit here writing this short article, we at CSO Ireland are preparing to run the Diploma in Official Statistics for Policy Evaluation for the fourth consecutive academic year. It is run in cooperation with our academic partners - the Institute of Public Administration (IPA). This year we have over 50 students enrolled and at the end of this academic year over 150 students will have undertaken the course in the last 4 years. It wasn't all plain sailing and a number of challenges had to be overcome to get the course established.

However, first a little about the diploma itself. The course is targeted at those involved in formulating and evaluating policy and programme development in the public sector. The course is not designed as a quantitative methods or technical statistics course but rather to teach an appreciation of statistics and how they can be used to find and present key messages. The aim of the diploma is to encourage sound evidence informed policy making and robust evaluation of existing policy. The idea is that the course will take the fear and mystery out of official statistics. Consequently public sector employees comprise the bulk of the students taking this course, however, a number of PhD students also participate to earn credits towards their qualification. The course is broken into four main areas:

- Macro Economic Statistics,
- Business Economic Statistics,
- People, Demography and Labour Force Statistics
- The Framework of Official Statistics.

The first three areas aim to provide students with a broad overview of the statistical outputs available in the Irish Statistical System, how they are compiled and how they can be used for policy purposes. The last area is cross cutting in nature and covers principles of policy evaluation, how to access information, statistical infrastructure and data management, legal and institutional frameworks and codes of practice with respect to Official Statistics. The broad nature of this module provides value to the students in their day to day work while also giving them an appreciation of the capabilities and shortcomings in the Irish Statistical System and how those shortcomings could be addressed in the future.

The course is run over the academic year and comprises of distance learning supported by eight full seminar days. The seminar days are a mix of lectures and hands on data laboratories. Project work submitted throughout the year accounts for 30% of the final mark. Readers can find out more about the course at <http://www.ipa.ie/index.php?lang=en&p=edu&id=363>.

Today the course is considered a success and the challenges it faces are those that come with success. How far should or can CSO go with further developing training/education in Official Statistics? Should there be an accompanying text book? Should CSO and IPA supplement the diploma with a more advanced course for those who wish to progress their studies further? When the diploma was first launched, the challenges were of a different nature. In certain quarters, Irish Public Sector workers had been criticised for having insufficient statistical skills and statistical knowledge to do their job. Accompanying this deficit in skills was a lack of educational opportunities in the academic sphere with respect to Official Statistics. Overcoming the first hurdle involved recognising the problem and deciding it was an appropriate problem for CSO to address. Steve Mac Feely (the then Director of Business Statistics & Methodology) and Chris Sibley took on this challenge and championed the diploma from the very outset. They convinced senior management that CSO should step into the education space. This, in my opinion, was the first critical success factor in getting the diploma up and running.

I joined with the project at an early stage and was responsible for developing and coordinating "The Framework of Official Statistics" module. Everybody who joined the team believed in what needed to be done and gave of their time and effort in addition to their day job. This belief was the second critical factor in getting the diploma up and running. In a nutshell, CSO had no experience of delivering academic courses (let alone designing one) and very little resources to dedicate to establishing and managing such a course. However, we quickly identified an academic

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partner in the Institute of Public Administration (www.ipa.ie) to work with in bringing about the course. The IPA is based in Dublin and is part of the University structure in Ireland. The IPA focusses on developing the capabilities of the Public Sector through research and education. The IPA also believed in the need for such a course and worked with the CSO team in shaping the product into the Diploma as it is today. This was the third critical success factor in getting the diploma up and running.

Elements of the diploma include material being presented by Official statisticians, mix of practical and theoretical teaching methods to keep the diploma interesting, project work (often set in the context of students' employer) to ensure the material is relevant, marketing of the diploma to all (including those already with advanced degrees), end of year exams to keep students motivated and finally a high profile graduation ceremony to acknowledge the hard work done by students during the year. All of these elements packaged together have proved to be a winning formula for the Diploma in the first few years. In particular, the fact that the course is taught by Official Statisticians rather than full time lecturers has proved to be of significant value to the students. They get to ask questions directly of the compilers of statistics giving them insights into how to use the data that otherwise would not be possible. The statisticians involved in teaching the course also thoroughly enjoy the experience while also getting insights from motivated users they would not otherwise be exposed to.

In the first year, the team had to put significant effort in going out and marketing the Diploma across the public sector. Every contact was exploited to ensure that employers encouraged staff to enrol on the course. Subsequent years did not require the same effort and numbers looking to enrol are increasing year on year.

The Diploma in Official Statistics for Policy Evaluation now plays a key role in the CSOs statistical literacy program. Other initiatives in this program include a CensusAtSchools program, an Apps4Gaps competition (to build a statistical application) and the John Hooper Medal poster competition. The winners of this years John Hooper Medal poster competition went on to do very well in the World ISLP poster competition finishing first and third in their respective categories. The Irish Statistical System will, at the end of this academic year, have a cadre of over 150 people across the Public Sector that have a strong appreciation of the role of Official Statistics in informing policy. The graduates are also strong advocates for the further development of the Irish Statistical System.

In summary, the ingredients for setting up a successful Diploma include

- Having a champion or two in senior management that were capable of convincing CSO that education was an appropriate activity for a National Statistics Office
- Being able to put together a small dedicated team that were willing to give of their time above and beyond their day job.
- Identifying and collaborating with a suitable and motivated academic partner
- Having the right recipe for the diploma to make it attractive
- Ensuring the first year of the Diploma had significant uptake among the public service to get the project off the ground
- Ensuring Official Statisticians have a significant role in designing and delivering material
- A high profile graduation ceremony to ensure the hard work undertaken by students is recognised.

So in conclusion, I hope our experiences in Ireland maybe of use to other countries that are considering similar initiatives.



Recent conferring ceremony attended by head of the Irish Civil Service, Robert Watt (middle)

Eurostat's mission in improving statistical literacy

Marleen Desmedt



1. Introduction

According to European Parliament (EP) and Council Regulation 223/2009 "...European statistics are relevant statistics necessary for the performance of the activities of the Community. European statistics are determined in the European statistical programme...". The Regulation sets out inter alia the statistical governance through the European Statistical System Committee (ESSC), the rules for development, production and dissemination of data and on professional independence.

Complementary legislation specifies the role of Eurostat. It states that "...Eurostat shall ensure that European statistics are made accessible to all users in accordance with statistical principles, in particular the principles of professional independence, impartiality and statistical confidentiality. In this respect, Eurostat shall provide the technical explanations and the support necessary for the use of European statistics and may use appropriate communication channels for the purpose of statistical news releases..."

Eurostat has a quality assurance framework, reflecting the measures in place or to be taken in order to ensure the proper implementation of the European Statistics Code of Practice. One of the 15 principles in this Code is concerned with accessibility and clarity: "European statistics are presented in a clear and understandable form, released in a suitable and convenient manner, available and accessible on an impartial basis with supporting metadata and guidance."

In its 'ESS Vision 2020', the ESSC engages itself to further develop a European Statistical System that "... delivers information in an interactive and easily understandable way, and improves the statistical literacy of European citizens and institutions by guiding them through the deluge of data and information from various origins."

So the legal framework and the quality assuring provisions, including the European Code of Practice, do not only regulate and steer the production of statistics, but they also include requirements with respect to appropriate dissemination and use of these statistics.

It is therefore important for Eurostat and its partners in the European Statistical System not only to better understand the needs of users, but also to obtain a better knowledge of the statistical literacy among the users, be they the counterparts in the Commission policy services, Members of the European Parliaments (MEPs), business contacts, social partners, the media or the public at large.



2. Statistics as a core element in establishing a robust knowledge base

Modern decision-making is rooted in quantitative and qualitative knowledge, with scientific evidence and reliable statistical information as key components. An old management adage says that "you can't manage what you don't measure". Especially in the process of public policy setting and monitoring, a good quality evidence base is a pre-requisite for transparent and credible decision-making.



We live at a time where 'information' is readily available, abundant, at a finger-clip but not necessarily relevant and valid. To arrive at real social awareness we need to move from information to a robust and solid knowledge base. This is where independent, high-quality Official Statistics have a crucial role to play, which means statistics closely linked to sciences of the 'state' (in particular social and economic sciences), hence the stat-etymology.

The institutional setting of Official Statistics ensures a particular level of information quality, with statistics produced in the context of an official quality assurance procedure and published together with metadata and explanation. But in turn this leads to some limitations as regards the scope of this information branch. So, limits to measurement – such as for prices without a market or when only opinions are gathered – might lead to exclusion of areas from evidence based decision-making.

Some however say that it is possible to try to solve this dilemma by going even further in the application of the above-mentioned principle so as to "Measure the immeasurable!" But this does not provide a real way out. Information that is not robust and reliable will not survive a tough decision-making process, at least not on the long run.

So if producers of statistics want the users to make the best possible use of their statistical products, the producers should try to understand the users' capacities of using statistics and explain to them the possibilities, but also the possible pitfalls and limits when using statistics. The value of statistical information is all the bigger the more you know about its quality, including its limitations.



3. Understanding statistics for a correct use in decision-making

Management according to a rational planning model is the process of realising a problem, establishing and evaluating planning criteria, creating alternatives, implementing alternatives, and monitoring progress of the alternatives. The very similar rational decision-making model, as it is called in organisational behaviour, is a process for making logically sound decisions.

Modern decision and management theory combine qualitative and quantitative information with the aim of achieving optimal decisions and highest efficiency. Dashboards, scoreboards, performance indicators, etc. are standard tools in the management of processes, projects and organisations.

But it is quite a challenge to extract - out of all this wealth of information - the most important messages. With respect to evaluating and concluding on the numerical information, this requires a good notion of statistics, which we call statistical literacy.

Grasping the meaning of statistics requires more sophisticated thinking; it has much to do with different aspects, some of which relate to the context in which the figures are presented and the accompanying information given, others are more to be seen in the context of human rationality (and irrationality) and of cognitive processes and decision-making.

According to Wikipedia "...statistical literacy is the ability to understand statistics. Statistical literacy is necessary for citizens to understand material presented in publications such as newspapers, television and the Internet. Numeracy is a prerequisite to being statistically literate. Being statistically literate is sometimes taken to include having both the ability to critically evaluate statistical material and to appreciate the relevance of statistically-based approaches to all aspects of life in general."

One of the main purposes for Official Statistics and European statistics is to provide the quantitative knowledge base for the EU decision-making process, in particular for developing, monitoring and evaluating EU policies and programmes. A reliable

quantitative knowledge base is even more important when these policies evolve towards performance management and when quantitative targets are set, as is the case on the Europe2020 strategy .

The quality of European statistics data but also of statistical literacy - of the capacity of the users and stakeholders to correctly interpret and use these data - determines whether the statistics and the related indicators are 'fit for purpose'. From this perspective it is important to know what are the drivers of 'illiteracy' and how this could undermine a transparent decision making process.

In the context of European statistics, improving statistical literacy therefore starts with identifying the key users and stakeholders of the European statistics, i.e. EU and national policy makers, social partners, but also different interest groups and the civil society at large. Once data needs have been defined, decision makers must then be able to identify suitable data and information sources to address that need.

Eurostat has direct contact with all relevant policy Directorates-Generals (DGs) to better understand their data needs and to provide the necessary statistical data. Through the European Statistical Advisory Committee (ESAC) Eurostat is regularly consulting outside users, respondents and other stakeholders of European statistics (including the scientific community, social partners and civil society) as well as users in other EU institutions such as the Council and the European Parliament.



4. What do statistics tell us? What not and how to make the difference

Many studies and in particular practical experiments in the field of cognitive psychology have shown the possible pitfalls and biases non-specialists are confronted with when they try to extract a message or make a decision based on statistical data.

The objective of this section is not to give an exhaustive list of all problems related to interpreting statistics, but rather to give examples of some of the most common obstacles which lay-people face when trying to interpret a measurement correctly.

With respect to statistical methodology, the first problem is error, either non-systematic (random) or systematic (bias), the second problem is that of spurious associations, and this because of confounding factors. Where producers of (official) statistics constantly seek ways to reduce the 'error' problem, the central problem is now more and more on 'confounding'.

To be statistically literate, ideally one should also understand something of probabilities and their implications. Studies have shown that human beings' estimations of probabilities are heavily influenced by context and wording. For example, people typically underestimate the probability of being involved in a car accident because their everyday interaction with vehicles gives the impression that they are safer than they actually are. Likewise, they tend to overestimate the probability of being robbed often because of the attention such facts get in the media.

Looking from a more general perspective, examples of the most common heuristics and biases that lead to an incorrect interpretation of (statistical) facts are 'selection bias: when not making the distinction between the target population and the sampled population, 'numerator-denominator bias': when the denominator does not match the numerator or vice versa and 'publication bias': the tendency on average to produce results that appear significant, because negative or near neutral results are almost never published.

Finally it should be clear to the users that Official Statistics have their limits, not all 'figures' are eligible to be called trustworthy and reliable Official Statistics and not everything can be measured, e.g. Official Statistics do not engage in providing monetary valuations for human capital.



5. Concrete actions to improve statistical literacy

Many of the ESS members, such as Statistics Finland, the Central Statistical Office of Ireland and the Czech Statistical Office, have material and/or programs to educate students in schools, journalists or the public at large.

Eurostat has engaged in improving statistical literacy by renewing its website with improved visualisation and extracting tools . The website gives direct access to statistical data, background information, news releases, Eurostat printed publications and Statistics in focus and it gives access to a set of posters. Main messages are given through a series of videos .

Recently Eurostat has also renewed its electronic publication system 'Statistics Explained' .

From January until July 2015, Statistics Explained had 3 million page views and 500 000 visits mainly because of tags in the articles allowing a better Google search.

Statistics Explained is a tool – working in a similar way to Wikipedia - easy to use and easy to navigate. It leads to series of Statistical articles that provide information on a particular topic and to a glossary/background pages that provide more detailed, technical descriptions of an indicator or specific data collection.



For the first time, the European Statistical System Committee (ESSC) awarded university master programmes with the European Master in Official Statistics (EMOS) Label. Following a positive evaluation and recommendation by the EMOS Board, the ESSC gave the EMOS Label to 12 Master programmes during their meeting on 20 May 2015.

EMOS started as a project aimed at developing a programme for Training and Education in Official Statistics within existing Master programmes at European universities. After the feasibility study 'Towards a European Master in Official Statistics', and extensive work of all parties involved, a big milestone has now been achieved with these first EMOS labelled programmes. Eurostat also organises training sessions for Commission policy departments and gives practical information - on how to access the data - to groups of visitors and journalists. Finally, a series of Handbooks is launched, with a first issue now published on 'Getting messages across using indicators' . The most recent steps taken by Eurostat are the publication of a short overview of progress on the Commission's priorities and the 4th monitoring report on Sustainable Development .

Finally, end September 2015, Eurostat and all Directors Generals of the National Statistical Institutes (DGINS) agreed on the Lisbon memorandum on 'Indicators and Decision making', including to '...commit to promoting training, workshops and exchange of experience within the statistical community on using statistical indicators to convey knowledge, understanding, experience, insight and contextualised information.'

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Cooperative Learning in Statistics: Our Experience in Uruguay

*Susana Pilon and Roberto Volfovicz-Leon**

In this article we want to share our experience teaching an undergraduate level statistics course for business students at the School of Business and Economics, Catholic University of Uruguay.



The Catholic University of Uruguay (Universidad Católica del Uruguay) is a Jesuit institute of higher learning located in Uruguay. Founded in 1985, it was the only private college in the country for many years and remains one of the few private universities in the country. It has more than 8,000 students in its three campuses (Montevideo, Maldonado and Salto).

Three years ago (Fall 2013) the School of Business and Economics adopted a team-based learning methodology for its courses, moving away from an instructor-centered approach to learning. Using small groups of 4 or 5 students to supplement traditional lectures has been a valuable teaching technique in our statistics courses. It appears to us that our students learn best when they actively participate in their learning, particularly improving their ability to solving quantitative problems. We also observed that group activities often led to 'peer teaching', where students taught each other - when some group members comprehend the material quicker than others. Our role is that of facilitators rather than as experts communicating knowledge. As facilitators, we move from group to group, observing the interactions between group members and intervening when deemed necessary.

Classes meet four times a week, 80 minutes on Mondays, Tuesdays, Thursdays and Fridays, for 8 weeks. Class sizes are about 40 ± 6 students (standard deviation) with two professors in charge of each class. The audience consists of third semester Business, Tourism, Accounting and Finance students. The course focuses on univariate and bivariate descriptive statistics concepts, linear regression and price indices with emphasis on understanding and interpretation of statistical information.

The course grade is a weighted average of four midterms, group homework, individual online quizzes, participation and a group data analysis project.

During the first day of class, students are all required to complete an online survey. This survey generates a database that is used as input during the remainder of the course. Nominal, ordinal, and quantitative variables obtained in the survey are summarized and

analyzed using graphs, tables, measures of central tendency, dispersion and association (contingency tables and regression). By the end of the course, the students are required to produce a group data analysis project based on the survey.

We next present some of the results of the survey obtained during our last course (Fall 2015). The total number of students taking this course is 213; 45 % male and 55% female (variable X1= Gender). Most of the students on this course (38.5%) are majoring (X2 =Major) in Accounting. The second most popular choice of major is International Business and in the third place is Business Management. If we separate students by gender, both have Accounting as first choice. Males have as second choice International Business whereas females select Business Management. Eighty-eight percent of the students on this course are majoring in one of these three careers (X1 by X2).

Our students don't live far away from the University (X3= commuting time in minutes). If they live in another region of our country, usually they rent a place in Montevideo or they live in a relative's house while they attend university. Commuting time for 99% of students is one hour or less from their place of residence. Most students only live at a short distance from the university - commuting takes less than 15 minutes for 53% and between 15 and 30 minutes for 28% of students.

Student opinion regarding the quality of the education they are receiving (X4) is as follows: 82% of them consider it good or excellent while just 18% of students think it is acceptable or barely acceptable.

The monthly income they wish to receive once they finish their degree (X5) is distributed as follows: 68% want a monthly income between 250 and 1,562 Euros while 18% will only work for a monthly salary of between 1,562 and 2,500 Euros. Only 14% expect to receive a salary larger than 2,500 Euros per month. Fifty one percent of the students think that the economy of our country will be worse or much worse in the next half of the year (X6). However, 35% think it will be the same as today, and 14% believe it will improve in the next six months.

Most of the students (72%) don't smoke (X7). Within the smoking group, 49% smoke 20 or less cigarettes per week, 49% smoke between 21 and 105 cigarettes per week, and just 2% smoke more than 105 cigarettes per week.

We would be delighted to share more details of our experience with other fellow colleagues if you are interested. It will be interesting to have other universities apply similar surveys to allow us to compare the profiles of our students (i.e. 'What are the differences between a Finnish and a Uruguayan student?', 'What do they have in common?', 'For a variable Xi, does it have the same Dispersion/ Central tendency in both populations?'). Additionally, this could result in an exciting starting point of interaction and cooperation between fellow professors of statistics in different regions of the world.



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AtivEstat

Atividades de Estatística

A site to facilitate access to statistical activities

Marcos Nascimento Magalhães*

The website *AtivEstat- Atividades de Estatística* (Statistics Activities - www.ime.usp.br/ativestat) is directed to teachers in all educational level, providing activities to improve teaching-learning of statistics. It was developed at Mathematics and Statistics Institute- University of Sao Paulo (IME-USP), Brazil.

Brief Description

AtivEstat contains a list of related sites and a set of activities. For the listed sites, it is presented a brief description of contents. The activities included in AtivEstat, either come from other sites, or were created by a team member. They are organized into topics, educational levels and types of activity. Four statistical topics are considered: Tables and Graphs, Summary Measures, Probability and Models, and Statistics Inference. Educational levels are divided into Elementary and Middle schools, High school and College. It is possible to use an activity in different teaching levels, and also some activities could be related to more than one statistical topic. Five types of activities are considered: Classroom use (short time and simple material); Spreadsheets (graphs and simulations by computers); Project proposals (data collection and analysis); Films and videos (concepts illustration) and Applets (small computer programs to interactive tasks). Figure 1 shows a few pages of AtivEstat.



Figure 1: AtivEstat

Statistics literacy

An important AtivEstat feature is to provide information in Portuguese language on the activities, even if they were originally written in other languages. The information available for each activity includes, among others, description, educational level and topic covered. Several activities have also a link to access more details on the activity execution.

Regarding on the improvement of the statistics literacy in Brazil, it is important to enlarge the number of teachers that promote possibilities of active learning in their classes and, consequently, enhancing the teaching-learning of statistics. In this direction, workshops are been proposed to discuss statistical concepts and to publicize AtivEstat

Brazil

(see photos in Figures 2, 3 and 4). As one can see on Figure 4, the hands on experience produces amazing reactions.

The current version of AtivEstat appeared in June/2015 and it must be understood as a starting point. There are a lot to do in order to improve the site layout and contents. The inclusion of new sites and activities intends to be a continuous process. Besides, it is necessary to create a collaborative relationship with statistics teachers, around the country, to obtain not only critical opinions but also new ideas to add to the site.

The team project includes a professor and four students with fellowships from USP. Web implementation of the site was provided by the staff of IME-USP.



Figure 2: Workshop with Math teachers (October, 21/2015)



Figure 3: Class activity in the Workshop CAEM-IME-USP (October, 13/2015)



Figure 4: Dice activity in Workshop CAEM-IME-USP (October, 13/2015)

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IMPORTANCE OF STATISTICS IN SCIENTIFIC PROJECTS

Pinar CETIN*

A Project is a work which investigates thoroughly a certain subject during a determined time span with the aim of reaching defined objectives and offer solutions for problems. In a Project, considered as a scientific study, there are many phases and procedures such as collecting and sampling of data, elaborating the cause-effect relationship between collected data and revealing the outcomes. It is expected that the knowledge acquired during the implementation of the project should be a beacon for new researchers to create a better world.

A comparison should be undertaken to provide an insight for future research. In fact, a comparison manifests whether or not any study has been conducted in this subject, what the similar studies are, how to choose the method applied, the peculiarity of the study, the extent of the study, its strengths and weaknesses, the content of data and relationships between variables. Scientific methods and criteria should be applied in this comparison. That is why statistics plays an indispensable role in the implementation of new studies. Studies and their outcomes are considered as void and null in a scientific assessment if they do not comply with statistical methods.

Today statistics is an inter-disciplinary field, applicable to any discipline, which has made unprecedented progress thanks to new methods and researches. Statistics can be used in any study conducted to gather numerical information in support of scientific research. Furthermore social progress, behavioral psychology, mass production process, the management of technological systems, geological phases, functioning of nervous system and capabilities of brain can all be analyzed and interpreted thanks to statistical assessment. Biology, anthropology, sociology, psychology, commerce, medicine etc; in brief all scientific disciplines utilize and mainly depend on statistics.

In Turkey, statistics has made huge progress in many areas and become a central benchmark in the preparation of scientific projects implemented at every level.

On considering the significance of scientific projects in Turkey and across the world, we appreciate the invaluable role of statistical data and methods in the conduct of scientific projects. In other words, statistics is the future of science and even its very self.



ISLP Resources pages to reopen

James Nicholson

The resources pages on the ISLP website have not been accessible for some time because many of the links did not work, and the resources had not been updated for some time. Thanks to a lot of work by Denny Garvis and one of his students at The Williams School, Washington and Lee University, defunct links have been removed if it has not been possible to locate a new URL for the resource. We plan to reorganize the resources available to provide a particular focus on supporting people who are new in the area of statistical literacy, and to try to provide support in multiple languages – starting with Spanish and Portuguese alongside English.

We intend to publish some support materials for the poster competition about what constitutes a good poster. We have plans to translate this into Spanish and Portuguese, but we recognise that it would be good for it to be available in other languages also. Please contact me at

j.r.nicholson@durham.ac.uk if you would like to argue a case for another language – particularly if you are able to do the translation. We have limited resources to get materials translated.

We will be setting up a network of people who are interested in helping with the development of the resources pages (<http://iase-web.org/islp/Resources.php>) – to act as a critical friend to comment on potential changes, or to evaluate resources, or recommend resources. Once we have done some more work to decide on the mechanisms to do this effectively, we will write to all IASE members and ISLP supporters about this – in the meantime, do please keep your eyes open for good resources and maybe create your own record of them at the moment., the other jury members will be announced later.



*Chair of the ISLP Advisory Board

* Chemist MSc, Project Coordinator

Stats + Stories = statistical literacy

*John Bailer and Richard Campbell**

Near the start of the economic crisis a few years ago, the two of us were asked to team-teach a class addressing quantitative literacy for students who are studying in humanities disciplines. Our college was considering the possibility of a new quantitative literacy (QL) requirement, and we were challenged to produce a course that would reach students who often either fear or dismiss numbers. We embraced the challenge and our course, *News & Numbers*, was born. Here was a portion of our course description at the time:

JRN-STA 380 explores how quantitative ideas and material are represented in daily journalism—where, in fact, most of us get our common-sense ideas about the numbers and data. Topics for the course are ripped from current events and headlines—especially those numbers and data related to political polling, the financial crisis, and energy/environmental issues. In analyzing current news stories, we dig under the surface of a USA Today graph or a CNN poll to give students the chance to critique contemporary journalism's use of numbers. We examine and critique concepts such as journalistic objectivity and bias, the concept of uncertainty, and various visual presentations of numerical data. We also give students opportunities to craft their own articles on related topics, some of them tied to course speakers and Miami faculty who are experts in political polls, financial systems, and environmental sustainability. For selected speakers, students will “cover” their lectures and write—as individuals and in groups—their own news stories. In turn, their stories will be critiqued, not only by course faculty, but by the lecturers themselves to see how well students presented complex numeracy in their journalistic representations. The course, useful to students in any major, advances in-depth critical thinking, promotes clear communication, and teaches compelling storytelling about complex topics. Finally, the course aims to help students understand numbers in a way that helps them become more discerning media consumers, more perceptive journalistic critics, and more actively engaged citizens.

Taken by honors students from 4 of 5 of Miami's colleges, the course was a success and our college did add a QL requirement. But we have not taught this class again. (It wasn't for

lack of interest. The problem was two department chairs, with limited resources, with too much to do and needing interested faculty to teach other courses...)

We enjoyed our partnership and vowed that we would look for other opportunities to continue a fruitful and fun-filled journalism-statistics partnership. In late 2012, as the statistics profession prepared for the International Year of Statistics, the American Statistical Association was planning its 175th anniversary. Given this context, we started thinking that the time was right to launch a new collaboration. We wanted to extend our reach beyond a fixed classroom with particular students and a webcast / podcast came to mind.

Where do you begin when you want to embark on such a journey? We started with examples of shows and podcasts that we thought were good models. The Car Talk podcast (<http://www.npr.org/podcasts/510208/car-talk>) was fun conversation between two brothers about automobile repair, Freakonomics (<http://freakonomics.com/radio/freakonomics-radio-podcast-archive/>) represented a collaboration between an economist and a writer and Science Friday (<http://www.sciencefriday.com/>) presented a weekly program with a science writer and guests from the world of science. We thought that applying our journalism-statistics partnership to conversations with guests would be a novel combination, and the webcast / podcast ‘Stats+Stories’ was born.

We formed a team to begin discussing the program. We wanted this to have a quality sound and high production values. So sound engineers were part of our team from the start. We recognized that publicity and promotion would be crucial, and as a consequence, we invited a communications specialist from the university to be part of the team. The online presence of this program was the next technical hurdle. We needed to develop web pages for hosting the program site and audio files for programs and to set up a system for launching podcasts. The on-air ‘talent’ was going to be a ‘stories’ guy (Campbell), a ‘stats’ guy (Bailer), and a moderator. Bob Long, a former public radio newscaster with a resonant voice and a strong sense for program pacing, became an early addition to the team. The title for our program, ‘Stats+Stories’, emerged in early discussions with the team. We also decided on a theme and catchphrase: the statistics behind the stories and the stories behind the statistics.

Several logistical decisions were required to plan the program: episode length (about 30 minutes); structure (opening package, introduction, conversation 1, person on the street interviews 1, conversation 2, person on the street interviews 2, conversation 3 and closing); introductory music (royalty free music selected). From the decision to do the show to recording the first episode, we needed to determine:

- Production and recording logistics (radio studio); theme music; web site;

- Model? Nightline (3-5 minute introduction and student report followed by conversation);
- Who is “on air”? Moderator + 2 panelists (stat, journalist) + guest;
- Topics for Episodes? Mix of serious and fun. Timely topics best; and
- Post-production – mp3, web site, iTunes

Finally, we needed topics for episodes... and guests. We decided that we wanted to have a mix of serious topics and lighter topics and that we wanted to have guests who were statisticians, journalists, scientists, and people who used stats and quantitative reasoning as a part of their everyday jobs. We recorded a demo show and sent it out to experts for review. The good news was that our critics thought the program was a nice idea; they liked Bob's voice and the person-on-the-street interviews. The bad news: we took too long to get to the interview, and used too much jargon. We were encouraged to keep our responses and comments to under 1.5 min or risk inducing ‘ear fatigue.’ For professors used to teaching in 50+ minute blocks, this was a challenge. After this review, we ended with the program that you hear today.

We have released 15 episodes, approximately 1 new show every 2 months, with topics ranging from the government statistics (Episode 2: “What does the census do the other 9 years”) to forensic data analysis (Episode 4: “CSI-crime statistics investigated”) to medical research (Episode 8: “How do I know this medicine works?”) to extra-sensory perception (Episode 11: “ESP - Evaluating Statistics for Psychic Phenomena”) to financial reporting (Episode 12: “Numbers as plot elements in financial reporting”). For the members interested in the ISLP, Episode 13 (“Reading, Writing and Statistics? Data analysis and statistical literacy for all”) with guest Chris Franklin might be of particular interest.

Since we have started, visitors from 101 countries have listened to our programs (based on Google analytics associated with www.statsandstories.net). Our Twitter account (@statsandstories) has 107 followers. We have some anecdotal evidence that some classes are finding these programs useful and interesting. We hope to continue to expand the impact of this program. Finally, we welcome your story and guest suggestions, program comments and criticisms. Email statsandstories@miamioh.edu with your thoughts.

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"Education is not the filling of a bucket, but the lighting of a fire."

W. B. Yeats

Eoin MacCuirc*

Lighting a fire in young people about mathematics and statistics is a challenge. Admitting that your organisation has a role to play in this challenge is the first step. In 2007 the Irish Central Statistics Office took this decision. From that small spark in 2007, a small fire was kindled that continues to burn bigger and brighter every year.

As the story goes about a person asking for directions being told, "If I was you, I wouldn't start from here", 2007 wasn't the ideal year to start an education outreach programme in Ireland. But, the poor economic climate, if anything, reflected the need for a better understanding of official statistics across all sectors in Ireland.

The first project to be delivered as part of the education outreach programme was the CensusAtSchool project. This was a really good project to begin with as it already had a proven track record internationally and the UK team were very willing to support our fledgling efforts. Our limited budget was overcome with strategic partnerships with the National Council for Curriculum and Assessment and in particular its Project Maths development, which was launching a new mathematics curriculum in Ireland. As luck would have it Statistics and Probability were key initial modules being developed by Project Maths and CensusAtSchool was viewed as a perfect project to make these topics more accessible to students. The National Centre for Technology in Education was a key partner too in getting the schools on board and in ensuring the new Irish CensusAtSchool website was hosted by HEAnet. The first Irish CensusAtSchool questionnaire was piloted for the academic year 2007/2008 paving the way for its use in the Project Maths pilot of the new mathematics curriculum. New questionnaires are introduced each year usually with a relevant theme. Next year is the 100th anniversary of the '1916 Rising', which sparked a 'War of Independence', so the 2015/2016 questionnaire focuses on this particular part of Irish history and on what it means to be Irish. Each year a statistician from the CSO analyses the CensusAtSchool results and publishes an 'official' release. The publication presents the latest findings, reflecting various elements of the mathematics curriculum. Recently CensusAtSchool data has been used in State Examinations and the website www.censusatschool.ie is used in many of the current Irish mathematics text books.

Another pillar of the education outreach programme is the seminar series run by the CSO, currently a Business Statistics Seminar series and an Administrative Data Seminar series along with occasional ad-hoc seminars. The philosophy underpinning these series has four central pillars:

- to make users and potential users aware of all the data already available ;

- to demonstrate how these data could be used by providing case studies or illustrations of analyses;
- to improve our relationships and develop a network of researchers, policy makers, academics and other stakeholders; and
- to market new products or datasets.

The seminar series has been running since 2008 and continues to promote awareness and use of statistics. The seminars are well attended and provide a forum where CSO staff, data users, respondents and policy makers can meet face to face to discuss matters of mutual interest. The series showcase new and interesting work by CSO staff, but also includes work from other researchers and policy experts. Series attendees are encouraged to raise data issues, suggest solutions and demonstrate existing and new ways that statistics can enrich all.

Building on these successes the CSO launched the John Hooper Medal for Statistics, on World Statistics Day in October 2010. The existing partnerships from the CensusAtSchool project were very useful in establishing this competition. Teams of secondary school students, (aged 12-18) compete to design an online statistical poster. Besides cash prize, beautiful silver medals go to the winning students. A prize giving ceremony, in October during Maths Week in the Department of Education in Dublin, is the highlight of this annual project and the successful students, their teachers, parents, families and friends turn up to celebrate their achievements. A government minister presents the prizes and the students present their research and their prize winning posters on the day. Thousands of students register for this competition every year and hundreds of great posters are entered in this competition each year. The standard of the winning poster are really excellent. The winning posters go on to represent Ireland in the ISLP poster competition. The Irish posters were placed first in the senior and third in the junior ISLP categories in 2015, in Rio de Janeiro, and second in the senior and third in the junior ISLP categories in Hong Kong in 2013. Doing well in the ISLP poster competition is a real thrill for the Irish students.

The Professional Diploma of Official Statistics for Policy Evaluation was launched in 2012 by the CSO in cooperation with the Institute of Public Administration (IPA) and University College Dublin (UCD). The diploma is a one-year, part-time programme and is targeted at the public service, specifically those who use (or should use) data to formulate or assess policy. The course is designed as a practical 'hands-on' course where students are shown how to access and interpret official statistics. Considerable emphasis is placed on presenting and visualising statistics so that useful, policy relevant information can be derived. This course has proven very successful and is now in its fourth year. 27 people successfully graduated from this course in 2013, 36 graduated in 2014 and over 50 students registered for the 2014-2015 academic year. In 2015-2015 the course launched in Cork and in 2015/2016 the course will be in both Dublin and Cork again.

The apps4gaps competition was launched in October 2013. This exciting competition looks to encourage people to develop computer applications or apps. The competition focuses on the use of Open Data, published in open data formats under an open data license. Partners with the CSO in this outreach project are the Insight Centre for Data Analytics, the Science Foundation of Ireland and the Open Government Partnership. Coder Dojo, the global network of free computer programming clubs supports younger people who want to enter this competition. Young people who compete in either this competition or the John Hooper Medal for Statistics poster competition get a Gaisce award from the President of Ireland for participating. Gaisce is a personal development programme for young people aged 15-24 encouraging them to dream big and fulfil their potential. Again the

apps4gaps competition encourages teamwork. There are two entry categories developing a working app or proposing an app concept. The Alice Perry Medal is awarded to the best working app. The 2015/2016 competition will be launched in October 2015 by Mr Damien English TD, Minister for Skills, Research and Innovation and this year will be open to international entries. The CSO encourages the use of our open data in this competition highlighting our application programming interface (API). Apps must use at least one Open Data dataset from <http://data.gov.ie/> Ireland's Open Data Portal.

Since 2014 the CSO has had a presence at the BT Young Scientist Exhibition. 59,000 students attended the 2015 exhibition with 363 schools from all over Ireland entering 2077 projects. The best 546 projects were exhibited by 1,174 students and the winners are announced on the third and final day of the exhibition. The CSO will sponsor a prize for the best use of CSO data at the 2016 BT Young Scientist Exhibition. The CSO exhibits at the National Ploughing Championship. The 2015 event had 279,000 attendees and 1,400 exhibitors making it Europe's largest outdoor exhibition and agricultural trade show. In 2015 the CSO exhibited at the inaugural TY Expo again reaching a key cohort of students. TY or Transition Year is a unique feature of the Irish secondary education cycle where students take a year out, within the school programme, to get work experience, volunteer, explore the arts, travel, experience course outside the standard curriculum, learn a skill or language, practice a hobby or whatever else takes their fancy. CSO selects these key exhibitions to maximise the reach of our different outreach projects and to engage with the wider public.

For World Statistics Day 2015 the CSO is involved in two exciting projects. Firstly, we have worked with the Portuguese Exploristica team to translate their exhibition. The exhibition will be officially launched on World Statistics Day at the Lifetime Lab, a lovely project in Cork City that promotes understanding and building a better future. On the same day the CSO is partnering with University College Cork to promote the mathematics and logic legacy of George Boole (www.georgeboole.com) in commemoration of his birth 200 years ago, on November 2nd 1815. The idea is to get student all over the world to learn about George Boole on the day. Lesson plans have been prepared for all age groups. Through social media channels CSO has reached out to a wider audience too. Our twitter feeds and facebook posts, our YouTube videos and interactive visualisations all play a part in engaging more people with official statistics.

Finally for Census 2016 a suite of lesson plans to build on the Census for Schools resources prepared for Census 2011 <http://www.census.ie/-and-Communities/Census-in-Schools.138.1.aspx>. Census Charlie will make a welcome return for primary school children, and resources for history, geography and civic, social and political education are being dusted off and recommissioned for Census 2016. Again, the 1916 Rising will play a part in the new resources produced for Census 2016.

Hopefully you now have a flavour of some of the different strands of the CSO education outreach programme. From humble beginnings in 2007 and over the intervening years new project have been added to the CSO education outreach programme, widening the audience reached and deepening the engagement. The fire is well and truly lit now and CSO keep adding on more sticks to keep it blazing.

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Presenting 'Sweden in figures' to the public

Anna Nilheimer

After 100 years of producing the Statistical yearbook of Sweden, Statistics Sweden created a new concept to make its data available to a broader audience, and present 'Sweden in figures' to the public.

Information technologies have driven changes in the ways users want to consume statistics. With the increasing flow of information, users need to get information quickly before digging deeper into reports and databases. Information needs to be simple to find, fast to interpret, and easy to dig deeper into.

These expectations are especially true of younger audiences, having grown up in the new media landscape. Most people aged 15-19 have never heard about Statistics Sweden. This problem is especially severe because we also encounter difficulties trying to collect data from the same audience. Therefore, we need to find ways to communicate why you should contribute to official statistics, and how you can benefit from using our data.

Statistics Sweden has produced the Statistical Yearbook of Sweden for one hundred years. During these hundred years, the book changed little. It grew in number of pages, came with added colours, graphs, photographs and maps. But it was still a printed publication of about the same size and content. When the final edition of the yearbook was released in 2014 it was time to come up with a new way to make statistics easy to understand and use for a broader audience. In September 2014 the new concept for 'Sweden in figures' was approved by the Director General. The concept is a selection of statistics, presented as interactive graphs and charts and complemented by explanatory texts on the web.

To be able to reach a younger audience, an important target group for the project is teachers. Therefore the basis for the selection of statistics in 'Sweden in figures' is the social studies curriculum for 10 to 15- year olds, which coincides with the most frequently asked questions from the public to our customer service. 'Sweden in figures' is thus both directed towards a younger audience and an non-expert user of statistics and aims to present our statistics so that a 15 year-old will understand them.

In October the first version of 'Sweden in figures' will be launched at scb.se, together with first issue of the publication with the same name. In 2016 we will continue to develop 'Sweden in figures' on the web, as well as planning four digital releases of statistics during the year, summing up to the publication 'Sweden in figures' at the end of the year.

We hope 'Sweden in figures' will allow us to fulfill our democratic duty and make the statistical information we produce and publish accessible for as many as possible. We also hope that it will help the public to use statistics as a tool to better analyse and understand the world, build argumentation, critically examine statements and crush myths.

* Statistics Sweden



Poster Competition Judging Process

Alejandra Sorto*

The ISLP International Poster Competition for 2014-2015 concluded with the announcement of the winners at the 60th Congress of the ISI in Rio de Janeiro in Brazil in July 2015. Finalists representing 21 countries in the older division and 16 countries in the younger division were reviewed by an international judging committee from five different regions of the world: Africa, Asia, Australia, Europe, and South America. The committee was guided by the ISLP Poster Competition Judging Criteria which consists of six categories: 1) Clarity of the message, 2) Data Collection, 3) Analysis and Conclusions, 4) Graphs and Tables, 5) Presentation, and 6)

Creativity/Importance. Each category is defined by three specific criteria elements. For example, the Analysis and Conclusions category is defined by three important elements: a) Analysis is appropriate to answer the research question and for the kind of data, b) Conclusions are stated and supported by the data, and c) Limitations are discussed or improvements are suggested. Each judge independently scored each poster on the five categories according to the following rubric: Not Present (or 0) for none of the three elements present, Low (or 1) for only one of the three elements present, Medium (or 2) for only two of the three elements are present and High (or 3) if all the three elements are present. Judges provided their scores for all posters in both categories. The maximum number of point for both categories was 18 points. The scores of all five members of the committee were combined and the posters' scores were ranked according to the average score. The top scores were recognized as the winners of the competition.

The current judging process only includes evaluative assessment of the quality of the posters. For future competitions we are considering to include a formative assessment aspect where judges can make comments and suggestions to the countries' team and mentors. The judging committee was very impressed by the quality of posters and for the large representation of all the regions around the world. As the chair of the judging committee, I would like to thank the statistics education community that was part of the Poster Competition and in particular the students and their teachers for their creativity and enthusiasm towards Statistics Literacy!

**Chair of the Jury of The ISLP International Poster Competition for 2014-2015*

The ISLP wishes to thank warmly all jury members: Chair: Alejandra M. Sorto (USA); Ayse Bilgin, (Australia); Tae Rim Lee, (Korea); Liliana Tauber; (Argentina), Joachim Engel, Germany)

ISLP Poster Competition

2014 -2015



The poster competition this year was open to students in two age divisions: born in or before 1999 (age 12-15), and students born in or before 1996 (age 15-18).

The theme for the competition was free.

This year, close to 8026 students participated, from 22 countries. In each country, a country coordinator for ISLP worked very hard to encourage schools and teachers to participate, provided resources and guidelines, and arranged a judging panel and the judging process.

The posters were first judged within their countries. After that, the national winner posters were evaluated by an international jury consisting of members from six countries, and chaired by Alejandra M. Sorto (USA). The jury members were:

Alejandra M. Sorto (USA) (the chair)

Ayse Bilgin, (Australia)

Tae Rim Lee, (Korea)

Liliana Tauber, (Argentina)

Joachim Engel, (Germany)

Winners – younger age division (age 12-15, born in or before 1999)

| COUNTRY | POSTER NAME | SCHOOL | STUDENTS |
|-----------------------|-------------------------------------------------------------------------------|-------------------------------------|-------------------------------------------------------|
| 1. Prize Australia | The Deterioration of tooth in liquids. | Lisarow High School | Tyler Hayter, Taylor Cheetham, Brooke Khoury |
| 2. Prize Kenya | Is the Agricultural extension officer right? | Gatuamba Secondary School | Paul Karingithi, Daniel Wanjau |
| 3. Prize Ireland | The effects of meditation and positivity training on school community members | Loreto Secondary School, Balbriggan | Aoife Conroy, Jessica Barbulescu, Lauren Murphy |
| 3. Prize Korea | Wake Up The Sleeping Mobile Phone! | Daewon International Middle | Kahyun Kang, Yunjae Noh, Chaehyun Chung |



WINNERS, YOUNGER AGE DIVISION

Winners - older age division (age 15-18, born in or before 1996)

| COUNTRY | POSTER NAME | SCHOOL | STUDENTS |
|----------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------|
| 1st prize Ireland | Road to Rio – Protecting our Olympic Boxing Future | St Vincent's Secondary School, Dundalk | Rachael Ni Dhonnachadha, Shannon Ni Dhonnachadha |
| 2nd prize Korea | Do you brush your teeth properly? | Cheongwon high school | Hyerin Nam, Yunjeong Ahn, Sunkwa Ji |
| 3rd prize Poland | Changes in activity of influenza virus – in the podlaskie voivodeship in Poland in the years 2009 - 2013 | Secondary School No. 3 in Bialystok | Adam Bajguz, Mateusz Markiewicz |

ISLP would like to thank everybody who helped the poster competition, Nokia and The Federation of Finnish Technology Industries, centennial foundation for financial support, all the country coordinators and schools, the teachers, the jury and the 8026 students who participated.



WINNERS, OLDER AGE DIVISION

Apps and e-learning Resources for training in Official Statistics



John Harraway*

The Special Topic Session STS074 organised and chaired by John Harraway at ISI2015 in Rio de Janeiro presented new developments in e-learning resources for training in statistics with an emphasis on capacity building in statistics in Developing Countries. The resources are free to use on phones and laptops which makes them operational in locations where there are smartphones but otherwise limited access to technology. The new products can be accessed either directly in the Resources section of the ISLP or by contacting each developer using the links provided. The ISLP is a workable and easily accessible home for these resources into the future especially with the pending rebuilding of the Resources Section of the ISLP. Country Representatives will also find it an easy task distributing access to all potential users in their own countries. This will be enhanced when the products are translated to other languages.

Four papers were presented in this well attended session.

The first paper (by Forbes et al.), "Official Statistics Web Apps" saw the release of three Apps for training in Official Statistics. The Apps can be accessed by selecting one of the images below on the Resources Section of this ISLP website. They were shown in action during the presentation. The first App, Measuring Price Change, had a focus on the CPI, price indices and change of base, time series in connection with the CPI, moving averages, trends, seasonality, and policy use. The second App compared populations over time between countries and between groups within countries including aspects of demography such as fertility, mortality, migration, life tables, population pyramids, age standardisation and odds ratios. The third App discussed data visualisation and emphasised data summaries using Excel with voice over instruction for creating seven graphs including boxplots, population pyramids and others.

The Apps are free and interactive with many example illustrations and matching training exercises of graduated difficulty although full worked answers are available after three attempts meaning feedback is immediately available. There are videos and web links throughout which have been included with permission. The Apps can be used on desk top computers, tablets and smartphones which make them attractive for capacity building in statistics in developing countries where there may be

limited access to technology. In future it is intended to translate to other languages and obtain data from other countries to replace the New Zealand data where desirable to aid motivation of users in these countries. As well as training for staff working in Government the Apps are appropriate for training in business statistics and advanced courses in sociology and demography in Universities. Already National Statistics Offices in several countries have expressed interest in using the Apps.

The second paper "Apps for Statistical Literacy in Africa" by David Stern from Reading University, UK, and Maseno University, Kenya, proposed that the rapid expansion of mobile phone technologies in Africa has the potential to influence the continent's development creating the possibility for Apps. Cheap smart phones and tablets have started to become available across the continent. This paper discussed why apps could make a big difference and described implications for statistical literacy.

Two contrasting contexts were explored. The first was the use of apps as a tool for extra-curricular school clubs and the second was their potential use to engage farmers through data and statistics. For subsistence farmers it may not be obvious that there is a need for statistical literacy but it was reported that recent projects have shown that discussing simple climatic risk with farmers can be a very powerful tool in decision making. The process involves basic understanding of graphs and simple notions of probability which farmers grasp easily irrespective of their level of literacy. Given the value of these simple statistical tools it is time for statistics to play a larger role in the African curriculum. But also extra-curricular clubs are common at many African schools and there is hope that these could provide an environment conducive to integrating statistics into schools to help with student understanding and motivation. Apps could potentially provide students and schools with access to appropriate engaging content.

The third paper, "Capacity building in Statistics through e-developments" was presented by Bruno de Souza from the University of Coimbra, Faculty of Psychology and Education Sciences, CINEICC, bruno.desousa@fpce.uc.pt.

It was a very hands-on presentation where very simple ideas using free on-line technology tools were developed. In particular three online tools were used, namely Ted Ed Lessons, JING and Present.me. The use of these tools were

shown through videos addressing the three main challenges entitled Can a video be used as a dynamic learning object?, Why should we take a random sample?, and What is a representative sample?. Three simple ideas that can go a long way. To see the full presentation contact the author or check the webpage

<https://apps.uc.pt/mypage/faculty/uc41501/en>

The fourth paper, "e-learning Resources for Training Statistical Literacy using Technology", by Tae Rim Lee from the Department of Information and Statistics at the Korean National Open University described an approach to e-Learning and mobile-Learning using locally developed on line structured resources for training in statistical literacy allowing a student or pupil greater interaction with their teacher than is provided by traditional teaching methods. Using mobile e-book tutorials and videos has no limitation on place and time.

The content includes statistical concepts and many graphical methods. To help students and teachers study statistics an intuitive and easy-to-use statistics education package called K-PLLOT has been developed. The graphs generated by K-PLLOT are dynamically linked to the data and morphing technology is used where applicable. Masking is also possible between data and graphs. K-PLLOT is developed using Java to prepare for a mobile environment such as an Android system. For tutoring, this K-PLLOT package is developed as an e-book for searching terminology, watching videos, tutoring how to use K-PLLOT and how to interpret the outcomes.

This Mobile e-book and K-PLLOT software for training in statistical literacy is available free. An English version can be obtained by contacting Professor Lee at trlee@knou.ac.kr. Potentially new software and resources for training statistical concepts, data management and interpretation of output can be developed. This kind of new technology gives ready access for students to learn statistical concepts and understand the output by student initiated learning.

**John Harraway, Organiser and Chair of STS074, World Statistics Congress, Associate Professor, Department of Mathematics & Statistics, University of Otago, New Zealand*

Chile participa en ISLP

*Soledad Estrella y Guido del Pino**

Tras participar en ICOTS-Arizona, Chile se integra activamente a la competencia internacional de posters de estadística de 2015 conocido como ISLP (International Statistical Literacy Project). Se realizó una publicidad masiva de la competición en más de 50 establecimientos de la comuna de Valparaíso. A fines del año 2014 hubo movilizaciones estudiantiles en Chile, lo que frenó una mayor convocatoria.

Desde el Instituto de Matemática de la Pontificia Universidad Católica de Valparaíso se promovió la competición de pósters, con ello se buscaba que los estudiantes trabajaran en equipo, propiciaran la investigación en torno a preguntas usando datos reales, y pusieran en juego sus habilidades matemáticas y de representación gráfica, para analizar e interpretar resultados estadísticos y desarrollaran sus capacidades de comunicación escrita.

Fueron recepcionados varios posters contruidos por más de 50 estudiantes del Instituto Superior de Comercio Francisco

Araya Bennett de la ciudad de Valparaíso, Chile.

Todos los participantes eran estudiantes que pertenecían a la educación secundaria y trabajaron en torno a preguntas que les interesaban en el marco de su comunidad educativa, tales como: ¿los hombres o las mujeres son más ambiciosos?, ¿cómo influye el desayunar con el rendimiento?, ¿cómo influye el consumo de alcohol en el rendimiento?, ¿las redes sociales influyen en la vida cotidiana de los alumnos?, ¿cuál es la cantidad de robos al interior del establecimiento y cuál es el motivo de estos robos?. Finalmente, los tres posters ganadores en la elección realizada en Chile abordaron los temas de consumo de marihuana, uso de anticonceptivos, y la infidelidad.

En Chile, aunque hace pocos años el contenido de estadística está en el currículo de todos los años de secundaria, el jurado consideró que los posters diseñados cumplían con los objetivos propuestos de alfabetización estadística. A modo de evaluación de la experiencia, creemos necesario apoyar más a los profesores en ejercicio en el conocimiento del contenido estadístico, de modo que apoyen el aprendizaje de los conceptos estadísticos para desarrollar el razonamiento estadístico de los alumnos y alumnas.

**Guido : Department of Statistics, Pontificia Universidad Católica de Chile; Soledad: Instituto de Matematica, Pontificia Universidad Católica de Valparaíso, Coordinadores ISLP – Chile*



Explorística is the winner of the Best Cooperative Project Award

*Conceicao Rocha **

Explorística is the winner of the Best Cooperative Project Award.2015. Explorística - Adventures in Statistics - is an itinerant exhibition designed to teach the fundamentals and practice of Statistics and Probability intended mainly for students of upper basic and secondary school (aged 12 to 17).



Carlos Braumann receives the award, on behalf of Maria Eduarda Silva (President of the Portuguese Statistical Society), from Steve MacFeely (Deputy ISLP Director)

The project is the outcome of the cooperation between SPE (The Portuguese Statistical Society), Statistics Portugal and Ciência Viva, the national agency for the scientific dissemination of the Ministry of Science and Technology of Portugal.

The interfaces of the six modules have been designed with the goal of being appealing and appropriate for the target audience. Applications are presented in a playful manner and are intended to apply statistical concepts in different situations of everyday life. Involving participants in all phases of the statistical process, ie, from data collection to data analysis, Explorística provides a different view of the teaching/learning process. In addition, the applications provided are linked to the concepts taught in other subjects, such as Biology, Geography, Economy, etc.

Visit Explorística at: www.exploristica.com

Explorística Coordination Team

visit IASE and ISLP websites

IASE: <http://iase-web.org/>
ISLP: <http://iase-web.org/islp/>

IASE 2016 Roundtable Conference

The International Association for Statistical Education (IASE) is pleased to announce its 2016 Roundtable Conference, July 19-22, 2016 at the Max Planck Institute for Human Development (MPIB) in Berlin, Germany, before the 13th International Congress of Mathematics Education (ICME13; July 24-31, 2016, Hamburg). The Roundtable is co-organized by IASE and MPIB and sponsored by the German Consortium in Statistics (DAGStat), the German Centre for Mathematics Teacher Education (DZLM), the European Commission's Erasmus+ program ProCivic-Stat, and other partners. See more at: <http://iase-web.org/conference/roundtable16/>



IASE 2016 Roundtable Conference

Promoting understanding of statistics about society

19 – 22 July 2016, Berlin, Germany

