

# Daily News

Monday, 22 August, 2011

## An island of saints, scholars and statisticians!



The Minister for Social Protection, Joan Burton TD, opened the ISI Dublin 2011 World Statistics Congress last night at the Convention Centre Dublin (CCD). She said that it was “a great honour to host a gathering of 2,300 delegates from more than 120 countries” and continued that “the Government is proud to be involved with an event of this importance”.

Minister Joan Burton said that the Irish are very proud of Dublin not only for its poets, artists and musicians but also for its scientists. She gave special mention to Sir William Rowan Hamilton who carved a famous equation using his penknife into the side of Broom Bridge (12 bridges up the Liffey from the CCD) for fear he would forget it. This event marked the discovery of the quaternion group.

The Director-General of the Central Statistics Office (CSO) Ireland, Gerry O'Hanlon, gave a welcoming speech to a near full Main Auditorium where he extended the alliteration of the famous description of the island of Ireland by declaring “for these two weeks at



least... we may be known as the island of saints, scholars and statisticians!”

Mr. O'Hanlon pointed out that the National Organising Committee for this World Statistics Congress is made up of statistical colleagues from North and South of the border in Ireland. He described the statistical community in Ireland as “a unified community with a common professional purpose that transcends political boundaries”.

Mr. O'Hanlon also highlighted the development of Dublin from a Viking settlement over a thousand years ago to a city with a population of 1.25 million at the latest Census last April. The latest accolade for Dublin was to be designated as an UNESCO City of Literature, just one of four cities worldwide to be so honoured. Mr. O'Hanlon says that “this reflects no doubt the association of the city with such giants of the English language as Joyce, O'Casey and Behan to name but a few.”

In a thoughtful speech from the ISI President Jef Teugels, he very much



concentrated on the historical development of the ISI from its early beginnings in 1853. The President declared that he was both humble and proud... “Humble because I have the good feeling of standing on the shoulders of one of my fellow countrymen Adolphe Quetelet... Pride because we have been able to further his dream of a universal platform on which statisticians of every type and background could meet to discuss common issues”.

President Teugels continued on a positive note when he declared that the “ISI is ready for the future”. He quoted the recent, seemingly successful, overhaul of the statutes where over 93% of the ISI-membership gave them their endorsement. It is expected that the General Assembly will ratify these changes on Thursday.

He also extended an invitation to two of the remaining continents (Antartica and the Americas) to hold a World Statistics Congress in the future, when he said “we would be glad to entertain a bid from any of these for a future Congress”.

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Photo: Christian Bertrand/Shutterstock.com

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# Dream team to reflect on past, present and future



Professor Stephen Stigler, Professor Donald Rubin, Sir David Cox and Professor Peter Huber

The 58th Congress gets off to a flying start this morning as some of the giants of international statistics come together to debate the past, present and future of statistics. The room will be packed to the rafters for a session that will certainly be both thought-provoking and enlightening (IPS015, 11.15am@Liffey B).

The dream team will consist of Sir David Cox (Honorary Fellow of Nuffield College, Oxford and former ISI President), Professor Peter Huber

(formerly ETH Zürich, Harvard University and MIT) and Professor Donald Rubin (Harvard University). The discussant will be none other than a former President of the ISI and an eminent historian of statistics at the University of Chicago, Professor Stephen Stigler. The order of speakers will be Sir David Cox, followed by Professor Peter Huber and then Professor Donald Rubin.

Sir David Cox will begin the session when he speaks about current challenges in

the theory of statistics. These challenges, which arise due to having very large amounts of data, range from particle and astrophysics to genetics to many aspects of public affairs and certainly call for new statistical methods. However, Sir David Cox asks the question; do they dramatically change the basic principles of statistical thinking?

Professor Huber will then take the stage and promises an unabashedly idiosyncratic view of what we

can learn (or should have learned) from the past 50 years of analysing data and statistics and the implications for the near future.

Finally, Professor Rubin will look at the evolution of the field of statistics. He promises us a somewhat idiosyncratic talk which will focus on how Professor Rubin sees statistics evolving from what it was in his early years, to what it is for him now, followed by some highly speculative extrapolations.

## Editorial

After the celebration and entertainment of the Opening Ceremony last night, we get down to the real business of the week this morning with the start of the scientific programme.

We have 5 days ahead of us with 22 sessions running in parallel. There will be almost 1,300 papers presented over the week which requires the involvement of some 1,800 unique persons (e.g. authors, organisers, chairs and discussants) with the Congress being attended in total by almost 2,300 delegates. Quite an undertaking!

Here in the Daily News, we are going to feature the social programme such as the Traditional Irish Night on Tuesday and the Gala Dinner on Friday. However, we will concentrate in particular on highlighting as many of the scientific papers as we possibly can.

The featured papers were chosen for various reasons. Firstly, we wanted to give statisticians that are young or from a developing country the chance to showcase their work to a wider audience at the Congress. Secondly, we wanted to reflect the diversity of the topics being presented. Finally, we wanted to feature high profile statisticians that have made the trip to Dublin e.g. see the Cox, Rubin, Huber, Stigler article above.

Don't forget that the Daily News has a live Twitter feed direct from the Convention Centre Dublin. So in order to stay right up to date, follow us on Twitter at the following link [www.twitter.com/ISIDublin2011](http://www.twitter.com/ISIDublin2011).

We hope you have a great World Statistics Congress!

The Editor

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## Daily Announcements

1. If you are presenting a paper at the Congress then you must attend the Speaker Ready Room to upload your presentation. Please note it will not be possible to load your presentation in any of the scientific rooms. The further you do this in advance the better. In most cases it would be advisable to load your presentation at least the day before.
2. The International Association for Statistical Computing (IASC) will hold its General Assembly Meeting tomorrow (Tuesday 23 August) between 7.00am and 08.30am in Liffey Hall 2 of the CCD.
3. The Traditional Irish Night will take place in Trinity College Dublin on Tuesday evening. There are still tickets available for this event which can be purchased in the lobby of the CCD. The price of a single ticket is €50.
4. There is a Mixer for Young Statisticians on today from 5.30pm in the Exhibition Hall.
5. There is a reception for ISI Elected Members (by invite only) today from 5.30pm on Foyer Level 4 of the CCD.
6. The Women in Statistics Mixer is on Wednesday between 17:30 and 19:00 on Foyer Level 5 of the CCD. If you plan to attend this event please complete the RSVP form in your conference bag and drop it to the ISI Permanent Office (Liffey Boardroom 1).

# Are we giving our children the best start possible?



Children are being exposed to statistics from an early age. This shift in exposure was acknowledged in Ireland in changes that were made to the Primary School Mathematics Curriculum in 1999 with the inclusion of a specific strand devoted to the teaching and learning of data. In 2005, the National Council for Curriculum and

Assessment (NCCA) in Ireland published their report examining concerns associated with the implementation of the new curriculum. A challenge in the delivery of the curriculum was found to reside in the data strand. The NCCA called for further research to help develop guidance to support teachers in implementing this aspect of the Mathematics curriculum.

The authors Dr. Aisling Leavy (Mary Immaculate College, Limerick, Ireland) and Dr. Finbarr Sloane (University of Colorado, Boulder, US), with funding from the Irish Department of Education, conducted two such studies and will report on these today

at the invited paper session "Applying Results of Statistics Education Research to Teaching Statistics" (IPS047, 8.30am@Liffey Hall 2).

The first study was a qualitative study of 24 final year pre-service primary teachers. Participants were involved in Lesson Study, concept mapping, and focus group interviews. Results provide valuable and unique insights into the teaching of statistics in Irish classrooms and pedagogical considerations which underlie innovative and modern approaches to teaching statistics.

The second study was a

survey of statistical understanding which was administered to 456 entry-level pre-service teachers. The survey consisted of 15 tasks examining understandings of foundational statistical concepts. While many of the tasks drew on knowledge and understandings that one would expect 6th class students (approx 11-12 years old) to possess, other tasks examined knowledge and understandings extending beyond primary level. Results provide critical insight into secondary student's knowledge of statistics and data analysis.

# ISI - Where are all the young people?



Claire Gormley (School of Mathematical Sciences, University College Dublin) and Victor Panaretos (Professor of Mathematical Statistics, École Polytechnique Fédérale de Lausanne) are organising the provocatively titled session "ISI - Where Are All the Young People?" (IPS109, 3.00pm@Liffey A). The aim of this session is to host a discussion on the role of early career statisticians in the International Statistical Institute (ISI). This session is a follow up to the extremely successful ISI Young Statisticians Meeting (YSI 2011) at

Trinity College Dublin last weekend.

While a number of sections within the ISI already have special initiatives involving early career statisticians (in particular ISBIS, TIES and the Bernoulli Society), to date the role of early career statisticians in ISI has been limited. However the ISI as a whole is acutely aware that in order for the discipline of Statistics to remain active and dynamic, it is necessary that talented people are attracted to the discipline.

This is a dual issue however, as early career statisticians also recognise the benefits of involvement in a statistical society whose senior members are a rich source of knowledge and experience. The global character and diversity of the ISI, encompassing all areas of Statistics, place it in a unique position among learned societies to provide for the needs of early career statisticians in all areas of the discipline.

The session will consist of formal presentations by ISI Vice President Professor Vijay Nair, by Professor Arnaldo Frigessi, who already has



extensive experience in spear heading initiatives for early career statisticians and by Dr. Adele Marshall, chair of the Young Statisticians Section of the Royal Statistical Society. Discussions will be stimulated by Professor Victor Panaretos, chair of a working group on the role of early career statisticians within the ISI. The organisers anticipate significant contributions from the floor, especially given the 'youth' theme planned for ISI 2013 in Hong Kong.

# Can we forecast avalanche hazard?

To prove that the scientific program at the 58th ISI Congress is varied, we move now to discuss the probability of avalanches triggered by alpine skiers. Christian Pfeifer, from the Institute of Statistics at The University of Innsbruck in Austria, will discuss this today at the special topic session on "Short and Long Term Forecasting of Avalanche Hazard" (STS063, 3.00pm@Wicklow Meeting Room 3).

In Austria, most fatal snow avalanche accidents are caused by skiers or snowboarders. There were 79 avalanche accidents, including 17 fatalities,



reported during the winter of 2001/02. Of the 17 fatalities, 16 were caused by avalanches triggered by alpine skiers or snowboarders. By far the highest number of accidents took place in Tyrol (2001/02:

47 accidents/ 12 fatalities).

However, it is rather difficult to predict the risk or probability of avalanche events on a backcountry ski slope under given conditions. About 10 years

ago, the mountain guide Werner Munter suggested a quantitative method in order to estimate the risk of avalanche events. He developed a strategy for backcountry skiers whether to go on a skiing tour but Munter's quantity cannot be understood as a probability of avalanche events.

The authors in this paper propose to use a logistic regression model in order to estimate the probabilities in question. They also develop Munter's decision strategy by attempting to establish a strategy for backcountry skiers based on empirical/statistical arguments.

## Is it statistics or is it magic?



Sarjinder and a "Deck of Cards"

Dr. Sarjinder Singh, from Texas A&M University, has been playing with randomized response devices for several years like young children play with marbles and kites. He introduced amongst others, the ideas of hidden gangs, stochastic randomized response device, efficient use of two decks of cards and forced quantitative randomized response models. He is the author of a two volume monograph "Advanced Sampling Theory with Applications: How Michael Selected Amy"; and a textbook "Thinking Statistically: Elephants Go to School".

Today Dr. Singh is going to give us a magical talk when he estimates at least seven measures of qualitative variables from a single sample using a randomized response technique. The paper was co-written with Cheon Lee and Stephen Sedory, from the same Texan university. The talk will form part of the special topic session "Theory and Practice of Randomized Response" (STS001, 8.30am@Auditorium Wing Left).

Dr. Singh tells us that a social scientist could be considered to be a tool-less mechanic if he/she does not have the appropriate statistical tools for collecting, analyzing and interpreting a dataset. Good tools are required for a mechanic to make a good vehicle. In the same way, good statistical tools are required for a social scientist to collect, analyze and interpret a dataset.

## Is facebook safe?



Image: clarusvisus/Shutterstock.com

Aysen Dener Akkaya (Middle Eastern Technical University, Ankara, Turkey), Mehmet Sahinoglu and Scott Morton (Auburn University, Montgomery, Alabama, USA) and Vir Phoha (Louisiana Tech University, Ruston, Louisiana, USA) have joined forces to tackle the social networks in relation to the security of their data and the resulting risks that come about. To hear more on this topic come down to the invited paper session today on "Statistical risk assessment in trustworthy computing" (IPS018, 3.00pm@Wicklow Hall 2B), where they will present their applied research entitled, "A Quantitative Security and Privacy Risk Assessment and Management Method for Social Networks".

The authors tell us that with the unprecedented popularity of the currently ubiquitous social networking sites (such as Facebook, MySpace and

Twitter), undesirable security and privacy risk issues have come to the forefront as a result of this unexpected rapid growth. The front ranking problems are mainly lack of trustworthiness; namely, those of security and privacy.

A major reason social network security and privacy lapses exist simply results from the astronomical amounts of information. These flows of data make it much easier to exploit a single flaw in the system. Features that invite user participation such as messages, invitations, photos, open platform applications etc. are often the avenues used to gain access to private information.

The authors will address these issues by employing a quantitative approach on how to assess the risks of security and privacy for social networks. They will also demonstrate using a cost-optimal game-theoretical solution on how to manage the risks, a process which common users may conduct on their own. As for the survey results on 11 students obtained from real people, the median risk in a representative Turkish university student audience at Ankara was 49.2% (49 out of a hundred are at some sort of a risk in terms of privacy breach).

# World Bank faces the new reality



Dr. Misha Belkindas has worked at the World Bank since 1992 and is currently Senior Advisor to the Director

of the Development Data Group, the department that manages statistical activities and produces the World Bank's statistical publications. Today he will present his paper "Rising Demands in the Era of Shrinking Budgets" at the special topic session on "Statistical Cooperation After the Financial Crisis" (STS020, 8.30am@Liffey A).

Dr. Belkindas tells us that demand for timely and reliable statistical information is increasing. The need to monitor

economic and social developments and the need for a timely response to rapid changes in the economic environment requires timely high-frequency data even more than before. The current financial crisis has reiterated this point further for both policymakers and statisticians. Sound and timely financial indicators to provide advance warnings in the system became very important.

At the same time the budgetary envelopes are shrinking and the funds

allocated for statistical systems in the developed and developing world alike are becoming scarcer.

In addition, there have been calls to find new measures of well-being beyond the traditional macro economic indicators such as GDP and its components. This is only one example of rising demands for data in addition to those created by the need to measure the Millennium Development Goals and respond to the results agenda.

## Profiling financial asset holders across Europe



Roberta Varriale is Research Fellow at the University of Florence and she will present the paper she co-authored with her colleague Omar Paccagnella from the University of Padua. The paper is entitled "Profiling Financial Asset Holders Across Europe" and formed part of the special topic session on "Statistical

Models for Marketing research" (STS033, 8.30am@Liffey Meeting Room 1).

The ongoing political process of European unification, the introduction of the Euro currency and new developments in information and communication technology has contributed to the creation a potentially large single market, the European Union. Treating the different member states as a unique market can lead to some attractive unified marketing strategies. Nevertheless, the identification of substantial differences among countries

might support the use of multi-domestic or multi-regional policies.

In the paper, the authors provide some evidence on the segmentation of the European market, in order to identify homogeneous groups of countries and/or consumers. In particular, their interest was in the ownership patterns of several financial assets among the elderly. Indeed, the elderly control a substantial portion of the household wealth, so their choices in investments or savings might affect the future course of the markets. Furthermore, there is

evidence of a large heterogeneity in household portfolio ownership within and across European countries. The study of the portfolio choice made by old people is therefore important for policymakers, scientific researchers and marketing managers.

The authors exploit the richness of information provided by SHARE (Survey of Health, Ageing and Retirement in Europe), that is an international survey on ageing collecting detailed information on several aspects of the socio-economic condition of the European elderly.

## Modelling bank failures



Sara Maccaferri is a PhD student in financial modelling at the Katholieke Universiteit of Leuven in Belgium who is also working for the Econometrics and Applied Statistics Unit of the European Commission Joint Research Centre. Today, she will speak about the paper she co-authored with Jessica

Carboni (European Commission) and Wim Schoutens (Katholieke Universiteit of Leuven) entitled "Levy Processes and the Financial Crisis: Can We Design a More Effective Deposit Protection?"

One of the presenting authors at today's special topic session on "Credit Risk and Levy Processes" (STS072, 8.30am@Wicklow Meeting Room 4) will show delegates how to use Levy processes to simulate the distribution of losses deriving from bank failures. The application of Levy processes is expected to provide successful results since bank failures are unexpected, rare events.

The authors propose to use the simulated distribution of losses to design effective Deposit Guarantee Schemes (DGS). During the recent global financial crisis, DGS were brought to the centre of the political and financial debate, especially due to the fact that the DGS in the EU Member States were (in many cases) incapable of reacting to the financial crisis, mainly due to the lack of funds set aside. By simulating banks' default and the corresponding losses, the authors' model allows defining a target level for funds to be collected under the scheme in order to promptly and effectively respond to financial crisis and protect citizens.

## Mainstreaming migration statistics



Bettina Knauth is Head of the Population Statistics unit of Eurostat, the Statistical Office of the European Union. She is presenting a paper today at the special topic session "Migration Statistics" (STS018, 3.00pm @ Ecocem Room) entitled "Mainstreaming Migration Statistics".

In many EU Member States, migration has become the largest component of population change and is likely to remain important in the future. The shaping of the size and the composition of future migration flows as well as the integration of migrants into their host societies present a real challenge to policy makers, who need high-quality statistical information for policy design and evaluation.

There is currently a noticeable gap between

this high demand for statistical information and the relatively poor availability of migration statistics, which are often limited to information necessary from a purely demographic perspective without taking into account the data needs for social policy. A further development of migration statistics has been hampered by the resource intensity of collecting additional statistics, resources that cannot be made easily available at a time of general budget cuts.

In order to overcome this dilemma, Eurostat has developed the approach of mainstreaming migration statistics, i.e. an approach in which the needs for information on migration and migrants are taken into account as part of an ongoing development of a wide range of economic and above all social statistics. Such an approach of adapting existing data sources, be it administrative registers or statistical surveys, is more cost-effective than developing new data sources.

## Reasoning from evidence

James Nicholson, Jim Ridgway and Sean McCusker from the University of Durham in the UK will give a talk today at the special topic session on "Statistical Literacy, Critical Numeracy and Social Statistics" (STS008, 3.00pm @ Auditorium Wing Right). They will be presenting their work on a project called "Reasoning from Evidence", funded by the Nuffield Foundation, which is developing some data visualisation tools to support the teaching of Sociology in courses for 16 – 18 year olds, but the tools have much wider application across many subjects and wider age ranges.

Sociologists theorise about issues such as inequalities in health, educational achievement, criminal behaviour or the distribution of wealth. The starting point for theory should be a clear understanding of phenomena.

Teaching social sciences in pre-college courses is a challenge, in part, because any social phenomenon involves a number of



factors. Up to now the complexity of social data has been a substantial obstacle, so the use of data has largely been restricted to headline statistics based on aggregated data, and explorations of the effects of single factors considered separately.

The use of technology offers the opportunity to let even young students get to grips with disaggregated data (literally). Using drag and drop variable placeholders they can manipulate the data to explore which factors are associated with the biggest effects, and to describe patterns in the data. Students can have the confidence to talk about the stories that the data tell, and can then judge the extent to which rival accounts are consistent with the evidence.

## The price is right!



What do owner occupied housing in Ireland, indirect bank charges in Australia, seasonal adjustment at the European Central Bank and regional prices in Brazil have in common? Give up? Well these are just some of the topics that will be discussed at today's session "Developments in Consumer Price Index Methodology" (STS011, 3.00pm @ Liffey B).

What's the motivation you

ask? Simple! The importance of consumer price indices, both as a tool to inform monetary policy or as the barometer of a society's cost of living, can hardly be overstated. But as economies and markets evolve, the identification of real price changes is becoming ever more difficult as innovations, such as bundling for example, blur the distinction between price and quality.

The issues above are just some of the many challenges facing price statisticians today. They include old chestnuts such as how best to incorporate owner occupied housing into a price

index. Not only does pricing owner occupied housing (or OOH as we like to call it) present very technical challenges but it also lies at the heart of a more philosophical debate – is a CPI a pure price index or a cost of living index, is it a tool for central bankers or citizens and can it serve both masters? On the other hand the question of how to incorporate indirect banking charges (or FISIM) into a price index is a new question, recently posed by our friends down-under, the Australian Bureau of Statistics.

With high profile speakers from Australia (Lewis Conn, Director, Consumer Price

Indexes at the Australian Bureau of Statistics), Brazil (Eduardo Pereira Nunes, Director General of the Brazilian Institute of Geography and Statistics), ECB (Martin Eiglsperger, Senior Economist) and Ireland (Paul J. Crowley, Senior Price Statistician at CSO Ireland) this session promises to be a humdinger. And that's not all! Dr. Michael Horrigan (Associate Commissioner, Office of Prices and Living Conditions) of the U.S. Bureau of Labour Statistics, never one to avoid controversy, will stir and provoke the debate as discussant.



## “Craic agus Ceol” at the Gala Dinner

The Gala Dinner that will close the 58th World Statistics Congress in Dublin will take place at the Convention Centre Dublin (CCD) on Friday 26 August 2011. This event promises great “**craic agus ceol**”! (i.e. fun and music).

The entertainment will have a distinctly Irish flavour with traditional Irish musicians, playing instruments such as the fiddle and the bodhran (type of drum), accompanying an Irish dancer.

The night will kick off with a drinks reception at 7pm with dinner being served at 7.50pm followed by some fantastic entertainment that will start just before 11pm. The venue will close at 2am.

We will also have a surprise act that will certainly stun the crowd with her melodic voice!

## Traditional Irish Night

On Tuesday 23 August, the Traditional Irish Night will be a party night to remember. The host venue will be Trinity College Dublin, the oldest university in Ireland. Tickets for this event include traditional Irish cuisine, drinks and a fabulous array of Irish musicians with fiddles, harps, flutes, tin whistles, accordions and bodhráns who are sure to keep the crowd dancing all evening long.

Try to arrive at Trinity College at 7.30pm for an expected 8.00pm start. Tickets cost €50 per person (not included in registration fee). Tickets can be purchased in the main lobby of the CCD all day today and tomorrow.



Photo: Christian Bertrand/Shutterstock.com

## Wednesday to bring clarity to muddy waters

As the delegates are aware at this point, a full day of this week's conference is being entirely devoted to the theme of Water. That day is Wednesday. We are quietly confident in the **Daily News** that the famously variable Irish weather will respond accordingly.

Water problems are essentially cross-disciplinary. This is reflected in the invited component of the Theme Day which consists of an opening session with presentations by three ISI President's Invited Keynote Speakers, 31 invited sessions, and a closing roundtable discussion.

We are very lucky to have three keynote speakers who are top of their field in relation to the science of water. These three presentations will highlight global water problems and will foster a collaborative role for



statisticians in addressing such problems. The speakers are Ignacio Rodriguez-Iturbe from Princeton University, USA, Olcay Ünver from UNESCO, Italy and Howard Wheeler from University of Saskatchewan in Canada.

The invited sessions cover both freshwater and marine

water at the global and national levels and include papers from the developed and developing world. The papers present studies on water quantity, quality and distribution, and cover almost all areas of statistical methodology. Most sessions show strong collaboration between statisticians and water scientists, some are

the joint efforts of the ISI Sections, and four are organised by Eurostat and UN organisations.

The roundtable discussion will be titled “Global Water Crises: The Role of Statisticians” and will discuss the challenges humanity is facing in securing current and future water needs and the role statisticians can play in dealing with water crises.

The panel, organised by Abdel H. El-Shaarawi and chaired by Gerard O'Hanlon (Director General, CSO Ireland), includes a stellar cast of water scientists, statisticians and policy makers including H.E. Sheikh Hamad Bin Jabor Bin Jassim Al Thani, (Chairman of Qatar Statistical Authority), Walter Radermacher, (DG Eurostat), Ignacio Rodriguez-Iturbe (University of Princeton USA) and Olcay Ünver (UNESCO, Italy).

# Things to do in Dublin tonight



Film

**Super 8** directed by JJ Abrams

Venue: Cineworld (Phone: 1520 880 444), Parnell Street, Dublin 1 (20 mins walk from CCD)

Performance times today: 12.40pm, 3.20pm, 6pm and 8.40pm

Venue: The Savoy (Phone: 1520 927 004), O'Connell Street, Dublin 1 (15 mins walk from CCD)

Performance times today: 3.30pm, 5.50pm and 8.30pm



Theatre

**Hay Fever** by Noel Coward

Venue: Gate Theatre, 1 Cavendish Row, Dublin 1 (15 mins walk from CCD)

Phone: +353 (0)1 874 4045, Website: [www.gate-theatre.ie](http://www.gate-theatre.ie)

Performance time today: 7.30pm, Price: €25



Live Music

**Grease the Musical**

Venue: Grand Canal Theatre, Grand Canal Square, Docklands, Dublin 2 (10 mins walk from CCD)

Phone: + 353 (0)1 677 7999, Website: [www.grandcanaltheatre.ie](http://www.grandcanaltheatre.ie)

Performance time today: 7.30pm, Price: €35.00 - €50.00

For further information on entertainment in Dublin please see [www.entertainment.ie](http://www.entertainment.ie)

## Daily Numbers

- 919** Undernourished people (in millions) in the world
- 1,545** Overweight people (in millions) in the world
- 515** Obese people (in millions) in the world
- 3.1** Deaths caused (in millions) by smoking so far this year
- 1.6** Deaths caused (in millions) by alcohol so far this year

Source: [www.worldometers.info](http://www.worldometers.info)

## Today's Weather



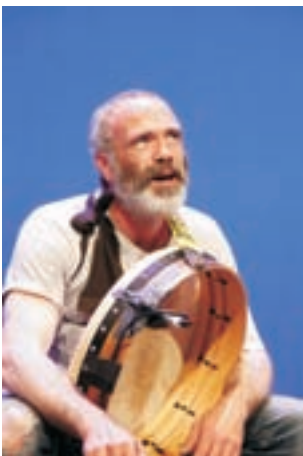
Cloudy with some sunshine



David Ferguson, Carol Murray & Yvonne Stegfeldt



Cynthia Z Clark & Martha Farrar



Rónán Ó Snodaigh (Kíla)

## SUDOKU

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## Emergency Contact Numbers

**Police, Fire, Ambulance:** Telephone: 112 or 999 **CCD Medical Centre:** Telephone: 01-819 4999

**CCD Security:** Telephone: 01-818 4999 **Tourist Victim Support:** Telephone: 1890 365 700

The Irish Tourist Assistance Service (ITAS) offers assistance to tourists who become victims of crime.