ISI & Sections’ Awards Ceremony 2010-2011

Featured at the 58th ISI World Statistics Congress 2011

Thursday 25th August 15:00-16:00
Welcome

Jef Teugels
ISI President
Welcome

Vincenzo Esposito Vinzi
ISI Awards Committee Chair
ISI Mahalanobis International Award in Statistics

Professor P.C. Mahalanobis (1893-1972)

2011 Award Winner
Professor Víctor J. Yohai
Argentina
ISI Jan Tinbergen Awards

Professor Jan Tinbergen (1903-1994)
ISI Jan Tinbergen Awards

2011 Prize Winners

Kodzovi Senu Abalo
Republic of Togo

Etude Comparative des Conditions de Travail des Enfants Issus des Menages Agricole au Burkina Faso, en Cote D’Ivoire et au Mali
ISI Jan Tinbergen Awards

2011 Prize Winners

Kavitha Mehendale & Manjula Kalluraya
India
Behrens-Fisher Problem and Distribution Free Tests for Equality of Means
ISI Jan Tinbergen Awards

2011 Prize Winners

Mahdi Roozbeh
Iran

Feasible Ridge Estimator in Partially Linear Models
IAOS Prizes for Young Statisticians

2011 1st Prize Winner

Julia Höninger
Germany

Morpheus: An Innovative Approach to Remote Data Access
IAOS Prizes for Young Statisticians

2011 2nd Prize Winner

Sarah Conn

Widening the Data Net: NSO Leadership Role
IAOS Prizes for Young Statisticians

2011 3rd Prize Winner

Kate Smaill
New Zealand

Trajectory Modelling of Longitudinal Non-response in Business Surveys
IASC ERS Young Researchers Awards

Charles Bouveyron
France

Adaptive Mixture Discriminant Analysis for Supervised Learning with Unobserved Classes
Fourier Analysis and Swarm Intelligence for Stochastic Optimization of Discrete Functions
IASC ERS Young Researchers Awards

Géraldine Laurent & Cédric Heuchenne
Belgium

Computational Treatment of the Error Distribution in Nonparametric Regression with Right-censored and Selection-biased Data
## ISLP Best Cooperative Project Award in Statistical Literacy

<table>
<thead>
<tr>
<th>Country</th>
<th>Society/Partnership</th>
<th>Title</th>
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<tr>
<td>Ethiopia</td>
<td>Belgian (Flemish), Ethiopian and Mozambique universities under the umbrella of the Flemish Interuniversity Council, VLIR-UOS</td>
<td>North-South-South (NSS) International Collaborative Project in Biostatistics</td>
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<tr>
<td>New Zealand</td>
<td>Statistics New Zealand and NAOS (the Network of Academics in Official Statistics)</td>
<td>A post-graduate program in official statistics</td>
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# ISLP Poster Competition

## Winners – Students born in 1995 or after

<table>
<thead>
<tr>
<th>1ST PRIZE</th>
<th>Country</th>
<th>Poster Name</th>
<th>School</th>
<th>Students</th>
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<tbody>
<tr>
<td></td>
<td>Canada</td>
<td>La Pollution Lumineuse (light pollution)</td>
<td>Bliss Carman Middle School, Fredericton, New Brunswick</td>
<td>Holly Ayles and Emily Baxter</td>
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<tr>
<td>2ND PRIZE</td>
<td>Portugal</td>
<td>How the spread of dust in the atmosphere can contribute to reduce the growth of plants</td>
<td>Third Cycle and Secondary School of S. Pedro</td>
<td>Beatriz Rocha and Beatriz Morais</td>
</tr>
<tr>
<td>3RD PRIZE</td>
<td>New Zealand</td>
<td>Can you predict the weather at midday by looking out your window in the morning</td>
<td>Cashmere Primary School Christchurch</td>
<td>Megan Snell, Jack Boyd and Mitchell Sammut</td>
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<tr>
<td>HONOURABLE MENTION</td>
<td>Finland</td>
<td>Carbon dioxide emissions caused by private cars in Finland</td>
<td>Peltolan koulu</td>
<td>Mikko Chan and Miko Pusztai</td>
</tr>
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</table>
**La pollution lumineuse**

**Les réverbères de défilement total**
Les réverbères de défilement total font que le parcours de la lumière soit concentré à une distance de 90 degrés ou plus.

**Les effets sur l'environnement**
Beaucoup de gens ont démontré que la lumière affecte la santé environnementale. Pour certaines, la lumière lumineuse n'est pas néfaste pour l'environnement, les animaux et même les humains. Au Neveu-Brunswick, un homme a dû s'installer une maison qui se situe à l'extérieur de la pollution lumineuse. On a dû installer des réverbères qui servent de barrières aux lumières. Mais jusqu'à maintenant, pas de preuve que la pollution lumineuse est néfaste.

**Collection des données**
On a collecté des données primaires en utilisant un indicateur qui mesure la qualité du ciel (IQC). Cet indicateur mesure les magnitudes en arc secondes, et la température. On a installé de nombreux capteurs dans le ciel de la pollution lumineuse. On a trouvé que la pollution lumineuse est une indication de la qualité du ciel. Le IQC est une mesure de qualité de ciel, et les utilisateurs peuvent prendre en compte les effets de la pollution lumineuse.

**Erreurs**
Pour avoir des erreurs dans nos résultats :
- il est possible que le ciel soit d'un autre pays, peut-être un pays trop chaud.
- le ciel est un mélange de nuages qui peuvent interférer.
- l'horaire est un mélange de nuages qui peuvent interférer.
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**IQC**
La pollution lumineuse se situe dans le village de New Maryland. Le ciel est bleu et on ne peut pas voir des étoiles.

**Born in 1995 or younger: 1st Prize Canada**
How the spread of dust in the atmosphere can contribute to reduce the growth of plants?

Introduction: The leaves are organs of plants where vital functions occur such as photosynthesis and transpiration. According to the characteristics presented by the leaves, one can evaluate the health status of a plant, and its state depends on the environmental conditions, including soil and atmosphere. When air contains the dust transported by wind after some time, by gravity, this dust will accumulate in soil and plant leaves.

Methodology: The experimental trial was developed over two months using two pots, A and B, respectively, study and control with Pelargonium sp. The two vessels were subject to the same environmental conditions. The study pot was subject weekly for 5 seconds sifted dust from an abandoned area. Thus, only the factor of the presence/absence (study pot/control pot) of dust is variable under study. From the 4th week the registration of plant evolution began, because after that time influence of dust would be completely visible. Thus, the number of healthy leaves, the number of wilted leaves and dried leaves was weekly counted, and the latter ones were removed from the pots.

Data Analysis: By analyzing the evolution of the number of leaves, from the 4th week, we made graphs. Mathematically we calculated as a percentage, rounding all values, to drive the evolution of each study plant from one week to another. We also analyzed the evolution of the number of healthy leaves that was weekly counted since the beginning of the study to the end, because its increase/decrease is the key indicator for us to conclude whether the environment is appropriate or not to the plant development.

Conclusions: The dust in the atmosphere is harmful to plant growth. They affect the growth of leaves and prevent the normal development of the plants. The results seem to indicate existence of a correlation between the presence of dust in the atmosphere and the subsequent depreciation in the leaves, with the degree of development of the plants. The abandoned areas are an obstacle to normal plant growth of the surrounding areas. So, we defend the recovery of abandoned areas such as quinqueries, by replanting with suitable vegetation.
Born in 1995 or younger: 3rd Prize New Zealand
CARBON DIOXIDE EMISSIONS CAUSED BY PRIVATE CARS IN FINLAND

Research question:
How many kilometres a day do people drive in their cars, and how much carbon dioxide emissions are thus produced? Are the CO₂ emissions of other means of transport smaller?
Hypothesis: People drive on five or more days a week. Consequently, carbon dioxide emissions from private cars are considerable.
This study focuses on CO₂ emissions from transport. The study was initiated by interviewing a total of 100 people: 50 women and 50 men. They were asked these questions:
- Do you own a car?
- If you do, how many times a week do you use it?
- If you do use it, how many kilometres a day do you drive?
These results allowed us to calculate the average carbon dioxide emissions, assuming that one kilometre driven corresponds with CO₂ emissions of 176 g (www.hsl.fi). We were also able to calculate the average distance driven. When calculating the annual carbon dioxide emissions, we relied on information obtained from the Statistical Yearbook of Finland 2009. The calculation was performed by using the value given in this book for the annual emissions of Finnish people.

We multiplied this value by 0.176 (the share of transport in the emissions was 17.3%), then multiplied the result by 0.4920 (the share of cars in transport emissions was 4.920%)
The Yearbook did not contain data for 2010, which is why we had to calculate the figures for 2010 without this information.
The calculations were performed as follows:
(The difference in the figures was due to the fact that based on the survey, women on average drove on 6 days a week, whereas men drove on 7 days a week).
Average of kilometres driven - 176 g
number of driver's licences held by men - 365
number of driver's licences held by women - 313

This diagram shows that cars are one of the means of transport with the highest emissions. A better alternative for the environment would for example be the bus, the emissions of which are over 50% smaller.

The conclusions of the study are as follows:
On average, men drive more than women. Families often have one car, and the carbon dioxide emissions from traffic have remained in almost the same figures since the 1990s. From this we can conclude that the increase in the number of cars has had little effect on carbon dioxide emissions. The reason for this could include better filtering of exhaust fumes or changes in the consistency of car fuel.
This shows that our hypothesis was correct. We were surprised to find, however, that the volume of emissions has remained more or less the same since 1990.

Authors' opinions:
Mark: This worked out better than I expected. The results make sense, and they are as accurate as you could manage with our methods.
Mikko: I think the figures obtained in our study are close to actual values, even if they differ slightly from the values in internet sources. This deviation was due to the number of people interviewed and the fact that we could not find the number of those with a driving licence for all the years. This study should be the most accurate there is, as I am not aware that anybody else has conducted a similar one.

Information sources:
"Statistical Yearbook of Finland 2009"
www.hsl.fi
www.veski.fi

Image Sources:
www.vestavet.fi/files/001/carbon-dioxide-emissions-are-depicted-according-to.jpg
www.veski.fi
http://www.veski.fi/files/005/2008/02/01/carbon-dioxide-emissions-are-depicted-according-to.jpg

born in 1995 or younger: Hon mention - Finland
### ISLP Poster Competition

**Winners – Students born in 1992 or after**

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<td><strong>1ST PRIZE</strong></td>
<td>Finland</td>
<td>Recycling and waste disposal</td>
<td>Lyseonpuiston lukio</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Leevi Leppäjärvi, Janne Mustaniemi and Iidaliina Uusitalo</td>
</tr>
<tr>
<td><strong>2ND PRIZE</strong></td>
<td>Portugal</td>
<td>Experience ”Irradiated Seeds Germination” – What is the effect of different radiations on plant growth?</td>
<td>Secondary School of Portela</td>
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<td>Margarida Santos and Sara Brites</td>
</tr>
<tr>
<td><strong>3RD PRIZE</strong></td>
<td>Canada</td>
<td>Black Gold &amp; Alberta’s Rivers</td>
<td>Webber Academy, Calgary Alberta</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cecilia Wright</td>
</tr>
<tr>
<td><strong>HONOURABLE MENTION</strong></td>
<td>Hungary</td>
<td>How do we think we change our environment in Hungary?</td>
<td>ELTE Apáczai Csere János Gyakorló gimnázium</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>János Mena, Gábor Galgúczi and Gergely Dálya</td>
</tr>
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</table>
Recycling and waste disposal

Objectives
Our objective was to study the attitudes or general upper secondary school students towards recycling, their recycling habits, and factors that may affect recycling. The aim was to attain a comprehensive picture of recycling among students at our school.

Research questions
What factors have an impact on recycling and attitudes towards recycling? Does recycling have links with such factors as age or gender? How important do people consider recycling? What do they recycle?

Implementation
Our main material was the results of our recycling survey carried out by random sampling. Out of approx. 700 students at our school, 100 filled in the questionnaire. In addition, material on waste management was used from the web site of Statistics Finland.

Municipal waste in Finland in 2008

A total of approx. 80.1 million tons of waste was produced in Finland. Of this amount, approx. 52% was disposed of in a landfill. The amount of municipal waste, or waste generated in households and waste comparable to household waste, amounted to approx. 2.8 million tons in 2008, or approx. 3.5% of all waste produced in the country. (Source: Statistics Finland)

Sources of waste in Finland

Composition of municipal waste

Disposal of municipal waste

Recycling at Lysepoluisto General Upper Secondary School

Recycling (1-5)

Personal importance of recycling (1-5)

Inconvenience caused by recycling (1-5)

The attached diagram shows the extent to which the students neglect various materials

The Green Flag project, which operates in schools such as ours, is a sustainable development programme that aims to reduce environmental loading. This programme is the biggest factor making recycling viable in our school, and we have investigated how the Green Flag has influenced the students' attitudes.

The majority of the students feel that the Green Flag has had a positive effect on their attitude towards recycling. On the other hand, the Green Flag has increased interest in recycling more than it has reduced it. In general, the interest in recycling has only increased, but in men it has also reduced somewhat.

In addition to the results shown in the paper, we observed that:

- The number of people who consider recycling important is clearly higher than the number of those who actually recycle. In general, people believe that recycling has an impact.
- Women recycle slightly more than men. Women also believe that the impact of recycling is greater, and they consider recycling more important.
- The type of dwelling has little impact on the extent to which waste is recycled or sorted, or the inconvenience caused by recycling and sorting.

Implications for the further study:
Relevance and feasibility of the study:

- The study is relevant and feasible for further studies.
- The study is valuable for understanding the factors affecting recycling and attitudes towards recycling.

Recycling is a wide concept and there is a lot more to study than what is demonstrated in these data alone. Consequently, this study does not directly address factors like influence, motivation, etc. recycling results from the students in an extremely high number of questions, for example from entire national factors, like family income, or in more specific factors, like a much more extensive utility with a wider coverage would be required, which would rely on a much larger sample from a far wider number of variables, and many more possible factors should be included in the examination.

Born in 1992 or younger: 1st Prize Finland
Experience “Irradiated Seeds Germination”

What is the effect of different radiations on plant growth?

Introduction

Irradiation of seeds is already widely used in agriculture because that in certain doses of radiation has a sterilizing effect, increasing the production yield.

Procedure

1. He set up the same type and same amount of land (fertilized and collected at school) in trays (leaving about 2 fingers empty on each wall). The trays were placed with plants in the same place so that growth conditions were the same (temperature, light, and humidity).
2. For each amount of radiation dose (0 Gy, 100 Gy, and 200 Gy, 500 Gy), 11 equal number of seeds irradiated by LIP (Particle Research Laboratory) were placed in the same area of land (one seed per well).
3. The seeds were watered with the same type and the same amount of water (approximately 10 cm³ on Mondays, Wednesdays and Fridays for three weeks).
4. The environmental variables (temperature and luminosity, humidity) were read every Monday, Wednesday, and Friday, and the values were recorded in a table.
5. For each value of radiation dose, number of seeds that germinated were counted.
6. Measured the plants every Monday, Wednesday and Friday.
7. After three weeks the results were recorded in tables.

Conclusion

• The seeds that were subjected to 50 Gy of radiation increased by about the same as those that were not irradiated, slightly less in the canary plants of canary seed, and slightly more in wheat plants.
• Seeds irradiated with 100 Gy and 200 Gy, in general, had lower growth than the other seeds, since this level of radiation affects the DNA of the seeds themselves.
• It appears that it is feasible to irradiate seeds with 50 Gy because harmful microorganisms are killed or sterilized, and the plant growth is less influenced.

Bibliography

http://www.ctafrica.org/color/irradiation.html
http://www.irradiation.com/irradiation.html
Black Gold & Alberta's Rivers

Questions
How have the oil sands (including natural deposits) affected the water quality of rivers in Alberta?

Stations
Data was gathered from stations either upstream or downstream of the oil sands or deposits.

River #
1, North Saskatchewan River at Devon
2, Athabasca River at Elk Point
3, Mississippi River at Fort Vermilion
4, Roa River South at Nipigon

Data was collected for these stations from the reports available through the following link:
http://waterqualityatlas.org/

Analysis
River Quality

TDS, FR, SO, Mg
- Quality: Calculated as an average of data in the format mg/L. A higher average indicates poorer water quality.
- Consistency: The standard deviation of the data. Higher standard deviation indicates less consistency.
- Fe and Cu

In both of the graphs of the averages of River 1 and River 3, it is clear that the averages of the downstream stations are higher than the averages of the upstream stations, though for magnesium this may be difficult to observe, due to the scale. This indicates lower water quality. Likewise, the graph of mercury and iron for River 1 shows more susceptible levels of mercury downstream, but no unacceptable levels of iron upstream or downstream.

Conclusions
Downstream rivers are nearly always demonstrate higher averages of substances than their upstream counterparts in the categories of TDS, FR, SO4, and Mg. They also tend to exhibit higher levels of mercury (Hg), though not iron (Fe). Also, downstream rivers are notably less consistent, nearly always showing higher standard deviation this indicates that something is consistently and negatively impacting the water quality of a river. The runoff from tailings ponds would likely be highly affected by the weather conditions and the contents of the ponds, and so it is not unreasonable to conclude that these would have a substantial impact. However, because the averages are consistently higher, we can also conclude that naturally occurring bitumen deposits are also a cause of higher average of the indicators present in the water.

And so, in conclusion, both the runoff from tailings ponds and the natural bitumen deposits of the oil sands are having a negative impact on the water quality of rivers in Alberta.

Improvements
In order to improve this project, I would analyze more indicators from more relevant rivers, if possible, and introduce an upstream and a downstream station from a “controlled” river to better gauge the oil sands impact.

The graph of River 3’s standard deviation clearly shows that standard deviation is deviated for all the downstream stations, pointing to lower consistency.
Born in 1992 or younger: Hon mention - Hungary
IASE ICOTS Prizes for Best Papers by Early Career Authors

2010 Winners

Jill Fielding-Wells
Australia

Linking Problems, Conclusions and Evidence: Primary Students’ Early Experiences of Planning Statistical Investigations
IASE ICOTS Prizes for Best Papers by Early Career Authors

2010 Winners

Andreja Vidic
Slovenia

The Impact of Problem-based Learning on Statistical Thinking of Engineering and Technical High School Students
IASE ICOTS Prizes for Best Papers by Early Career Authors

Highly Commended

Jennifer Kaplan
USA

Post Secondary and Adult Statistical Literacy: Assessing beyond the Classroom
Highly Commended

Jennifer Noll
USA

Students’ Statistical Reasoning about Distribution across Grade Levels: A Look from Middle School through Graduate School
IASS Cochran-Hansen Prize

2011 Award Winner

Solange Correa Onel
Brazil

Bias in Modelling Complex Data for Small Area Estimation
ISBIS Best y-BIS Paper Award

2010 Award Winner

Veronika Czellar

Efficient Estimation of Learning Models
TIES Abdel El-Shaarawi
Young Investigator Award

2010 Award Winner

Marc Genton
USA

For fundamental contributions to statistical theory and practice, teaching, and service to the statistical community
Science Foundation Ireland
Best Poster Winners

Presented at the ISI Young Statisticians Satellite Meeting

Karthik Bharath
University of Connecticut
Test for jumps in semimartingale models using clustering criteria

Nicholas Chamandy
Google
Dipping a toe into variance estimation for large data streams
Jennifer Gillespie
University of Ulster
Modelling an orthopaedic integrated clinical assessment and treatment service (ICATS) using analytic and simulation approaches
Science Foundation Ireland
Best Poster Winners

Damien McParland
University College Dublin
Mixture models for ordinal and mixed data

Anton Westveld
University of Nevada - Las Vegas
Joint work with Kevin Quinn
Dirichlet processes for quantal response equilibrium models - examination of pegged exchange rate policies
Thank You

ISI Awards Committee
ISI Mahalanobis Committee
ISI Jan Tinbergen Jury
ISI Sections’ & ISLP Representatives & Selection Committees
Science Foundation Ireland
Award Winners
Audience

Invitation to ISI & Sections’ Awards Ceremony 2013
at the 59th ISI WSC in Hong Kong