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Newsletter

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Seminar on Applications of Forecasting Techniques

A successful seminar on Applications of Forecasting Techniques was held on 28th and 29th October 2013 organized by the IASSL. This is the third year in succession the IASSL and the former ASASL organized this seminar.

A significant number of participants attended the seminar representing both public and private sector institutions, but the largest number participated from the banking sector.
The main topics covered were:

- Regression Analysis by Mr. R A B Abeygunawardana of University of Colombo
- Generalized Linear Model by Dr.(Mrs.) Chandanie Nawaratna of the Open University of Sri Lanka

A section of the participants

Dr. Chandanie Nawaratna Chairperson of the ATC addressing the Seminar

- Neural Networks by Dr. Dharshana Yapa of the University of Peradeniya
- Time Series Analysis by Dr. (Mrs.) R. N. Abeywardana of Wayamba University of Sri Lanka

Mr. Palitha Sarukkali, Past President of the IASSL who coordinated this seminar gave the Introduction to Application of Forecasting Techniques

IASSL is planning to organize a 2 day workshop on 'R' during November. Anybody interested in attending this workshop should contact our Administrative Officer (Mrs. Kalani Adikari).. Members are entitled to 10% discount. Apply soon. FIFS basis

Feature article

IMPROVING PRECISION OF EXPERIMENTS

Prof. R.O. Thattil
Faculty of Agriculture, University of Peradeniya

Prof. R. O. Thattil

The precision of experiments can be improved using good design techniques and supplementary information. If the experimental units are homogenous, completely randomized designs (CRD) can be used. However, such conditions (homogeneity) exist only in restrictive cases such as in laboratory and green house experiments. In the field it is difficult to find homogenous conditions. Systematic variability due to factors such as slope, soil fertility and moisture gradients is the rule rather than the exception.

Blocking

Blocking is a technique that is used to control systematic variability. If soil variability occurs systematically, blocking is done perpendicular to the direction of variability so that the resulting blocks are more or less homogenous. The variability between blocks is explicitly considered in the model and the residual variability (error variability) is minimized leading to higher precision of the experiment. In cases where more than one direction of systematic variability exist, the latin square design can be employed. If the number of treatments is low, replicated latin square designs can be utilized to obtain the required number of degrees of freedom for the error term.

When the number of treatments is large, it may not be possible to find uniform blocks to accommodate all the treatments within a block. In such cases incomplete block designs, should be used. Among the incomplete block designs, the most useful are the Balanced Incomplete Block Designs (BIBD)

Factorial Experiments

Single factor experiments may in some cases give useful information. However, they do not reflect what will happen under field conditions. To obtain information on interaction between several factors experiments using a factorial structure is an absolute necessity.

In large factorial experiments all treatment combinations cannot be accommodated in complete blocks. For such cases the device of confounding can be used to accommodate part of the treatment combinations in a block such that a full replicate will contain many blocks of smaller size, leading to more precise experiments. When a large number of factors are investigated it may not be possible to even have a full replicate. In such cases fractional factorial designs can be employed. Many experimenters shy away from large factorial experiments as they are not comfortable with the design and analysis of confounded designs and fractional factorials.

Use of Supplementary Information

When the variability is not systematic, blocking will not help in controlling variability. In such cases, use of supplementary information (covariate) is essential in controlling variability. The covariate is used to adjust the measurements of the response variable leading to higher precision.

Therefore, to increase precision of experiments different types of blocking techniques, factorial designs and use of covariates are necessary

About the Author

Prof. R. O. Thattil is attached to the University of Peradeniya. He was the founder President of the former Applied Statistics Association of Sri Lanka and is a Fellow Member of the Institute of Applied Statistics, Sri Lanka

NEWS IN BRIEF

Second Annual General Meeting of IASSL

As informed in our last Newsletter, the second Annual General Meeting of the IASSL has been planned for 23rd November 2013 at the auditorium of the Organization of Professional Associations of Sri Lanka.

The AGM will be preceded by the Technical Session in which several Research Papers will be presented by members of he IASSL.

Prof. S. Samita, the founder secretary of the former ASASL will be awarded a Fellowship at this AGM.

Sri Lanka journal of Applied Statistics in 2013

Vol 14(1) of the Sri Lanka journal of Applied Statistics (SLJAS) has already been published in the web. For the next issue, Vol 14(2), three accepted articles are already available. This issue can also be published as early as possible. The Editorial Board of the IASSL is expecting to publish three issues in 2013. These will be published in the web when issue is ready for publishing and the hard copies of all three issues in Volume 14 will be published as a one bounded book form later.

The editor Prof. Pushpa Wijekone informed the Applied Statistics News Letter that the Sri Lankan Journal of Applied Statistics is now listed in the following sites

(i) Sri Lanka Journals online.(http://www.sljol.info/ ndex.php/SLJAStats/issue/current)

(ii) Asia Journals online (http://www.asiajol.info/),

(iii) Ulrichsweb Serials Solutions (http://ulrichsweb .serialssolutions.com/login)

(iv) Google Scholar.

(v) Academic keys database (http://sciences. .academickeys.com/jour_main.php)

(vi)Directory of Open Access Journals (DOAJ- http://www.doaj.org/)

Addition of the journal to Sri Lanka Journals Online, made it is possible to use the website allocated to the SLJAS in Sri Lanka Journals Online also as our journal website and the Editorial Board decided to use this site as the journal website. The other advantage of using this site is that all articles published in Sri Lanka Journals Online will get a DOI (Digital Object Identifier) number.

Seminar on "Sample size computation"

A seminar on "Sample size computation of a Statistical study" organized by IASSL, was held at the new seminar room on Monday the 5th August 201. For details please turn to page 7

IASSL members win the second place of the Greenfield Challenge Award

Two members of IASSL, Dammika Lakmal Walpitage and Priyadarshana Dharmawardane were awarded second place, of the Greenfield Challenge Award organized under Statistics2013 by the **European Network for Business and Industrial Statistics's (ENBIS)** for their play titled "Standard ECG".

The members of the Executive Council watched this video at its monthly meeting in September and expressed their appreciation for the achievement of these two members. The Executive Council passed a resolution congratulating the two members. The link to this video is `http://www.youtube.com/watch?v=vkGJo-nvxlU`

MONOGRAPH SERIES

On a proposal made by the President Prof. L H P Gunarathna, IASSL has decided to publish a Monograph Series on various Statistical Topics to illustrate the power of Statistics in providing meaningful solutions to issues in all the areas of science and humanities. This will be carried out as a program under the International Year of Statistics as 'increase public awareness of the power and impact of statistics on all aspects of society' is one objective of the Statistics2013 campaign.

Contd..... Page 4

EDITORIAL

Contd…. from page 3

A GLIMPSE INTO THE FUTURE OF OUR PROFESSION

The main problem today's global companies is the lack of Statisticians who could analyze the large amount of data they posses and interpret the results that will suit the Managers to understand and to use them for the benefit of the consumers. How many credit cards are swiped in a second? Every time you swipe your credit card you add a large amount data to the company's database. According to the New York Times, this escalation of demand for statisticians is the result of the explosion of digital data.

Statisticians work everywhere and virtually in every field that requires the collection, aggregation and analysis of large amounts of data. According to published data, in 2010, there were roughly 25,100 statisticians employed in the U.S. This has been projected to increase by roughly 3,500 by 2020, as statistical analysis becomes a more commonly used tool in decision-making. However, between 2010 and 2020, 15,200 positions will be filled just to meet replacement needs. The issue of high turnover is probably unrelated to salary, however, as the median annual wage for statisticians is $72,830.

Thus employment of statisticians is expected to increase by 14 percent from 2010 to 2020, as fast as the average for all occupations. Job prospects will be very good. But that is in USA.

In Sri Lanka the situation is quite different. The use of statistics for decision making is very much less compared to the opportunities we have. IASSL is now trying its best in popularizing the use of statistics by holding various events such as workshops, seminars, new courses for budding statisticians and National Olympiad for school children. Thus future Executive Councils of IASSL has a Hugh responsibility vested on their shoulders to arrest this situation.

MONOGRAPH SERIES

The author/s of the monograph will be senior Statisticians attached to the IASSL who possess the necessary expertise and experience on the theme they work on. Once the draft report is submitted, the editorial board will appoint a reviewer. Once the review process is over, the monograph will be published by the IASSL with ISSN/ISBN number. A standard cover page will be used for all the monographs and the name/s of the author/s will be cited in the front cover.

The sale price is set as 300% of the printing cost and author/s will get 10% from the sales income. The copy right will be with the IASSL. The Editorial Board will contact the author/s for future editions, if necessary.

We have received the first drafts of these monographs from the following eminent Statisticians in Sri Lanka.

Prof. R.O. Thattil, University of Peradeniya
(Title: Tree Crop Experimentation)

Prof. Pushpa Wijekoon, University of Peradeniya
(Title:ClusterAnalysis using R)

Prof. Roshini Sooriyaarchchi, University of Colombo
(Title: Clinical Experiments)

Second Statistics Olympiad

The second National Statistics Olympiad organized and conducted by the Institute of Applied Statistics, Sri Lanka (IASSL) was started on 26th October 2013. This year the Olympiad is planned to be held in two categories, Junior and Senior.

Junior competition was held on 26th October whilst the senior one will be on 2nd November 2013. Details of winners will be published in the next issue.

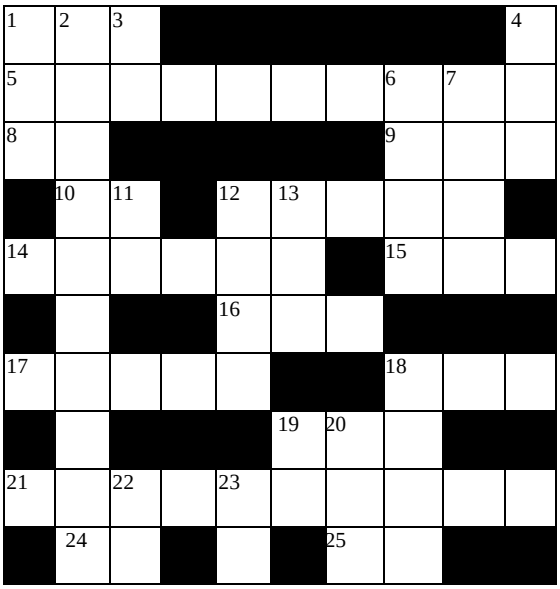
STATISTICS CROSSWORD –03

Fill the following crossword with Statistics / Mathematics and ICT terms. Send your solutions along with your mailing address and the contact telephone number to the Editorial Board, Institute of Applied Statistics, Sri Lanka, Professional Center, 275/75 Stanley Wijesundera Mw, Colombo 7

Prizes: 1st price - Rs. 5,000
2nd price - Rs. 3,000
3rd price - Rs. 2,000

The prizes are sponsored by the **Sri Lanka Tea Board**
Members of the Executive Council of IASSL and their immediate family members are not allowed to take part in this competition.

Closing date of Crossword 03: 15th January 2014



ACROSS

1, Find the sum of …….
5. An approach to model the relationship between a scalar dependent variable *Y* and one or more explanatory variables denoted *X*.
8. Natural Logarithms
9. Smallest Natural Number
10. Abbreviated Dynamic Programming
12. Type of bar chart that illustrates a project schedule
14. Every LP problem, can be referred to as this and also can be converted to its dual problem.
15. A curve that displays Average Outgoing Quality of sampling plans in Quality Control– (Abbrev)
16. Maximum Likelihood Estimator (Abbrev)
17. A Cumulative Frequency Polygon.
I8. A chart that displays the values or frequencies of categorical data
19. Average Total Inspection for quality improvement under rectifying inspection of a sampling plan in QC (abbrev)
21. A time series model that consists of a succession of random steps.
24. A letter in the Greek Alphabet
25. A vital System Software abbreviated in a computer

DOWN

1. Average Run Length
2 A tree diagram used to display hierarchical clustering.
3. A metric unit of weight equal to one-tenth of a gram.
4. A direction between North and East
6. A letter in the Greek Alphabet
7. Surjective mapping
11. A letter in the Greek Alphabet
12 This theory deals with decision making by two intelligent opponents with conflicting objectives.
13. Entire quantity
18. A systematic distortion of a statistical result due to a factor not allowed for in its derivation
19. Abbreviated average
20. You can't find a prime smaller than this.
22. A letter in the Greek Alphabet
23. A curve that shows the probability of acceptance of a product as a function of the quality is abbreviated.

CROSSWORD 02 - Solution

1 L	O	G	2 N	O	R	M	A	3 L	
A			U					A	
4 M	5 S	6 E		7 S	P	8 C		9 G	10 P
11 D	U	A	12 L			13 O	14 R		A
15 A	R		16 A	17 L	18 P	H	A		S
	19 D	O	T	P	L	O	T		C
20 I			T		21 A	R	I	22 M	A
23 D	E	S	I	G	N	T	O	O	L
L			C		E			D	
24 E	D	G	E		25 S	I	N	E	

Winners

1st Prize –(Rs. 5,000/-): Ms. Thilini Kalpana,
No. 135, Saraboomi, Batakeththra, Piliyandala

2nd Prize- (Rs. 3,000/-): Mr. Shamitha Ranwala ,
376A, School Road, Batuwatta

3rd Prize-(Rs. 2,000):Mr. K. Jayasooriya
179/2, Shramadana Mawatha, Ihala Biyanwila,Kadawata

Great Statisticians of the Past - 2

(Extracted from articles in the Web)

Florence Nightingale

Florence Nightingale is most famous for her work to improve the care of soldiers in the military hospital at Scutari in Turkey during the Crimean War from 1854 to 1856. It was there that she gained her nickname of 'the Lady with the lamp' for her nightly rounds of the wards tending to the sick.

Nightingale was not just a pioneering nurse and social reformer; she was also a medical statistician of some repute.

But in parallel with her nursing at Scutari, Nightingale introduced the systematic documentation of deaths in the hospital, using the records to calculate death rates due to different causes.

By today's standards, it seems like such an obvious thing to do, but at the time her work was progressive.

Her findings were disturbing. Overwhelmingly, soldiers were dying not of their injuries, but from contagious diseases like cholera and diphtheria

In fact, the problem was so bad that it was more dangerous to be in hospital than on the battlefield. And in separate data, similar high mortality rates in the military in peacetime were also revealed.

Nightingale devised polar area diagrams, which are pie chart-bar chart hybrids occasionally known as the **Nightingale rose diagram**, equivalent to a modern circular histogram, to illustrate trends in the death rate during the Crimean War

Sanitation in the military underwent major reforms as a result of Nightingale's campaigning, aided by her statistical illustrations. And her work didn't stop there, other activities with Farr included reforms to improve the consistency of data collection in civilian hospitals.

Later Nightingale made a comprehensive statistical study of sanitation in Indian rural life and was the leading figure in the introduction of improved medical care and public health service in India. In 1858 and 1859 she successfully lobbied for the establishment of a Royal Commission into the Indian situation.

Two years later she provided a report to the commission, which completed its own study in 1863. "After 10 years of sanitary reform, in 1873, Nightingale reported that mortality among the soldiers in India had declined from 69 to 18 per 1,000".

Nightingale's contributions to statistics were recognized when she became the first female Fellow of the Royal Statistical Society in 1858 and later, an honorary member of the American Statistical Association

Seminar on "Sample size computation of a statistical study"

A one day seminar on "Sample size computation of a Statistical study" organized by IASSL, was held at the new seminar room on Monday the 5th August 2013 with a significant participation of officers from various organizations.
Seminar was organized under International Year of Statistics program and was overall a success with around 30 participants.

Two good presentations made by Mr. Wimal Nanayakkara, former Director General, Dept. of Census & Statistics and Prof. S. Samita, Faculty of Agriculture, University of Peradeniya.

2nd Annual General Meeting of IASSL

The Second Annual General Meeting of the IASSL has been scheduled to be held on Saturday, November 23rd 2013 at the Auditorium of the OPA. This will be preceded by the Annual Academic sessions. Program is given below. Executive Council of IASSL cordially invites all members to be present in these two events.

Academic Sessions

8.30 AM	Registration
9.00 AM	Arrival of Guests
9.10 AM	Lighting of the traditional oil lamp
9.20 AM	National Anthem
9.30 AM	Welcome Address & Presidential Speech Prof. L. H. P. Gunaratne – President, IASSL
9.40 AM	Keynote Address
9.55 AM	Address by the Chief Guest – Prof. W. L. Sumathipala, Chairman/ NSF
10.10 AM	Award of Fellowship to Prof. S. Samita
10.20 AM	Awards for best undergraduate & postgraduate research projects
10.25 AM	Awards for winners of Olympiad
10.35 AM	Vote of Thanks – Mrs. H. C. Fernando – Secretary, IASSL
11.05 AM	Academic Sessions –
12.30 PM	Lun**ch**

Annual General Meeting

1.30 PM	Notice convening the AGM
1.35 PM	Welcome speech –
1.40 PM	Adoption of the minutes of the 1st AGM
1.55 PM	Matters arising from minutes
2.05 PM	Adoption of the Annual Report of EC
2.20 PM	Matters arising from the Annual Report
2.30 PM	Adoption of the audited accounts
2.40 PM	Resolutions for which notice were given
2.50 PM	Tea/ Coffee
3.05 PM	Presidential speech
3.25 PM	Election of office bearers
4.00 PM	Speech of the Incoming President
4.10 PM	Any other business
4.30 PM	Vote of thanks

INTERNATIONAL YEAR OF STATISTICS – 2013

Institute Planning Underway to Propel Statistics2013 into 2014 and Beyond

The old adage says that all good things must come to an end. But that doesn't always have to be the case, especially for the wildly successful, global International Year of Statistics movement.

Organizers of the movement that has brought together more than 2,250 organizations (and growing!) from 128 countries (also still growing!) believe it important to continue to leverage the energy and activism of participating organizations and have begun the process of planning for post-2013 activities and a new website that will carry the statistics awareness movement into the future.

In the weeks ahead there will be more detail about the continuation of the Statistics2013 movement. So, We will extract and publish them in future issues of this newsletter to keep you up to date on the plans for 2014.

IASSL Executive Council Notice

The Second Academic sessions and the Annual General Meeting of the IASSL will be held on 23rd November 2013 commencing from 8.30 AM at the OPA Auditorium. The Executive Council appreciates the presence of all the members

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