IASSL NEWSLETTER

Stories inside......

Greetings from the President

Dr. A.P.G.S. De Silva

I am happy to forward this message to the current issue of the newsletter which comes after a lapse of almost three years. Though we are living in a highly digitized world and access to information is much easier, the need for updating the members and the statistical community at large regarding the activities of the IASSL seems much appropriate. I hope the newsletter will become a regular instrument in keeping the members of the IASSL informed of the activities performed by the Institute. Concurrently members too can share information relating to the developments, activities and events on statistical arena through the newsletter

The most important event that IASSL experienced in the recent past is the 4th International Conference in December 2017. Undoubtedly it was a great success with a participation of a large number of statisticians around the world. Hon Dr. Sarath Amunugama graced the occasion representing His Excellency the President and the Government of Sri Lanka. We are indeed happy to note that Hon Dr. Amunugama has been appointed as the Minister of Science and Technology especially since IASSL functions under the purview of the same Ministry. We hope to seek cooperation of the Hon Minister in making IASSL a stronger and a viable institution serving the people of Sri Lanka and beyond.

I hope the newsletter will keep members informed of the main constituents of the EXCO proceedings decisions and actions taken on important matters of interest to the membership which are implemented by different subcommittees of IASSL. I take this opportunity to thank the chairs of the five subcommittees and the staff of the IASSL office who endeavor to accomplish the numerous tasks to make IASSL a worthy entity.

President's Speech at the 6th AGM

I am very pleased to welcome all of you to the Annual Sessions and to the award ceremony organized for the winners of Statistics Olympiad and the Best Research work. Dr. Ruediger Blumoer, Senior Adviser in Education for Social Cohesion- GIZ the chief guest of our today morning proceedings, on behalf of the IASSL I welcome you to this important event organized by the institute.

Dr. Amitha Bentota, Additional Director General (Research) Department of Agriculture, we are very grateful to you for accepting our invitation to be here today as the keynote speaker. Members of the executive council and members of the IASSL I warmly welcome you for today's' programme of activities including the AGM of IASSL which will be held in the afternoon.

Dear winners of the Statistics Olympiad, their parents, winners of the best research awards, I am very happy to welcome all of you to the important occasion.

We are continuing with our tradition of organizing the Statistics Olympiad and the Best Research Awards as part of our responsibility since we IASSL is the only professional body looking after the interests in the field of Statistics in Sri Lanka. The foremost reason is that IASSL comprises of a majority of all university academics and many of the statisticians who are working in the industry as applied statisticians. Due to this strong bond as professionals, I must highlight the fact that IASSL stands high in Sri Lanka among professionals. IASSL carry out many activities in performing its duties.

I can give an account of few of the key activities carried out by our statutory committees, but certainly not all.

We have five action committees in IASSL which have been very active in bringing much needed stability to the institute.

Large numbers of statistics personnel, students and employees connected with statistics have sought the services of our Institute in enhancing their knowledge in statistical applications and the use of statistical software in their day to day work. We are also fortified by the increasing demand in securing membership of our Institute.

I wish to make a very important announcement at this occasion regarding the International Conference which will be held in 28th -29th December, 2017. I am glad to mention that the conference is taking shape now with a large number of statisticians from overseas and within the country pledging to participate in the conference. I wish to pay my gratitude to Prof. Sarath Peiris for his dedication and enthusiasm in delivering the services as the Chair of the committee.

The Statistics Olympiad is one among many activities the IASSL has been performing well since 2011. I wish to congratulate the winners of the competition who were participating from various parts of the island.

Volumes of the journal of Applied Statistics, is published online. The Editorial committee is performing an excellent service in accomplishing this.

Research and Development committee is organizing the Best Research Awards. We are also happy to promote the researchers in the field of statistics by getting them to make presentations during our Annual General Meeting deliberations. I congratulate the winners and request them to join hands with

the institute to perform better services to the nation.

Membership has increased up to 500 as at present. The committee provides administrative and management support to the institute. I thank all members for their contributions.

Statistics became so vital in the path of development specifically since 1990 when the global Human Development Monitoring was initiated by the United Nations followed by the MDGs (Millennium Development Goals) with the dawn of the new millennium in the year 2000. As the target year for MDGs ended in 2015, the new paradigm of SDGs (Sustainable Development Goals) came into effect. The need for disaggregated data at reliable and timely manner is part and parcel of achieving SGDs until 2030. We as statisticians should capitalize on the available opportunities through active involvement in the dialogue and the process of monitoring SDGs.

We also value our duty to serve the corporate sector in the country with our knowledge and skills in making informed decisions towards developing the nation and serving the needs of the people.

Dear Students and researchers, you can be happy that you have developed skills in the field of statistics and looking for opportunities in the world of statistics where the recognition for statisticians is increasing as never before.

While assuring that IASSL is moving slowly but steadily in the path to its splendor, I wish to thank our membership for assisting in numerous ways to the upliftment of our institute.

I wish you a good day ahead.
Thank you.

Fun with Mathematics

Give answers if you are a mathaholic.

I. $4 \times 4 + 4 \times 4 + 4 - 4 \times 4 = ?$

II. $6 / 2 (1 + 2) = ?$

III. $18/3 (5-4+1) = ?$

IV. $1+1 = 5$
     $2+2 = 20$
     $3+3 = 45$
     $4+4 = ?$

V. $9 = 72$
     $8 = 56$
     $7 = 42$
     $6 = 30$
     $5 = 20$
     $3 = ?$

EDITORIAL

Mrs. D.A.B.N. Amarasekera

Editor/IASSL Newsletter

Why study Statistics

'Statistician – fastest growing job for the future"

In the whole world, human beings create an immense and ever-increasing volume of data with the availability of internet facilities and high capacity modern computers while store these trillions of data in data warehouses or clouds and analyze them using fast developing techniques and technology. New and various kinds of data regularly emerge from science and industry. A new understanding of the value of these data to society has emerged, and with it, a new and leading role for Statistics. In order to produce sensible theories and draw accurate conclusions from data, cutting-edge statistical methods are needed. These methods use advanced mathematical ideas combined with modern computational techniques, which require expert knowledge and experience to apply. In addition, the US Bureau of Labour Statistics (BLS) showed by its recently released report that the demand for Statisticians is expected to grow fastest from 2016 to 2026 and it is estimated to increase jobs in USA for statisticians by 33.4%.

The above trend increases at an exponential rate, not only in USA but all over the world. The demand for Statisticians has been vastly increasing. Hence, a degree in Statistics with Mathematics equips you with the skills required for developing and implementing methods in data handling and provides a fascinating combination of deep and mathematically well-grounded method-building and wide-ranging applied work with data.

Further, judging by the above trend it is a 'must' to include more students' based activities in early exposure for school curricular from primary level to popularize the subject Statistics among youngsters and continue up to secondary education. Undergraduates and graduates should be strengthened with teaching and research in a wide range of modern areas of statistical science specially in statistical machine learning and methods for Big data analysis, applied probability, network analysis, medical, actuarial and financial applications.

In conclusion there is a wide range of options for graduates whose studies have included a substantial amount of Statistics and applied probability. There is a great demand for those who are willing to work in the new area of Data Science, with careers in fields as diverse areas such as health, technology, education and industry has great potential.

ONE ACT PLAY

A matter of Significance

Emeritus Prof. R.O. Thattil
(Founder of the Association of Applied
Statistics Sri Lanka)

The following conversation takes place among a group of participants at an international conference during a tea break.

The group
Agricultural Engineer (AE)
Biotechnologist   (BT)
Agro-forestry specialist (AF)
Physical scientist (PS)

AE   : I don't know why scientists make a big fuss about significant differences. In my field which is very specific any difference in the means can be called a significant difference.

AF   : I beg to disagree.   Sampling variability is very high in agroforestry.

Therefore, any difference between treatment means has to be tested for significance.

PS   : That may be so in Agro-forestry. However, in general I tend to agree with

AE   : Quite so! Statisticians make a big deal about significance. When a difference is large they say it is significant and when the difference is small they say it is not significant!

PS   : You hit the nail on the head. That you said amounts to common sense which I believe is not a strong point among scientists

BT   : But, who is to decide what is big and what is small? How can you decide this by simply looking at the difference?

AE   : By using common sense which is not very common among scientists.

BT   : You are simply avoiding the issue by sophistry. You have not answered BT's question. What you call common sense is not common to us and only applies to you!

At the stage it appears that there is a deadlock, with no side getting the better of

the other.   There is a hush when a renowned statistician (ST) walks in and joins the group.

BT   : Dear ST, your discipline has been belittled by some of the members here. I think it is only fair to tell you about our argument and get your response.

[The details of the argument is narrated to ST who gives a sigh before answering]

ST   : A difference is judged to be big or small depending on the variability observed within each treatment. Every scientist is aware about variability between observations. The variability within each treatment is measured by the standard error which obviously depends on sample size. Using the standard error for each treatment, a pooled estimate of variability for differences between means can be calculated. Let us called this "pooled standard error". Now we can compare the observed difference between the two means relative to the pooled standard error, by taking the ratio. If the ratio exceeds a certain value (called the t value) determined from a table we conclude that the difference is statistically significant at the certain probability level. The t-value, of course depends on sample sizes. Take for example of a difference of 0.1 (which

many would consider small and therefore not significant). However if the pooled standard error was even smaller (say 0.001), ratio would be 100 ! leading to significance. On the other hand take a difference of 25 (which in comparison would be large) we can conclude that it is non – significant if the pooled standard error was 30 giving a ratio of only 0.83 which is less than one!

BT   : Thank you ST. You have made it sound so simple. From what you have said, is it right to conclude that to state that a difference is big or small it has to be compared relative to the standard error or existing variability in the observations.

ST   : Absolutely correct. That is why in designing good experiments, one takes much care in controlling variability, due to external factors.
The group now disperses with laughter all around.

> *"A single death is a tragedy; a million deaths is a statistic"*
>   *Joseph Stalin*

Congratulations....

For the significant achievement of the 1st Lady President of IASSL

Prof. N. Rupika Abeynayake

Prof. Rupika obtained her B.Sc. (Agric.) degree in 1994 from University of Peradeniya, Sri Lanka and MSc. In Biostatistics from Post Graduate Institute in Agriculture, from the same University in 2001. She secured her PhD in 2008 from Indian Agriculture Statistics Research Institute, New Delhi, India.

Upon her graduation she joined the Dept. of Crop Science, Faculty of Agriculture, University of Peradeniya as a temporary assistant lecturer in 1995. Then she served as a lecturer to the Dept. of Agribusiness Management, Faculty of Agriculture & Plantation Management, Wayamba University of Sri Lanka and promoted to Senior Lecturer in 2008.

With her dynamic nature, motivation, dedication and great contribution to the academic, research and outreach activities she

became a professor from year 2017. She has published four books, monographs and more than 150 research publications which include abstracts, extended abstracts full papers etc.

Her contribution to IASSL was enormous and invaluable and it was reflected well by being elected as the first lady President of IASSL In 2014 and served for two consecutive years.

Stat Quiz

$$55-80 = 335$$

in what system ? ....

Answer is in page 15

> **"All statistics have outliers"**
> Neina Campbell

"Be a proud member of IASSL

Membership application can be downloaded www.iappstat.lk"

News in Brief

National Statistics Olympiad

IASSL is happy to inform that its 6th National Statistics Olympiad Competition-2017 had been conducted all over the island for school students and the best winners were awarded at the last Annual General Meeting held on Nov. 2017.

Winners (Medalists) of the 6th National Statistics Olympiad 2017

Junior Category

1st Place - K.J.Y.N. Jayasekara (Richmond College, Galle)

2nd Place -D.M.U.S. Wijerathne - (Dharmaraja College, Kandy)

3rd Place - K.S. Kodithuwakku, (Richmond College, Galle)

3rd Place - T. Sundarbayan - (J/Chawakachcheri Hindu College)

Senior Category

1st Place - P.M.N.S. Bandara- (Dharmaraja College, Kandy)

2nd Place - A.C.T.J. Ganathilaka - (Devi Balika Vidyalaya, Colombo 08)

3rd place - A.W.M.T.S. Thilakarathne - (Anula Vidyalaya, Colombo)

Further, The Best 12 Students, based on marks obtained from the local competition were trained to participate in the Indian Statistics Olympiad, 2018 competition organized by C R Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIMSCS), University of Hyderabad.

Winners (Indian Statistics Olympiad 2018)

Senior Level

11th Place - P.M.N.S. Bandara - Dharmaraja College, Kandy

Junior Level

1st Place - K.S. Kodithuwakku Richmond College, Galle

3rd Place - K.T.Y.N. Jayasekara - Richmond College, Galle

4th Place - T. Sundarbayan - J/Chawakachcheri Hindu College

7th Place - G.A. Mahabaduge - Ananda College - Colombo

11th Place - N.N. Rajapaksha - Dharmaraja College - Kandy

Winners of Best Research Projects 2017

Undergraduates
Winner:
A.Y. Dissanayake - University of Moratuwa

Runner-ups
B.K.D.j.R. Samarasinghe - University of Wayamba
S.A.P.T.K. Sirisena - Faculty of Agriculture, University of Ruhuna

Postgraduates
Winner:
A.A. Sunethra - University of Colombo

Runner-ups:
J.C. Hapugoda - The Open University of Sri Lanka
A.A. Amarsinghe - Sabaragamuwa University of Sri Lanka

Delivering a speech by Mrs. D,A.B.N. Amarasekera (Coordinator/National Statistics Olympiad) at 11th Statistics day celebration at University of Hyderabad , India representing IASSL.

Recently Published Monographs by IASSL Members

1. **Basic Mathematics -**
   Prof. N.R. Abeynayake
2. **Hand book on Analysis of Multivariate data Using SPSS -**
   Prof. T.S.G. Peiris

Recently published books

1. Design and analysis of Experiments - Dean , A. et.al (2017)
2. Introductory to Statistics for Business & Economy - Uboe, J. (2017)
3. Statistical methods for field and laboratory students in Behavioral Ecology - Scott Pardo & Michel Pardo (2018)

Past Editors of the Newsletter

Prof. W.A.J.M. Costa

Prof. R. P. De Silva

Prof. L.H.P. Gunaratne

Prof. S. Banneheka

Mr. Palitha Sarukkali - 1st President of IASSL

"Great appreciation for your invaluable contribution as past Editors........"

Statistical Word Power

Quasi-experiment

In social science research, particularly in the qualitative literature on program evaluation, the term "quasi-experiment" refers to studies that do not involve the application of treatments via random assignment of subjects. They are also called observational studies. A quasi-experiment (or observational study) does involve the application of a treatment, but the treatment could be one that was applied prior to the initiation of the study.
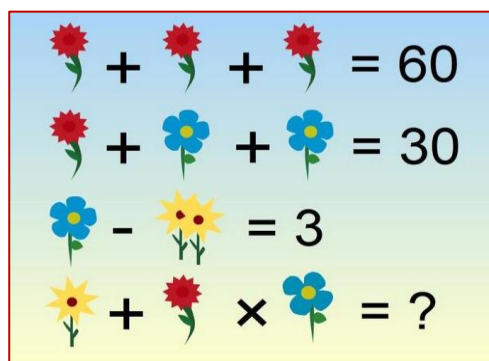
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Photo Gallery

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6ᵗʰ AGM of the IASSL – November 2017

Welcome event of the Hon. Chief guest Dr. Ruediger Blumoer (Senior Adviser in Education for Social Cohesion –GIZ), Keynote Speaker Dr. Amitha Bentota. (Additional Director General- Research, Department of Agriculture)

Lightning oil lamp (Left to right): Dr. A.P.G.S. De Silva, Mr. K.J.Y.N. Jayasekara (Gold medalist of the Junior Level, National Statistics Olympiad 2017) , Prof. N. R. Abeynayake, Mrs. D.A.B.N. Amarasekera

Address by Dr. A.P.G.S. De Silva (President, IASSL)

Address by Chief Guest, Dr. Ruidiger Blumoer

Head Table (left to right) - Prof. N.R. Abeynayake, Dr. A.P.G.S. De Silva, Dr. Ruediger Blumoer (Chief Guest) , Dr. Amitha Bentota (Keynote speaker) , Mrs. D.A.B.N. Amarasekera

Giving certificates for the winners- Best Research Awards and International Statistics Olympiad 2017

International Statistics Conference, December 2017 - Highlights

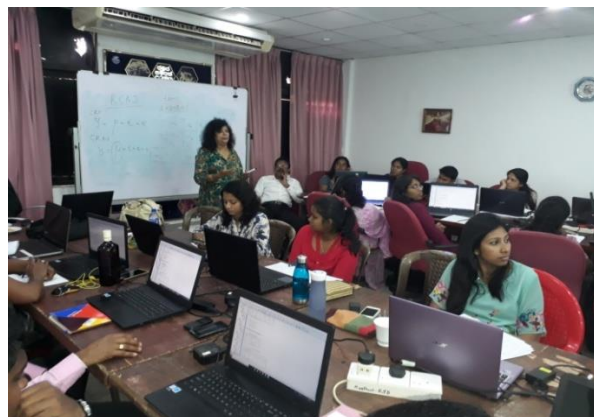## Highlights of the events recently conducted

- Short Course on Applied Statistics using SPSS for Medical Officers (February 2018)

- Workshop on the use of SPSS for Survey Data Analysis (March 2018)– North Central Provincial Council

- Short Course on Analysis Using SPSS & Result Interpretation (June 2018)- National Aquatic Resources & Development Agency

New Council – 2018

President -   Dr. A. P. G. S. De Silva

Vice President, Chairperson/ House & Finance Committee - Mrs. D. A. B. N. Amarasekera

Secretary -   Dr. L. D. B. Suriyagoda

Asst. Secretary -   Mr. Priyath De Silva

Treasurer -   Mrs. Padma Yatapana

Asst. Treasurer -   Dr. M. A. C. S. S. Fernando

Editor -   Prof. T. S. G. Peiris

Chairperson/ Academic Training Committee -   Prof. (Mrs.) N. R. Abeynayake

Chairperson/ Research & Development Committee -   Mr. M. D. N. Gunaratne

Chairperson/ Statistics Popularization Committee-   Dr. Chithraka Wickramarachchi

Executive Council Members-   Prof. S. Samita,
Prof. K. A. P. Siddhisena,
Prof. L. H. P. Gunaratne,
Dr. P. M. Edirisinghe,
Mr. R. B. M. Korale,
Mr. Rukshan Abeygunawardana
Dr. (Mrs,) A.P. Hewaarachchi

New Members of the IASSL– 2018 (From 1st Jan – 30th June)

- Mrs. J.C. Hapugoda _____ B.Sc. (Stat) & M.Sc. (Financial Econ).
- Mrs. S. S. Langappuli _____ B.A.(Stat)
- Miss. H.L.D.K. Jayarathna _____ B.Sc.(Stat)
- Mr. T. B. Alahakon _____ M.Sc.(Stat)
- Mrs. D R N N. Rathnayake _____ B.Sc. (Stat)
- Mrs. G.S.S. Gunawardana _____ M.Sc. (Bio Stat)
- Mr. A.A.M.D. Amarasinghe _____ M.Sc. (Stat)
- Mr. R.M. K. T. Rathnayaka _____ B.Sc. (Stat) & M. Sc. (Stat)
- Miss. A. C. Jayatilake _____ B.A. (Stat) & M.Sc. (Business Stat)
- Miss. N. M. Wijesekara _____ B.A. (Stat)
- Miss. D.M.K.N. Seneviratna _____ B.Sc. (Stat) & M.Sc. (Industrial Maths)
- Mrs. L.P. Himali _____ B. A. (Stat) & M.Sc. (Applied Stat)
- Mr. W. A. K. Sumedha _____ M.Sc. (Business Stat)
- Ms. A.I.Ambuldeniya _____ B.A. (Social Stat) & M.Sc. (Applied Stat)
- Ms. P.T. N. Devindi _____ B.Sc. (Stat) & M.Sc. (Applied Stat)

Future Events

National

- Seventh National Statistics Olympiad competion will be held in September 2018.
- IASSL Annual General Meeting in November 2018

International

- Maximum likelihood and Bayesian Methods - http://www.kurims.kyoto-u.ac.jp/~kyodo/workshop-en.html

- AISTATS 2019
  International Conference on Artificial Intelligence and Statistics - http://www.aistats.org/

- WCSB9 - 9th World Conference of Sampling and Blending - http://www.wcsb9.com/

- ICASQF 2019

  Third International Congress an Actuarial Science & Quantitative Finance - http://icasqf.org

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Answer

That equation make sense when the numbers are interpreted as degrees on a compass (directional or circular statistics by Geoffery Watson)

Contributions

If you have any submisson, comment, suggetion & feedback, Please send them to appstatsl@gmail.com. To receive notification of online newsletter, subscribe the newsletter icon of www. iappstat.lk.

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We are profusely thankful to whoever contributed to this issue and participated in its' production.

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