Acknowledgements

We wish to acknowledge the contributions of the following sponsors

Tropical Medicine Research Institute

Centre for Marine Sciences

Jamaica National Building Society

We wish also to thank the administrative, technical and academic staff of the Tropical Medicine Research Institute, members of the JSS Organizing Committee, presenters and participants for your support in making the staging of the 1st Biennial Statistics Symposium and Pre-Conference Workshop a success. We are also extremely grateful to the management and staff of the Hopwood Centre, and the Tropical Medical Research Unit for their courteous services in the provision of venues.

The Jamaica Statistical Society

Programme

1st Biennial Statistics Symposium and

Pre-Conference Workshop

MAKING SENSE OF DATA

UNDERSTANDING DATA TO INFORM DECISION MAKING

Pre-Conference Workshop

October 30, 2013

Hopwood Centre, UWI Medical Library
University Hospital of the West Indies, Mona

Statistics Symposium

October 31-November 1, 2013

Tropical Medical Research Unit Seminar Room
University Hospital of the West Indies, Mona

The Jamaica Statistics Symposium

The Jamaica Statistics Symposium was conceived in 2011 at the Sixth Biennial meeting of the Central American and Caribbean Region of the International Biometric Society (IBS-RCAC) where it was noted that there was a local need for additional exposure to training in and appropriate use of statistical methodology. In addition, it was felt that more efforts need to be made to use data to make decisions based on evidence. As such it was felt that a formal professional body was needed in Jamaica to facilitate the efficient use of statistical applications to interpretation of various types of data. This professional body, ***The Jamaica Statistical Society*** (JSS), is expected to be an outgrowth of this inaugural Jamaica Statistics Symposium and function as the organisation committed to providing support for valid and reliable data analysis services to aid more informed decision-making in both industry and academia.

The mission of The Society is to:

1. Foster and encourage the growth, development and application of statistics in all areas to make reliable informed decisions.
2. Facilitate the use of statistical applications to provide valid explanations of relationships between variables.
3. Serve the interest of all persons participating in data analysis by providing a myriad of continuous learning opportunities through workshops and seminars.
4. Promote the public understanding of the importance of safeguarding the reliability of data as well as support education and training in statistics at the undergraduate and postgraduate levels.

The goal of the organization is to become a key player in upholding and advancing high standards of statistical competence by providing consultative and training services to the various industries in the private sector and government as well as individuals working with data. The Interim Officers of ***The Jamaica Statistical Society*** are as follows:

President:	David Finlay, MSc
1st Vice-President:	Nathalie Guthrie-Dixon, PhD
2nd Vice-President:	Novie Younger-Coleman, PhD
Secretary:	Marcia Creary Ford, MPhil
Treasurer:	Shelly McFarlane

The Society will be launched officially at the inaugural Jamaica Statistics Symposium 2013.

The Sixth Biennial Meeting of the Central American Caribbean Region of the International Biometric Society (IBS-RCAC)

The sixth (6th) biennial conference of the International Biometric Society within the Central America and Caribbean Region (IBS RCAC) was held at the Mona Visitors' Lodge and Conference Centre, University of the West Indies (UWI) Mona Campus, on the 16th-18th November 2011. The theme of the three day event was "Why Statistics? Impact and Implications of statistics and statistical data analysis". Participants represented a range of institutions and countries – Bahamas, Canada, Colombia, Jamaica, Montserrat, Puerto Rico and Venezuela – adding value to various sessions and workshops of the conference. Some of institutions represented were:

University of Western Ontario
National University of Columbia
University of Puerto Rico
Univ. Francisco de Miranda
The Statistical Institute of Jamaica

The University of the West Indies
The University of Technology
Excelsior Community College
Northern Caribbean University

Forty persons registered for the conference, twenty-nine participated in the SPSS workshop, twenty-six followed the Stata Workshop and twenty-one the R workshop. The three-day conference highlighted the importance of statistical data analysis and data management to different fields. Among the registered candidates, twenty persons were present on all three days, five were present on two days only, and fifteen attended only one day of the conference. Eleven participants gave either of oral or poster presentations with two persons giving two presentations each.

The conference provided an assortment of stimulating sessions and workshops in various statistical disciplines and software commencing with Professor Charmaine B. Dean's feature lecture on "Spatial and Mixture Models in Health and Environmetrics". Other special presentations for day 1 included those by Dr. Maurice McNaughton, Director of the Centre of Excellence, Mona School of Business; Ms. Sonia Jackson, Director General, Statistical Institute of Jamaica; and Mrs. Natalie Guthrie-Dixon, from the University of Technology, who presided over workshop on SPSS software.

The second day of the conference was characterized by three main activities, two formal academic presentations and one workshop. The interactive workshop on the applications and uses of the statistical software, Stata, was led by Dr. Christine Walters. Following this workshop, the next conference session featured an open discussion of the work of the IBS RCAC in Jamaica after the conference.

Overall the conference provided much needed insight into the various applications of Statistics to several disciplines. Based on the feedback from conference attendees the local organising team for this year's conference hopes to host the Jamaica Statistics Symposium in 2013.

2013 is the International Year of Statistics

Recognizing the contribution of statistics to the society worldwide. More than 2,000 organizations—professional statistical societies, colleges and universities, primary and secondary schools, businesses, government entities, and research institutes— are participating in this worldwide event. Why? Because statistics have powerful and far-reaching effects on everyone. When many people hear the word "statistics," they think of either sports-related numbers or the college class they took and barely passed. While statistics can be thought about in these terms, there is more to the relationship between you and statistics than you probably imagine.

So, what is statistics? Several informal definitions are offered in the book *A Career in Statistics: Beyond the Numbers* by Gerald Hahn and Necip Doganaksoy:

- The science of learning from (or making sense out of) data
- The theory and methods of extracting information from observational data for solving real-world problems
- The science of uncertainty
- The quintessential interdisciplinary science
- The art of telling a story with [numerical] data

Statistics is used around the world by governments, political parties, civil servants, financial companies, opinion-polling firms, social researchers, news organizations, and so much more. Statisticians, the scientists who collect and analyze data, work in many areas that touch your life, including the following: Medicine, Economics, Agriculture, Business, Law enforcement and Weather forecasting. Statistics is becoming more critical as academia, businesses, and governments come to rely on data-driven decisions, greatly expanding the demand for statisticians.

Go to www.statistics2013.org to learn more

Message from the Interim President, JSS

Developing interest in statistical data analysis and formation of The Society

The Jamaica Statistical Society has been long in coming. Interest in the development and growth of statistical practice in Jamaica has become quite prominent since the past fifteen years. The Statistical Institute of Jamaica (Statinja) has been a longstanding bulwark in creating awareness concerning the importance of statistics in national development. Persons who have played a major role in the development of and interest in statistics from Statinja are Director's Mrs. Carmen McFarlane, Mr. Vernon James, Mr. Roland Boothe and Ms. Sonia Jackson. These persons have also played a major but indirect part in influencing the recent developments at the University of Technology, Jamaica (UTech).

Plans towards the organization of a statistical association began with meetings of a collaborative group hosted by UTech in the previous decade. The Bachelor of Science in Applied Statistics was finally organized and began to be offered in 2009 after a few members of academic staff obtained postgraduate degrees in statistics. Since then the interest has been steadily growing. One individual mention is Mr. Olusegun Ismail, who is presently the head of the Division of Statistics and Research Methodology at UTech. He has done much to help both students and staff others to gain interest in as well as understand the statistical processes.

Towards the end of the twentieth century, the University of the West Indies developed a Master of Science programme in Statistics which was offered in collaboration with the University of South Carolina. A number of individuals graduated with an M.Sc.in Biostatistics. At U.W.I. there are quite a number of persons who have made contributions to the interest in statistics. Professor Rodkina and Dr. Samuel McDaniel are both statistics instructors in the Mathematics Department. They have both participated in the statistical meetings that have been organized in the past couple of years. Dr. Christine Walters is a Biostatistician who has given service through both the Ministry of Health and the universities. One individual who I must mention is Dr. Novie Younger-Coleman. She is one of the leading, if not the leading, Statistician in the Tropical Medicine Research Institute. I have mentioned these persons because performing their role has played a part in statistical science gaining increasingly greater interest.

I am pleased to see that the growing interest in the field and the developments towards organizing a local statistical group to assist practitioners and others interested in the science. Connections with the International Biometrics Society and particularly that with the Central American and Caribbean Region (IBSRCAC) have been tremendous support and have helped to take us this far. Dr. Younger-Coleman and others at the TMRI, UWI, Mona have managed to pull together a larger group from various institutions to formally manage the activities that assist us all in"Making sense of data." This is the birth of the Jamaica Statistical Society.

The idea behind this symposium is to encourage and allow persons to become familiar with the use of data for decision making at even the simplest level. It is important to understand that statistical analysis is not primarily or limited to the sophisticated and technical methods of analysis. In fact exploratory data analysis which includes the use of descriptive statistics as summary measures, simple charts and tables are just as or more important. For this reason we have chosen the theme "Making sense of data: understanding data to inform decision making."

A special welcome and thanks to all who participate in any form whether as poster submission, presenters, sponsors, organizers and all attendees. It could not be a success without you.

Welcome to all and enjoy!!

David Finlay,
Interim President,
The Jamaica Statistical Society

Notes

Message from the Caribbean Community (CARICOM) Secretariat

Message from The Project Director- Regional Statistics Caribbean Community (CARICOM) Secretariat- Jamaica Statistics Symposium Secretariat First Biennial Statistics Symposium On: – Making Sense Of Data Understanding Data To Inform Decision-Making

I wish to extend my whole-hearted support and that of the CARICOM Secretariat to the Symposium organised by your secretariat on- Making sense of data-Understanding Data to Inform Decision-making. Unfortunately the timing of this event has occurred around the period as the series of meetings in the Region including the Standing Committee of Caribbean Statisticians (SCCS) and the Regional Census Coordinating Committee (RCCC) which implied the lack of participation in this event by statisticians across the Region.

However, this symposium which is taking a critical look of statistics in decision-making will no doubt contribute to the discourse that is required throughout our Community to ensure that the availability, use and interpretation of statistics are able to meet the needs of all our users to make effective decisions at all levels.

Already statisticians across the region are focusing on the issue of harmonisation of statistics and on the development of Quality Assurance and Monitoring and Evaluation Frameworks for statistics. A critical framework that is being implemented is the updated Regional Statistical Work Programme, the original of which was approved by the Community Council of Ministers in 2005 and which has been updated. In this regard strategic development of the offices, effective legislation through a Draft Model Bill that has also been produced and facilitation of data management, data warehousing are but some of the tools and frameworks that are being implemented across the Region.

However, good data for decision-making requires funding from governments and international good organizations. The symposium evidently is contributing to putting statistics in the spotlight that can redound to improved availability and use and better management and decision-making in our countries.

The Project Director
Regional Statistics
Caribbean Community (CARICOM) Secretariat

Workshop Facilitators

Christine A. Walters, PhD currently lectures in Epidemiology and Biostatistics at the University of the West Indies (UWI, Mona Campus) in various programs at the undergraduate through to graduate levels. She also serves as a Health Research Scientist in the Health Research and Resource Unit, Faculty of Medical Sciences, UWI, with duties including reviewing research proposals for the university-based Ethics Committee as well as providing research assistance (from study design to data analysis) to both medical students and faculty.

Dr Walters completed a Bachelor of Arts in Mathematics with first class honors (in 1995), then went on to read for a Master of Science in Biostatistics (2003) and Doctor of Philosophy in Epidemiology (2009). She has studied both locally at UWI and in the United States at the Medical University of South Carolina. She has worked as an Actuarial Assistant and immediately prior to pursuing doctoral studies, was employed to the Ministry of Health as a Biostatistician.

Outside of the classroom and when away from the computer, Dr Walters enjoys singing - having performed for several years with the University Singers and more recently, joining the Father Holung and Friends Music Ministry. She is also a founding member of the Jamaica Alumnae Chapter of the Delta Sigma Theta Sorority and over time has participated in many service oriented activities.

Emotional Intelligence, Leadership Practices and Pastoral Effectiveness: A Multivariate Analysis of Variance in a Faith-Based Organization in Jamaica.

Michael H. Harvey, Northern Caribbean University, Manchester Road, Manchester, michael.harvey@ncu.edu.jm

The construct of emotional intelligence (EI) has attracted substantial interest in organizational psychology and leadership literature. Although the predictive validity of EI is likely to depend on the context and focus of interest, researchers have identified a positive relationship between EI and leadership effectiveness (LE) Donaldson-Fielder and Bond (2004). It offers the prospect of providing insights into pastoral leadership effectiveness that have not been explained by traditional cognitive intelligence. EI is teaching us every day how to enhance our reasoning capacities and, at the same time, to make better use of the energy of our emotions, the wisdom of our institution, and the power inherent in our ability to connect at a fundamental level with ourselves and those around us. A sample of 58 conveniently selected participants from pastors on the summer program reading for their Master's and Doctorate degrees at Northern Caribbean University, and pastors at a fraternity meeting in Central Jamaica Conference responded to a quantitative cross-sectional questionnaire-based survey, which considered EI, the five factors of leadership practices and pastoral effectiveness The researcher tested the hypothesis that EI and Leadership Practices do vary by Pastoral Effectiveness in a Faith Based organization in Jamaica. The Multivariate Analysis suggests that the level of emotional intelligence and the level of employing leadership practices vary by levels of pastoral effectiveness. The tests of between-subjects results also indicate that there is more statistically significant variability in EI based on the effectiveness of the pastor than the variability in the leadership practices due to the pastor's effectiveness based on observed power.

Key words: Emotional Intelligence; leadership practices and pastoral effectiveness.

A comparative analysis of imputation techniques as a compensation method for item non response in survey data: An implication for poverty estimation

Olusegun Afis Ismail, Head, Division of Statistics & Research Methodologies, School of Mathematics & Statistics, Faculty of Science & Sport, UTECH.

This paper illustrates the use of Multiple Imputation model as a compensation method for computing missing annual expenditure of meals purchased away from home. The paper also illustrates the use of log-normal dependent variable in modeling factors that contributed to the estimates of annual expenditure of meals purchased away from home. Significant relationships were found between age, annual expenditure of fresh food items, size of household, sex, parish, area, occupation and the expenditure of meals purchased away from home. Based on these factors, the assumption of Missing At Random Mechanism was imposed on the missing data in the estimates of annual expenditure of meals purchased away from home. These factors were applied to a linear regression Multiple Imputation model to impute missing expenditures. The complete expenditure of meals away from home was used to generate a revised consumption expenditure. A revised household poverty status was generated through the reclassification of the households according to the revised consumption expenditure. An improved poverty prevalence was produced.

Posters

A Quantitative Exploration of Math Anxiety Resulting in Low Math Test/Exam Scores: For Introductory University Students

Glenroy Pinnock, Ph.D. Lecturer, School of Math and Statistics, University of Technology, Jamaica - gpinnock@utech.edu, Telephone 876-504-6323

The purpose of the quantitative research study is to examine the correlation between math anxiety and student's test scores. With better math performance at the university level, more students can get jobs in technical or professional fields. In this correlation design a group of 12 adult introductory precalculus students who have showed different levels of math anxiety at a small urban university in Jamaica. The researcher will be testing the following hypothesis: math anxiety (independent variable) is negatively correlated to students' precalculus math tests scores (dependent variable), as measured by Suinn and Winston math anxiety rating scale and math scores as measured by precalculus standardized math test. The findings of the study revealed that math anxiety scores and math test scores variables are curvilinear (i.e., a certain level of anxiety is required for students to perform well; but for high levels of anxiety caused students to received low math test scores). Additionally, the accepted value for a math anxious student was proven to be approximately 76%. Finally, this research will shed light on the prevalence and non-normalization of math anxiety in the field adult education for introductory university students. Nevertheless, more research is needed to be done on the topic math anxiety and students' math test scores to justify the curvilinear relationship of independent and dependent variables.

Prevention of misinterpretation of data analysis within computing undergraduate capstone research projects at a Jamaican university

Susan A. Muir, Lecturer, University of Technology, Jamaica

Aim: To reduce misinterpretation of data analysis within undergraduate capstone research projects at the School of Computing and Information Technology (SCIT) at the University of Technology, Jamaica (UTECH)
Objectives: (I) To identify common errors in interpretation of data analysis, and (II) To list suitable methods - in priority order - to reduce misinterpretation of data analysis
Methods: (I) Interviews of SCIT academic staff and (II) Analysis of a representative sample of 2010/11 and 2011/12 undergraduate computing capstone research projects.
Results and Conclusions: The most common error type in the interpretation of data analysis is succinctly described by academic staff as "disconnect between data analysis and conclusions". Examples include generalizations beyond the population sampled, little or no interpretation beyond a summary of graphs of survey results, and a misunderstanding of concept of 'proofs' and statistical significance. Deductions of project feasibility are often based on insufficient data, e.g. based *only* on technical feasibility *or* stakeholder perceptions; research students often 'forget' economic and operational feasibility, unless their supervisor intervenes. The methods that are perceived to be most suitable to address common interpretation errors in priority order are: (I) additional education and training of research supervisors, (II) use of a revised research syllabus taught within SCIT (which adds data analysis using computer applications), (III) a revised online capstone research manual, and (IV) online access to past capstone projects with suggested corrections with clear explanations to improve interpretation.

Pre-Conference Workshop

Microsoft Excel for Data Analysis Workshop

Wednesday, October 30, 2013

Venue: Hopwood Computer Centre, UWI Medical Library, University Hospital of the West Indies, Mona

Time	Activity
8:00 – 8:55 am	Registration
9:00 – 10:30 am	**Introduction to Microsoft Excel** **Microsoft Excel Basics** Dr. Christine Walters, FMS, UWI, Mona
10:30 – 11:00am	Coffee Break
11:00 am – 12:30 pm	**Microsoft Excel: Basic Data Analysis** Dr. Christine Walters, FMS, UWI, Mona
12:30 – 1:30 pm	Lunch
1:30 – 2:30 pm	**Microsoft Excel: Beyond the Basics – Pivot Tables** Dr O'Neil Lynch, TMRI, UWI, Mona
2:30 – 3:00 pm	Coffee Break
3:00 – 4:30 pm	**Microsoft Excel: : Beyond the Basics – Hypothesis Testing** Dr O'Neil Lynch, TMRI, UWI, Mona

1st Biennial Statistics Symposium

MAKING SENSE OF DATA

Thursday, October 31, 2013

Time	Activity
8:00 – 8:55 am	Registration
9:00 – 10:30 am	**Opening Ceremony**

Welcome and Opening Remarks:
Novie Younger-Coleman Ph.D., JSS Planning Committee Chair

Greetings
Professor Ishenkumba Kahwa, Deputy Principal, UWI
Dr Winston Buckley, Head, Actuarial Sciences, Faculty of Science & Sport, UTech)
Dr. Trevor Gardner, President, Northern Caribbean University.

Feature Lecture:

A Better Method for Non-parametric Multivariate Analysis of Variance for identifying paraffin (kerosene) remains
David Finlay M.Sc., Dept of Mathematics, UTECH

10:30 – 11:00am	Coffee Break and Poster Session
11:00 am – 12:30 pm	**Session 1 : Answering Questions in Education** Session Chair: Richard Plummer M.Sc, MIMA, Grad. Dip., Dept. of Mathematics, UWI, Mona

Nurturing Statistics as a Profession among High School & College Students. Edward R. Jones, Ph.D., Statistical Consulting Services

The Value of Data Collection and Analysis in Measuring Research Performance in a HEI. Paul W. Ivey, Ph.D., School of Graduate Studies, Research & Entrepreneurship (SGSRE), UTECH

Students' attitude towards school, their attendance and teacher support as predictors of academic performance, in selected shift schools in Jamaica. Paulene Gayle-Betten, M.Sc., NCU

Students' Social Media Habits, Sleep Habits and Hours of Class Time: Impact on Academic Performance among Students in Three Selected High Schools in Central Jamaica. Jacqueline Champier, M.Sc., NCU

12:30 – 1:30 pm	Luncheon

From the data collected the drivers of the decline of coral cover was determined to be overfishing, effects of hurricanes, coral bleaching coral diseases and coastal runoff. From these data set recommendations for regional coral reef management were proposed.

Session 5: Feature Presentation - Data Mining

Applying the IKDDM process model to Identify the Determinants of Quality of Life of Sickle Cell Patients.

Gunjan Mansingh, Department of Computing, The University of the West Indies, gunjan.mansingh@uwimona.edu.jm. Kweku-Muata Osei-Bryson, School of Business Virginia Commonwealth University ,KMOsei@VCU.edu . Monika Asnani, TMRI- Sickle Cell Unit, The University of the West Indies, monika.parshadasnani@uwimona.edu.jm

Data Mining involves the use of software techniques to identify valid, non-trivial, previously unknown, interesting relationships/global patterns that exist in large databases. Fulfilling the objective of data mining efficiently and reliably requires knowledge of the appropriate choice and combination of the various data mining techniques. To ensure that the process of data mining in repeatable and reliable various process models for Knowledge discovery and data mining (KDDM) have been proposed. The existing KDDM process models typically organize the activities related to knowledge discovery into several phases: domain/business understanding, data understanding, data preparation, data mining/modeling, evaluation and deployment. The domain/business understanding phase has been identified as one the most important phases as the quality of the data mining activity is largely dependent on the choices in this phase. In this presentation we present a case study which applies a specific KDDM process model (IKDDM) to a dataset to determine the factors affecting the quality of life of sickle cell patients in Jamaica

the environment (has been monitoring since 2001 pollutant concentrations and meteorological variables in this part of town. We analyze the behavior of tropospheric ozone (O_3) and meteorological variables to help government agencies and health ministry to evaluate the effectiveness of Mass Transport System as a mechanism to reduce pollution levels. Earlier work by the same authors conducted for the period 2001-2010 showed a progressive increase in the concentration of ozone in the atmosphere since 2006 when work began to implement the Bus Rapid Transit (BRT). However, in late 2010 there was a reduction of the said concentration was observed. In order to verify whether the trend observed in the last reporting period remained, we present results of new analysis data for the period 2006-2012. To evaluate the effectiveness of the implemented measures, we analyzed longitudinal data which showed that before the launch of the BRT (late 2010) O_3 concentration increased again, on average 5 points above the historical average from 2006 to 2010 . This increase was affected both by the implementation of the BRT as by increasing temperature and solar radiation by decreasing relative humidity and slow winds.

Frequentist vs Bayesian confidence interval in 2^{k-p} experiments with Beta response.

Luis Grajales National University of Colombia, Luis Fernando Grajales1 , Raydonal Ospina2 , Luis Alberto Lopez1. 1 Statistics Department, National University of Colombia, Bogota, Colombia. 2 Statistics Department, Federal University of Pernambuco, Recife/PE, Brazil.

Many factorial experiments include continuous responses restricted to the interval (0,1) such as percentages, rates and indices mainly found in industry and medicine. In order to explain the response for some factors, usually the analysis of variance (ANOVA) is the most common technique because the response is considered normally distributed. However, normality and constant variance for errors is dicult to achieve for response in (0,1). This paper used beta regression models from frequentist and Bayesian perspectives to estimate mean response for 2k□p factorial experiments with response in (0,1). The methodology is also compared with normal regression models. Numerical results exhibit that coverage of intervals with logit transformation was as good as the best function link for beta regression. Also, Bayesian and frequentist lengths of intervals are similar for logit link. The Bayesian model with probit link presented the worst performance with respect to lengths of intervals.
Keywords and Phrases: Bayesian analysis; beta regression model; confidence intervals; experimental design; fractional factorial; rates; transformations.

The Value of Data collection in Assessing the Health of Caribbean Coral Reefs.

Marcia Creary Ford, MPhil, Environmental Data Manger, Centre for Marine Sciences, UWI, Mona marcia.creary@uwimona.edu.jm

Coral reef health worldwide has been in the decline for the past 50 years; however this decline has not been uniform for all regions. The Global Coral Reef Monitoring Network (GCRMN), with support from the IUCN, has undertaken to implement a global project to understand why some reefs are healthier than others. They started with the Caribbean primarily because extensive historical data already existed for this region. This assessment involved data from 90 reef locations in 34 countries, spanning a period of 44 years and involving over 35,000 ecological surveys therefore representing the largest amount of quantitative reef survey data ever complied. Time series data extending back to the early 1980's was provided from Jamaica. During the compilation process it was noted that the quality of the data varied and that most of it existed in unpublished form, grey literature or was obscured in technical reports. To overcome these problem 16 sites with good data were used to determine trends in coral reef health over the 40 years, four of those sites were located in Jamaica.

1:30 – 2:30 pm	**Session 2 : Understanding Health and Public Policy Data** Session Chair: Shelly McFarlane, Research Fellow, Epidemiology Research Unit, TMRI, UWI
	Evaluating the effectiveness of complex interventions: meta-systematic review and meta-analysis approach Damian Francis M.Sc, US Cochrane Center (Caribbean Branch), TMRI, UWI, Mona .
	Temporal Change in Homicide Frequency in Trinidad & Tobago 2000-2012: A Time Series Analysis. Godfrey St. Bernard, Ph.D. UWI, St. Augustine
	The Los Angeles County Health Survey (LACHS): A surveillance Tool for Health Assessment of the Most Populous County in the United States. Jerome Blake, M.P.H., Los Angeles County Department of Public Health
2:30 – 3:00 pm	Coffee Break and Poster Session
	Session 3 : Exposure to Data Analysis Software
3:00 – 3:45 pm	***Introduction to R*** Richard Plummer M.Sc, MIMA, Grad. Dip., Dept. of Mathematics, UWI, Mona
3:45 – 4:45 pm	***Handling Complex Survey Data using Stata.*** Novie Younger-Coleman Ph.D., TMRI, UWI, Mona

Friday, November 1, 2013

Time	Activity
8:00 – 8:55 am	Registration
9:00 – 10:15 am	**Session 4: Science and Environment Data** Session Chair: O'Neil Lynch, PhD, TMRU, UWI, Mona
	Influencia de los factores atmosféricos en la contaminación ambiental "Un Modelo de datos longitudinales" Eddy Johanna Fajardo, Deicy Villalba, Universidad Central de Venezuela
	Frequentist vs Bayesian confidence interval in 2^{k-p} Beta response. Luis Grajales National University of Colombia
	The value of Data Collection in Assessing the Health of Caribbean Coral Reefs. Marcia Creary Ford, M.Phil, Centre for Marine Sciences, UWI, Mona.

10:00 – 10:30am	Coffee Break and Poster Session
	Session 5: Feature Presentation - Data Mining Session Chair: O'Neil Lynch, Ph.D., TMRU, UWI, Mona
10:30 – 11:15 am	***Applying the IKDDM process model to Identify the Determinants of Quality of Life of Sickle Cell Patients.*** Gunjan Mansingh, Ph.D., Dept of Computing, UWI, Mona
	Session 6: Career Development - University Pathways to Careers in Statistics. Session Chair: Paulene Gayle-Betten M.Sc, NCU, Jamaica
11:15 am – 12:15 pm	**Panel Discussion:** Richard Plummer, M.Sc, University of the West Indies Merrick Mullings, University of Technology Edward Jones, Ph.D., Texas A & M University
12:15 – 1:15 pm	Luncheon
1:15 – 2:15 pm	**The Power of SPSS for Data Analysis** Helen Fox, SALISES Data Bank, UWI, Mona
2:15 – 2:45 pm	***Launch of The Jamaica Statistical Society***
2:45 - 3:00 pm	Closing Remarks and Vote of Thanks

Poster Presentations

A Quantitative Exploration of Math Anxiety Resulting in Low Math Test.
Glenroy Pinnock Ph.D., School of Math and Statistics, UTECH

Prevention of misinterpretation of data analysis within computing undergraduate capstone research projects at a Jamaican university.
Susan A. Muir M.Sc., UTECH

Emotional Intelligence, Leadership Practices and Pastoral Effectiveness: A Multivariate Analysis of Variance in a Faith-Based Organization in Jamaica.
Michael H. Harvey, NCU

A comparative analysis of imputation techniques as a compensation method for item non response in survey data: An implication for poverty estimation
Olusegun Afis Ismail, Head, Division of Statistics & Research Methodologies, School of Mathematics & Statistics, Faculty of Science & Sport, UTECH.

The Los Angeles County Health Survey (LACHS): A surveillance Tool for Health Assessment of the Most Populous County in the United States.

Jerome Blake, M.P.H., Amy S. Lightstone, M.P.H., M.A., Margaret Shih, M.D., PhD. , Gigi Mathew, DrPH, Yan Cui M.D. PhD, Yajun Du, M.S. County of Los Angeles, Department of Public Health (DPH), Office of Health Assessment and Epidemiology

Background: LACHS is a population-based random-digit-dialed telephone survey that provides ongoing high quality health information on Los Angeles County (LAC) residents. The data are used for assessing health-related needs, program planning/evaluation and policy development. The 2011 LACHS is the sixth cycle of the study (conducted in 1997, 1999, 2002, 2005 and 2007).
Objective: To highlight the value of local data collection and dissemination in public health assessment of health conditions, behaviors, access and utilization of services from a representative sample of LAC residents.
Methods: Each LACHS cycle includes an adult and a child component (administered to the parent/guardian/primary caretaker of a child 0-17 years old). The adult component includes 8 subsamples, each administered to a portion of the survey population. Interviews are conducted in 6 different languages and in 2011, the sample size was 8,036 and 6,013 for the adult and child components, respectively. Statistical weighting procedures are utilized to generalize the sample data to the overall population.
Results: Results are disseminated through LA Health Briefs, Data Snapshots, comprehensive reports, conference presentations, press releases, peer-reviewed journal articles and websites, including a web-based data query system. Customized data analyses are also done for interested agencies, organizations, and academia.
Conclusions: LACHS fulfills a core function of public health through ongoing assessment of the LAC population. It provides updates on key health indicators, and identifies emerging public health issues among adults and children. It highlights the value of high-quality local data collection and analyses in informing policy and evidence-based
practice to improve population health.

Session 3 : Exposure to Data Analysis Software

Introduction to R
Richard Plummer M.Sc, MIMA, Grad. Dip., Dept. of Mathematics, UWI, Mona

Handling Complex Survey Data using Stata.
Novie Younger-Coleman Ph.D., TMRI, UWI, Mona

Session 4: Science and Environment Data

Influence of atmospheric pollution "A Model of longitudinal data" (Translated from Spanish).

Eddy Johanna Fajardo, Deicy Villalba, Universidad Central de Venezuela

The centre of the city of Bucaramanga is an area highly traveled by vehicles and pedestrians, because it is the most commercial part of the city. There you will find most of the shops for textiles, leather goods, stationery and the banking sector, as well the Administrative services (mayor and governor) and city court. For this reason the government ministry responsible for

Kingston, Jamaica

Background: There is an urgent need for the systematic synthesis of research data to provide evidence-based summaries on the effectiveness of interventions that address global health challenges.
Objectives: In this paper we demonstrate the effectiveness of Systematic review and meta-analysis in the assessment of complex interventions with food supplementation combined with other interventions to improve growth in children under 5 years old.
Methods: Meta-analyses were performed for randomized control trials (RCTs) and clinical before and after studies (CBAs) that assessed food supplementation interventions with or without co-intervention in children aged 3 months to 5 years. Analyses were conducted with random effects models based on a conceptual framework which identified how the intervention might work. Heterogeneity was explored and addressed using subgroup analyses.
Results: Searches identified 29,387 studies with 290 retrieved after screening, of which 29 unique studies[1] met inclusion criteria. Of these, 26 were from Low and Middle income countries. There was no significant effect of supplemental food on weight in the 8 RCTs meta-analyzed (0.08 (95%CI -0.0-0.16).kg supplemented vs not supplemented) however from the CBAs children who were given supplementation gained an average of 0.25 (95%CI 0.11-0.39) kg more over a year than those who were not supplemented. For height, there was a significant difference in the RCTs but not the CBAs; Supplementation increased height by 0.28 cm more over 5 months (or 0.67 a year) than those who were not supplemented (95%CI 0.04-0.53) over an average 5 month intervention. There were high levels of heterogeneity for the height outcome partially explained in subgroup analysis.
Conclusion: Supplemental food showed little effectiveness for growth. Identified determinants of effectiveness such as supervision, providing energy dense food, giving the family additional rations, multiple intervention design, and family and community context will be submitted to UNICEF and the World Food Programme for improving interventions.

[1] multiple publications from single studies.

Temporal Change in Homicide Frequency in Trinidad & Tobago 2000-2012: A Time Series Analysis.

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Problem Statement: Criminal homicide is a scourge in society to the extent that there is need to reduce its frequency and prevalence. Thus, a more systematic basis for informing dynamics associated with change to the extent that one can interpret the nature of change qualitatively. In other words, is there a definite trend or pattern emerging?
Aims and Objectives: In addition to discerning the existence and nature of the annual trend in criminal homicide, the paper seeks to gauge whether such trends are likely to be temporary or permanent. It also assesses the persistence of trends across police jurisdiction domains, the use/non-use of firearms to kill victims and plausible motives for such killings. Assessments were also explored dependent on different periodicities.
Methods and Models: Data pertaining to every case of criminal homicide between January 1, 200 and December 31, 2012 were obtained from the Crime and Problem Analysis Unit (CAPA), Trinidad and Tobago Police Service. Dependent on different periodicities, trend lines and their respective parameters were evaluated to inform judgments of prospective change based on past trends.
***Results and Conclusions*:** Over the period 2000-2012, conclusive evidence of a downward trend in the frequency of homicide cases is not forthcoming. However, there is potential for it to change at a slower pace annually. The persistence of upward trends in the number of homicide cases cannot be refuted especially in cases associated with altercations, robberies, revenge and drug-related activities. The greatest promise for potential declines is evident in the case of domestic violence and gang-related activities as motives.

Abstracts

Keynote Address

A Better Method for Non-parametric Multivariate Analysis of Variance for identifying paraffin (kerosene) remains. (An Application in Forensic Science)

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Traditional MANOVA methods and most non-parametric methods are not usually suitable for various reasons. The requirement of multivariate normality may rule out the traditional MANOVA. The non-parametric counterparts are many times inappropriate when there are more than one factors along with their interactions because they do not allow for direct additive partitioning of variation for complex models, There are other situations for which these methods are not valid. However, a new non- parametric method (McArdle and Anderson,2001) is now available for analysis of variance for multivariate data. This method is more formerly called the Permutation MANOVA. It uses sums of squared distances (dissimilarities) to calculate the nonparametric analogue of the Fisher's F-statistic ratio and permutation methods to calculate the corresponding P-values. It is appropriate also when variances and covariances do not satisfy homogeneity, sample sizes are unequal and factors are crossed or nested. The only as assumption required for Permutation MANOVA is that the multivariate variables have similar distribution. A study was done by Trudy-Ann Hamilton from the Jamaica Forensic Laboratory in pursuing a Master of Science in Forensic Science to identify the factors that determine which absorbents may be used to detect the presence of paraffin remains after a fire possibly due to arson and what are the appropriate conditions. Paraffin and the possible remains considered consist of a mixture of six organic gases. The strategy was to determine whether the ratios of the six gases found in paraffin were the same for each case and whether any of the cases matched the ratio profile of paraffin. There were two absorbents investigated. The other factors investigated comprised the volume of air with four levels and the paraffin (kerosene) volume with three levels. Due to the fact that the traditional MANOVA model did not satisfy multivariate normality, a search was done to find an appropriate non-parametric method analogous to traditional method. This led to the Permutation ANOVA. The tests indicated that there is no significant difference in the gas ratios between the absorbents (P-value = 0.95). However, the gas ratios were significantly different for the volumes of air (P value = 0.02) as well as for the paraffin volumes (P-value =0.01). The forty cases of gaseous remains were checked for similar ratio profiles to that of paraffin. The equality of the gas ratios with that of paraffin was assessed by visually examining the data. The gas ratio profiles of the selected cases appeared to be significantly different from those the paraffin gas ratios.

Key words: MANOVA, non-parametric, permutation, organic gases, ratios, forensic science, paraffin.

Session 1 : Answering Questions in Education

Nurturing Statistics as a Profession among High School & College Students

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The theme for the International Year of Statistics, 2013 is Statistics in *Everyday Live – Let us Educate and Appreciate*. In keeping with that, the Secretariat of the Caribbean Community (CARICOM) declared that one of the three primary goals of IYOS 2013 is to: Nurture Statistics as a profession, especially among young people. http://caricomstats.org/iyos2013.htm The Department of Statistics at Texas A&M University recently experimented with mentoring student teams thru the Capital One Data Mining competition. Initially the aims were modest. Since the competition was against some of the top universities with reputations for producing excellent applied statisticians, there were only modest expectations of winning. Our aims were to guide students thru the competition and in the process challenge and improve their skills at solving big data problems. The results of this experiment were completely unexpected and more rewarding than initially imagined. This paper describes the nature and challenges of data mining and big data competitions, and how they can serve as an excellent tool for recruiting and teaching future data scientists and statisticians. This model is now being used in the Texas A&M Master's level program and is encouraging cross-fertilization between students in business, computer science and engineering.

The Value of Data Collection and Analysis in Measuring Research Performance in a HEI.

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Research output is one of the key indicators that set a university apart from other post-secondary institutions. Therefore, it is of paramount importance that a university evaluates its research performance. This presentation underscores the importance of data collection and reports the results of a simple data collection exercise done to document the research performance of the University of Technology, Jamaica (UTech), for the period 2007-2011. The metrics used were counts of the number of papers published in refereed journals and counts of citations by other authors of the papers authored by research-active Faculty Members of UTech. The results revealed much variation in research productivity among academic units and also a trend of an increasing number of refereed publications for the period under review. These results have emerged within an environment which has seen the implementation of various initiatives aimed at encouraging and promoting research within the university.

Keywords: research and innovation management; research support; research performance metrics

Students' attitude towards school, their attendance and teacher support as predictors of academic performance, in selected shift schools in Jamaica.

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There is a common belief among stakeholders that educational outcomes and school performance indicators have more positive outcomes for morning shift versus that of afternoon shift. (Sudu 2010). The current quantitative study examined attitude of students towards shift / school, teacher support and attendance as predictors of academic performance. For this purpose, students were asked to complete a teacher support and an attitude towards school scale. Both scales were tested for internal consistency of items and returned Cronbach's $\alpha = .73$ and .80 respectively. Data obtained from 168 participants (n= 168) were processed in Predictive Analytical Software (PASW, IBM 20.0); Multiple regression analysis using the stepwise method was conducted, to determine whether or not students attitudes towards school, attendance, and teacher support were statistical significant predictors of academic performance. The overall regression that included one of three predictor variables (attendance) was statistically significant, $R2 = 8.3$, adjusted $R2=7.8$, $F (1, 166) = 15.049$, $p< .001$. The results showed that attendance accounts for 8% of the variability in academic performance, and is more robust than do teacher support and attitude towards school in predicting academic performance. The study recommends that strategies be implemented to increase attendance, to improve academic performance of students attending shift schools. Further research is required to explore relationships between attendance, shift type schools and other variables impacting student's performance.

Keywords: Attitude towards school, Teacher support, Attendance, Performance, Shift schools, Gender.

Social Media Habits, Sleep Habits and Hours of Class Time: Impact on Academic Performance among Students in Three Selected High Schools in Central Jamaica

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The purpose of this study is to examine students' Social Media and Sleep Habits and Hours of Class Time on academic performance, as there are conflicting reports regarding the factors that impact academic performance (Ndirika and Njoku (2012). For example, an online article posted by the British Broadcasting Cooperation (BBC) states that "many UK teachers believe pupil's work is suffering because of an obsession with social networking yet other researchers have found that Facebook was negatively correlated with overall college grade point average (Junco, 2011). For this study the data were collected from 116 students from high schools in Manchester, Jamaica. The social media habit scale had a Cronbach's reliability coefficient of 0.93 and the study habit scale had a Cronbach's reliability of .73. Multiple Regression analysis results indicated that contact time accounts for about five percent of the variance in academic performance ($R2 = .049$, Adjusted $R2 = .041$, $F (1, 114) = 5.93$, $p = .016 < 0.05$) suggesting that class contact hours is a statistically significant predictor of a student's academic performance, although it could be argued that 5% of the variance in academic performance explained by contact hours may not be of practical significance.

Keywords: Social media habits, sleep habits, hours spent in class (contact time), academic performance.

Session 2 : Understanding Health and Public Policy Data

Evaluating the effectiveness of complex interventions: meta-systematic review and meta-analysis approach

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