**JPSS Editorial Board**

**Editor-in-Chief:** (since January 1, 2016)
B. M. Golam Kibria,Dept. of Math. & Statistics, Florida International Univ., Miami, FL 33199, USA; e-mail: kibriag@fiu.edu. (speciality: statistical inference, regression analysis, distribution theory, applied statistics)

**Editors:** (listed in alphabetical order according to last name)
Paul C. Chiou, Dept. of Math., Lamar Univ., Beaumont, TX 77710, USA; e-mail: chiou@math.lamar.edu.
Chien-Pai Han, Dept. of Math., Univ. of Texas at Arlington, Arlington, TX 76019, USA.
e-mail: cphan@uta.edu. (speciality: statistical inference, multivariate analysis, sampling theory)

**Coordinating Editors:**
Syed A. Hossain, Management Science Dept., Rider Univ., Lawrenceville, NJ 08648, USA.
e-mail: shossain@rider.edu. (speciality: Financial math., Mathematical statistics, Software reliability)
Borko D. Jovanovic, Dept. of Preventive Medicine, Northwestern Univ., Chicago, IL 60611, USA.
e-mail: borko@northwestern.edu. (speciality: biomedical statistics and epidemiology)
Chihwa Kao, Center for Policy Research, Syracuse Univ., Syracuse, NY 13244, USA.
e-mail: edkao@maxwell.syr.edu. (speciality: statistics for economics and business)
Andrzej Korzeniowski, Dept. of Math., Univ. of Texas at Arlington, Arlington, TX 76019, USA.
e-mail: korzeniowski@uta.edu. (speciality: probability theory and its applications)
K. Muralidhuraran, Dept. of Statistics, M. S. Univ. of Baroda, Baroda-390002, India.
e-mail: lmv_murali@yahoo.com. (speciality: applied probability and statistics for industry)
Kamel Rekab, Dept. of Math. & Statistics, Univ. of Missouri, Kansas City, MO 64110-2499, USA.
e-mail: rekabk@umkc.edu. (speciality: statistical software testing and reliability, network security, biostatistics, statistics in advanced manufacturing & quality improvement, sequential analysis, etc.)
Mohammad Salehi M., Dept. of Math., Statistics, and Physics, Qatar Univ., P.O. Box 2713, Doha, Qatar.
e-mail: salehi@qa.edu.qa. (speciality: sampling theory and survey methodology)

**Editorial Advisors:**
Barry C. Arnold, Dept. of Statistics, U. of California, Riverside, CA 92521-0002, USA.
James E. Gentle, Dept. of Comput. Science & Informatics, George Mason U., Fairfax, VA 22030, USA.
Arjun K. Gupta, Dept. of Math. & Statistics, Bowling Green State U., Bowling Green, Ohio 43403, USA.
André I. Khuri, Dept. of Statistics, U. of Florida, Gainesville, FL 32611-8545, USA.
Kiang Liu, Dept. of Preventive Medicine, Northwestern U., Chicago, IL 60611, USA.
Shaw-Hwa Lo, Dept. of Statistics, Columbia U., New York, NY 10027, USA.
Kung-Jong Lui, Dept. of Math. & Statistics, San Diego State U., San Diego, CA 92182-7720, USA.
Douglas C. Montgomery, Dept. of Industrial Engineering, Arizona State U., Tempe, AZ 85287, USA.
Sheldon M. Ross, Dept. of Ind. Sys. Eng., U. of Southern California, Los Angeles, CA 90089, USA.
Robert J. Serfling, Dept. of Mathematical Sciences, U. of Texas at Dallas, Richardson, Texas 75083, USA.
Ahmad Reza Soltani, Dept. of Statistics and Operational Research, Kuwait U., Safat 13060, Kuwait.
Lee-Jen Wei, Dept. of Biostatistics, Harvard U., Boston, MA 02115, USA.

**Production Editor:** Chih-Chiang Cheng, Dept. of Electrical Engineering, National Sun Yat-Sen Univ., Kaohsiung, Taiwan, ROC; e-mail: chengcc@mail.ee.nsysu.edu.tw.

**Marketing Manager:** Ardor Yu-Hong Chen (CEO of Techcom Information Corp., Taipei), Center of Sampling Survey, Oriental Institute of Technology, Ban-Chiao, New Taipei City, Taiwan, ROC; e-mail: techcom5054@hotmail.com.

**International Managing Editor** (since January 1, 2018): Andrei I. Volodin, Dept. of Math. and Statistics, University of Regina, Regina, Saskatchewan, Canada; e-mail: andreii@uregina.ca.

**Managing (and Founding) Editor:** Kuang-Chiao Chang, Dept. of Statistics and Information Science, Fu Jen Catholic Univ., New Taipei City, Taiwan, ROC; e-mail: stat1016@mail.fju.edu.tw.
**JPSS Editorial Board**

(continued)

**Associate Editors:**

K. K. Achary, Dept. of Statistics, Mangalore U., Mangalagangothri-574199, India.

Ahmed N. Albatineh, Dept. of Community Med. and Behavioral Sci., Kuwait Univ., Safat 13110, Kuwait.

Gokarna Aryal, Dept. of Math., CS & Statistics, Purdue U., Hammond, IN 46323, USA.

Olivier Basdevant, The World Bank, Washington DC 20433, USA.

John J. Borkowski, Dept. of Mathematical Sciences, Montana State U., Bozeman, Montana 59717, USA.

Connie M. Borror, Division of Management Information, U. of Illinois, Champaign, IL 61820, USA.


Hrishikesh Chakraborty, Dept. of Epidemiology & Biostatistics, U. of S. Carolina, Columbia, SC 29208, USA.

Chang-Tai Chao, Dept. of Statistics, National Cheng-Kung U., Tainan, Taiwan, ROC.

Ajit Chaturvedi, Dept. of Statistics, U. of Delhi, Delhi 110 007, India.

Jie Chen, Dept. of Biostatistics & Epidemiology, Georgia Regents Univ., Augusta, GA 30912-4900, USA.

Tzu-chin R. Chou, Dept. of Applied Statistics and Information Sci., Ming Chuan U., Taoyuan, Taiwan, ROC.

Po-Huang Chyou, Marshfield Medical Research Foundation, Marshfield, WI 54449, USA.

David Drain, Dept. of Math. & Statistics, U. of Missouri-Rolla, Rolla, MO 65409-0020, USA.

Jamie Emerson, Perdue School of Business, Salisbury U., Salisbury, MD 21801, USA.

Florence George, Dept. of Math. and Statistics, Florida International Univ., Miami, Florida 33199, USA.

Jan Hannig, Dept. of Statistics and O. R., U. of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA.

Chia-Ding Hou, Dept. of Statistics and Information Sci., Fu Jen Catholic U., Taipei, Taiwan, ROC.

Hsiao-Yun Huang, Dept. of Statistics and Information Sci., Fu Jen Catholic U., Taipei, Taiwan, ROC.

Yu-Sheng Hsu, Dept. of Math., National Central U., Chung-Li, Taiwan, ROC.

Anwar H. Joarder, School of Business, U. of Liberals Arts Bangladesh, Dhammondi, Dhaka 1209, Bangladesh.

Shahjahan Khan, Dept. of Math. & Computing, U. of S. Queensland, Toowoomba, Qld. 4350, Australia.

Tai-Ming Lee, Dept. of Statistics and Information Sci., Fu Jen Catholic U., Taipei, Taiwan, ROC.

Pen-Hwang Liau, Dept. of Mathematics, National Kaohsiung Normal U., Kaohsiung, Taiwan, ROC.

Shang P. Lin, Dept. of Health Studies (Biostatistics Lab), U. of Chicago, Chicago, IL 60637, USA.

Hung-Yi Lu, Dept. of Statistics & Information Science, Fu Jen Catholic U., Taipei, Taiwan, ROC.

Suzanne McCoskey, Dept. of Economics, United States Naval Academy, Annapolis, MD 21402, USA.

Vincent F. Melfi, Dept. of Statistics and Probability, Michigan State U., East Lansing, MI 48824, USA.

Weiwen Miao, Dept. of Math. & Statistics, Haverford College, Haverford, PA 19041, USA.

Magdi S. Moustafa, Dept. of Math., The American U. in Cairo, Cairo 11511, Egypt.


B. N. Pandey, Dept. of Statistics, Banaras Hindu U., Varanasi 221005, India.

M. N. Patel, Dept. of Statistics, School of Sciences, Gujarat U., Ahmedabad-380009, India.


Kevin S. Robinson, Dept. of Math., Millersville U., Millersville, PA 17551-0302, USA.


Henri Schurz, Dept. of Mathematics, Southern Illinois U., Carbondale IL 62901-4408, USA.

John F. Shortle, Dept. of Systems Engineering and O. R., George Mason U., Fairfax, VA 22030, USA.

Lotfi Tadj, Dept. of Statistics and O. R., King Saud U., Riyadh 11451, Saudi Arabia.

Fred Torcaso, Dept. of Mathematical Sciences, The Johns Hopkins U., Baltimore, MD 21218, USA.

Wensong Wu, Dept. of Math. & Statistics, Florida International Univ., Miami, FL 33199, USA.

Liang Zeng, Dept. of Physics and Geology, U. of Texas Pan American, Edinburg, TX 78539, USA.

**Associate Managing Editor:**

Sy-Mien Chen, Dept. of Mathematics, Fu Jen Catholic U., New Taipei City, Taiwan, ROC.
The *Journal of Probability and Statistical Science* (JPSS, ISSN 1726-3328) is a modified version of the *Journal of Propagations in Probability and Statistics* (JPPS, ISSN 1607-7083). JPSS, like its predecessor JPPS, is a multipurpose and comprehensive journal of probability and statistics that publishes papers of interest to a broad audience of theorists, methodologists, practitioners, teachers, and any other users of probability and/or statistics. The scope of JPSS is intended to be quite broad, including all the major areas of probability and statistics. Research papers involving probability and/or statistics, either theoretical or applied in nature, will be seriously considered for publication. Additionally, papers involving innovative techniques or methods in teaching probability and/or statistics will also be considered. Papers submitted for publication consideration will be peer reviewed. Initially, we will publish semiannually, one issue each in February and August. Hopefully, as time accrues, we will be able to publish quarterly. It is the goal of JPSS to publish a wide range of works involving probability and/or statistics (theoretical and/or applied in nature) and provide widespread availability of such to a broad audience of people interested in probability, statistics and biostatistics.

**Submission and Review Policies**

1. Submission of manuscript written in English should be mailed (by email attachment) to the Editor-in-Chief, an Editor, a Coordinating Editor, or to the International Managing Editor at the address provided in the JPSS Editorial Board.
2. A manuscript is accepted only with the understanding that the text has not appeared in publication, and that it is not being simultaneously reviewed by any other journal.
3. Submitted manuscripts are refereed by a double-blind process, meaning that the reviewers will not know the names of the authors and vice versa.
4. If an article is accepted for publication, the author(s) will be required to provide an electronic copy of the paper, in Micro-soft Word or PCTEX format, through an email attachment. The authors will also be requested to transfer their copyright on certain conditions to the publisher.

**Publisher** Harold C. H. Chen, Head, Susan Rivers’ Cultural Institute. Address: 26, Lane 2, Chien Mei Road, Hsinchu City, Taiwan, ROC. Phone: (03)5716594, Fax: (03)5712524.
February 1, 2018

Editorial Note

There are nine articles on the theories, methods and applications in this issue. Most of them are on the distributional theories and their properties along with applications. The first article discusses the characterization of Fréchet and Weibull Max Domains under Power Normalization. The second article gives an overview on Moran’s Index by a simulation experiment where the local Moran values are computed and a time variable is added to a spatial Poisson point process. Changes in the Moran statistics over the neighboring areas are investigated and ideas on how to perform the analysis are proposed. The third article models the distribution of the charge emitted during the partial discharge process. A collection of observations on the electric charge emissions during the partial discharge activity is taken and is modelled with the density function so that the results developed are scientifically verified. A new class of transmuted weighted Weibull distribution by using the quadratic rank transmutation map technique is studied in article four. Some structural properties of the proposed distribution are discussed. Maximum likelihood method is used to estimate the model parameters. Article five proposes a new family of distributions, called the Marshall-Olkin Lomax distribution and studied some of its important properties. It also developed count models with Lomax inter arrival time distributions. The model is applied to a set of real data on inter arrival times of four wheeler vehicles in a city in India. The characterizations of the transmuted Lindley distribution for modelling survival data is presented in article six. Some structural properties of the transmuted Lindley distribution are also discussed. In article seven, a family of continuous probability distributions which integrates recently introduced Marshall-Olkin-Kumaraswamy-G family and Beta Marshall-Olkin-G family of distributions is proposed. Probability density function, cumulative distribution function, moment generating function, moments and probability density function of order statistics of the proposed family are expressed as linear mixture of the corresponding functions of Kumaraswamy-G distribution. Article eight considers distributions which generated from exponential-class lifetime distributions by taking positive real powers (greater than 1) of the exponential-class c.d.f. It also considers the asymptotic behavior of the MLE’s for the parameters of these distributions. A recurrence relations for single and product moments is outlined in article nine. It characterizes the extension of exponential distribution using these recurrence relations based on general progressively Type-II right censored order statistics and using relation between probability density function and distribution function.

- B. M. Golam Kibria, JPSS Editor-in-Chief
  Professor, Department of Mathematics & Statistics, Florida International University
  Miami, FL 33199, USA
### Table of Contents

- On a Characterization of Fréchet and Weibull Max Domains under Power Normalization  
  A. S. Praveena and S. Ravi  
  1
- New Approaches to Model Simulated Spatio-Temporal Moran's Index  
  Nhan Bui, Jennifer Lorio, Norou Diawara, Kumer Das, and Lance Waller  
  11
- Partial Discharge Analysis via the Pathway Model  
  Naiju M. Thomas  
  25
- A New Class of Transmuted Weighted Weibull Distribution  
  Muhammad Shuaib Khan, Robert King, and Irene Lena Hudson  
  37
- Marshall-Olkin Max-Min Lomax Process and Count Models  
  Seetha Lekshmi V. and Catherine Thomas  
  53
- Some Structural Properties of the Transmuted Lindley Distribution with Application to Women’s Anxiety Data  
  Muhammad Shuaib Khan, Robert King, and Irene Lena Hudson  
  69
  Subrata Chakraborty, Laba Handique, and M. Masoom Ali  
  81
- Asymptotic Properties of MLE’s of Parameters of Exponentiated Exponential Class Lifetime Distributions  
  James U. Gleaton and Sami Hamid  
  103
- Recurrence Relations for Single and Product Moments for the Extension of Exponential Distribution Based on General Progressively Type-II Right Censored Order Statistics and Characterization  
  M. M. Mohie El-Din and A. M. Sharawy  
  117

### Appendix

Published by: Susan Rivers’ Cultural Institute, Hsinchu City, Taiwan, ROC.
On a Characterization of Fréchet and Weibull Max Domains under Power Normalization

A. S. Praveena¹ and S. Ravi²

University of Mysore

ABSTRACT Max domain of attraction of the Gumbel law under linear normalization has been studied extensively in the literature. It is known that all distribution functions belonging to the max domain of attraction of the Gumbel law under linear normalization belong to either the max domain of attraction of the Fréchet law or that of the Weibull law under power normalization. The objective of this article is to state and prove the characterization results of max domains of attraction of Fréchet and Weibull laws under power normalization. Some illustrative examples are also discussed.

Keywords Characterization; Fréchet law; Gumbel law; Linear normalization; Max domains of attraction; Power normalization; Slowly varying function; Weibull law.

1. Introduction

A distribution function (df) $F$ is said to belong to the max domain of attraction of the Gumbel law, denoted by $F \in D_{\gamma}(\Lambda)$, if there exist norming constants $a_n > 0$, $b_n \in \mathbb{R}$, the real line, such that

$$\lim_{n \to \infty} \lim_{m \to \infty} P\left( \frac{M_n - b_n}{a_n} \leq x \right) = \lim_{n \to \infty} F^n(a_n x + b_n) = \Lambda(x) = e^{-e^{-x}}, \quad x \in \mathbb{R},$$

(1.1)

where $M_n = \max(X_1, X_2, \cdots, X_n)$, $n \geq 1$, and $X_1, X_2, \cdots, X_n$ are independent identically distributed (iid) random variables (rvs) with common df $F$. Along with the Gumbel law, the...
New Approaches to Model Simulated Spatio-Temporal Moran's Index

Nhan Bu  Jennifer Lorio  Norou Diawara  Kumer Das  Lance Waller

Old Dominion University  Lamar University  Emory University

ABSTRACT  The Moran's index is a statistic that measures spatial autocorrelation; it quantifies the degree of dispersion (or clustering) of objects in space. However, when investigating data over a general area, a single global Moran statistic may not give a sufficient summary of the spread, behavior, features or latent surfaces shared by neighboring areas; rather, by partitioning the area and taking the Moran statistic of each divided subareas, we can discover patterns of the local neighbors not otherwise apparent. In this paper, we present a simulation experiment where the local Moran values are computed and a time variable is added to a spatial Poisson point process. Changes in the Moran statistics over the neighboring areas are investigated and ideas on how to perform the analysis are proposed.

Keywords  Extreme value distribution; Moran's index; Simulated processes; Spatio-temporal model.

1. Introduction

In the era of big data, we rely on modeling correlation between features of data to make inference. One such correlation in spatial data is the Moran's Index. As first described by Moran [16], when given a set of variates (x, y) (defined on some two-dimensional discrete area) we may want to investigate whether there is any evidence that spatial autocorrelation is present overall or in neighboring clusters based on selected features. Applications of such spatial statistics can be found in many areas, for example, in agricultural research, specific plots of land may influence in several aspects the production of nearby plots. Defining random variables with spatial components as described in Vaillant et al. [21] can further advance the understanding of
Partial Discharge Analysis via the Pathway Model

Naiju M. Thomas
Centre for Mathematical Sciences & Banaras Hindu University

ABSTRACT  We conduct a study on partial discharge phenomena in the field of electrical engineering, using statistical techniques. Partial discharges are localized electrical discharges that behave as a sequence of electrical stress concentrations in insulation material or on the surface of the insulation. We use the pathway probability model for the statistical analysis. The density function of the amplitude of the pulses which are emitted during the partial discharge process, expressed in units of charge, is obtained. A real data analysis is made in order to corroborate the results developed. A statistical study on the location of the partial discharge, measured at different time points, is carried out, a graphical representation of its distribution for the different values of the parameters is provided and based on that, a new generalized integral form of the density function of the amplitude of the pulses is defined.

Keywords  H-function; Laplace transform; Partial discharge; Pathway model.

1. Introduction

Statistical distribution theory is concerned with the properties of random variables, with the emphasis on the distributional aspects of the random variables frequently used in the theory and application of statistical methods. It is of great interest to theory-orientated statisticians because of their great number of special features and to practitioners because of its adaptability for vast applications, especially to fit to data from various fields, ranging from life data to weather data or observations made in economics, physics, hydrology, biology or in the engineering sciences. Thousands of research papers regarding the distribution theory are available in the literature, see for examples Birnbaum and Vincze [2], Castellares et al. [5], Mathai [14], Nadarajah [21], Provost and Rudiuk [22], Rocke [23] and Thomas [25].
A New Class of Transmuted Weighted Weibull Distribution

Muhammad Shuaib Khan   Robert King          Irene Lena Hudson
The University of Newcastle         Swinburne University of Technology

ABSTRACT This article introduces a new class of transmuted weighted Weibull distribution by using the quadratic rank transmutation map technique studied by Shaw and Buckley [15]. This new class of distribution generalizes the eleven lifetime distributions as special cases. Some structural properties of the transmuted weighted Weibull distribution are discussed. The method of maximum likelihood is used for estimating the model parameters. We illustrate the use of transmuted weighted Weibull distribution with an application to survival data.

Keywords Maximum likelihood estimation; Moment estimation; Weighted Weibull distribution.

1. Introduction

The effect of transmuting parameter plays a dynamic role in the transmuted family of lifetime distributions and is very useful technique to examine lifetime data. The ability of the quadratic rank transmutation map technique proposed by Shaw and Buckley [15] proved to be a versatile modelling technique to characterize the impact of lifetime data on new extended model. There are several methods available in statistics literature to develop new Weibull family of lifetime distribution. Recently there was introduced a new family called the transmuted generated family of lifetime distribution, which is very flexible for adding a new parameter by using quadratic rank transmutation map procedure. The transmuted family of distributions have proved to be a better method in exploring tail properties and in improving the goodness-of-fit statistics. This article introduces a new class of distribution called the transmuted weighted Weibull distribution, which can be used in modelling survival data, reliability problems and fatigue fracture life testing problems. The proposed model includes
Marshall-Olkin Max-Min Lomax Processes and Count Models

Seetha Lekshmi V
Nirmala College

Catherine Thomas
Govt. College

ABSTRACT In this paper a new family of distributions called the Marshall-Olkin Lomax distribution is introduced and studied in detail. Different autoregressive max-min processes are introduced and their properties are studied. It is also extended to $k$-th order. We also introduce a new count model with Lomax inter-arrival time distribution. The model is applied to a real data on inter arrival times of vehicles in Cochin, India.

Keywords Autoregressive models; Lomax count model; Lomax distribution; Marshall-Olkin Lomax distribution; Minification processes.

1. Introduction

Recently there has been great interest in extending distributions to develop more general families for wider use and applications. Marshall and Olkin [30] developed a new family which has been applied to various distributions developing Marshall-Olkin extended distributions. Marshall-Olkin distributions with Weibull and Logistic marginals were introduced by Alice and Jose [2]-[3]. A detailed study of Marshall-Olkin Weibull distribution is given by Jose et al. [19] and Githany et al. [11]. An extended form of Marshall-Olkin distributions based on Lomax model is introduced by Githany et al. [12]. Sankaran and Jayakumar [39] gave a physical interpretation of the Marshall-Olkin extended family of distributions using proportional odds model. The applications in time series analysis and reliability analysis of Marshall-Olkin extended semi Burr and Marshall-Olkin extended Burr distributions are introduced and studied by Jayakumar and Mathew [17]. Parikh et al. [32] discussed both estimation and testing problems along with numerical examples of Marshall-Olkin generalized exponential distribution. Jose et al. [22] introduced Marshall-Olkin beta distribution and studied...
Some Structural Properties of the Transmuted Lindley Distribution with Application to Women’s Anxiety Data

Muhammad Shuaib Khan  Robert King          Irene Lena Hudson
The University of Newcastle         Swinburne University of Technology

ABSTRACT  This paper presents some characterizations of the transmuted Lindley distribution for modelling survival data. The transmuted Lindley distribution can be obtained by using quadratic rank transmutation map technique. We obtain the analytic shapes of the density and hazard functions. Some structural properties of the transmuted Lindley distribution are discussed. The method of maximum likelihood is used for estimating the model parameters. We illustrate the use of this model with an application to women’s anxiety data.

Keywords  Maximum likelihood estimation; Moment estimation; Reliability functions.

1. Introduction

Lindley [10] introduced the one parameter distribution in the context of the Bayes modelling, known as Lindley distribution. Lindley [11] has also discussed this distribution from Bayesian point of view. The Lindley distribution is the mixture of exponential ($\beta$) and gamma (2, $\beta$) distributions. The Lindley distribution has been used for modelling lifetime data, when the system or process follows the increasing hazard function. A random variable $X$ is said to have Lindley distribution, if its cumulative distribution function (cdf) is given by

$$G(x; \beta) = 1 - \frac{\beta + 1 + \beta x}{\beta + 1} \exp\{-\beta x\}$$  \hspace{1cm} (1)

and the corresponding probability density function (pdf) is given by

$$g(x; \beta) = \frac{\beta^2}{\beta + 1} (1 + x) \exp\{-\beta x\}$$  \hspace{1cm} (2)

Received November 2017, revised December 2017, in final form January 2018.  
Muhammad Shuaib Khan and Robert King are affiliated to the School of Mathematical and Physical Sciences at The University of Newcastle, Callaghan, NSW 2308, Australia; emails: shuaib.stat@gmail.com and robert.king@newcastle.edu.au. Irene Lena Hudson is affiliated to the Department of Statistics, Data Science & Epidemiology at Swinburne University of Technology, Hawthorn, VIC, 3122, Australia; email: lhudson@swin.edu.au.

© 2018 Susan Rivers’ Cultural Institute, Hsinchu City, Taiwan, Republic of China.  
JPSS: ISSN 1726-3328

Subrata Chakraborty     Laba Handique           M. Masoom Ali
Dibrugarh University               Ball State University

ABSTRACT  A family of continuous probability distributions which integrates recently introduced Marshall-Olkin-Kumaraswamy-G family and Beta Marshall-Olkin-G family of distributions is proposed. Probability density function, cumulative distribution function, moment generating function, moments and probability density function of order statistics of the proposed family are expressed as linear mixture of the corresponding functions of Kumaraswamy-G distribution. The Rényi entropy, quantile function, random sample generation, shapes, reliability and stochastic ordering are studied. Maximum likelihood estimation of parameters and real life data modeling for comparative assessment with immediate sub families are carried out. Different model selection criteria and likelihood ratio test have revealed the advantage of applying the proposed family over its sub families.

Keywords  AIC; Exponentiated family; K-S test; Maximum Likelihood; Power Weighted Moments.

1. Introduction

Generalized classes of univariate continuous distributions through introduction of additional shape parameter(s) to a baseline distribution have attracted a lot of attention in recent times. Some recent developments in this research area include beta exponential Fréchet distribution (Mead et al. [22]), Marshall-Olkin-Kumaraswamy-G family (Handique et al. [16]), Kumaraswamy Marshall-Olkin-G family (Alizadeh et al. [2]), Kumaraswamy generalized Marshall-Olkin-G family (Chakraborty and Handique [7]), Beta Marshall-Olkin-G family (Alizadeh et al. [3]), beta generated Kumaraswamy-G family (Handique et al. [17]), beta
Asymptotic Properties of MLE’s of Parameters of Exponentiated Exponential Class Lifetime Distributions

James U. Gleaton and Sami Hamid
University of North Florida

ABSTRACT The properties of exponential-class distributions are well-known, including asymptotic properties of MLE’s. We consider distributions generated from exponential-class lifetime distributions by taking positive real powers (greater than 1) of the exponential-class c.d.f. We then consider the asymptotic behavior of the MLE’s for the parameters of these distributions.

Keywords Asymptotic behavior of MLE’s; Exponentiated exponential-class distribution families.

1. Introduction

Gupta and Kundu [2, 3] introduced the family of generalized exponential (GE) distributions, involving an exponential transformation of the c.d.f. of an exponential distribution. The new distribution has c.d.f.

$$F_\alpha(x) = \begin{cases} (1 - e^{-(x-\mu)/\beta})^\alpha & \text{for } x > \mu, \\ 0, & \text{otherwise} \end{cases}$$

Here $\alpha > 0$ is the transformation parameter, $\mu > 0$ is the location parameter, and $\beta > 0$ is a scale parameter. Gupta and Kundu [2, 3] examined the form of the hazard rate function for the new family of distributions, obtained the moment generating function and moments of the distributions, and found the distribution of the sum and of extreme values for such random variables. In addition, they derived the normal equations for the MLE’s of the parameters, and, for a particular data set, compared the fits of a GE distribution, a Gamma distribution, and a Weibull distribution, finding that the GE distribution had a slightly better fit to the data.

Received September 2017, revised December 2017, in final form January 2018.

Authors of this article are affiliated to the Department of Mathematics & Statistics at University of North Florida, Jacksonville, FL 32224, USA; email address of James U. Gleaton: jgleaton@unf.edu.

© 2018 Susan Rivers’ Cultural Institute, Hsinchu City, Taiwan, Republic of China. JPSS: ISSN 1726-3328
Recurrence Relations for Single and Product Moments for the Extension of Exponential Distribution Based on General Progressively Type-II Right Censored Order Statistics and Characterization

Marwa M. Mohie El-Din and A. M. Sharawy

Egyptian Russian University

ABSTRACT In this article, we establish recurrence relations for single and product moments. Moreover we characterize the extension of exponential distribution using these recurrence relations based on general progressively Type-II right censored order statistics (GPTIIC) and using relation between probability density function and distribution function.

Keywords Characterization; Extension of exponential distribution; General progressively type-II right censored order statistics; Recurrence relations; Single and product moments.

1. Introduction

Progressively censored samples have been considered, among others, by Balakrishnan et al. [5], Balakrishnan and Sandhu [6] and Davis and Feldstein [7]. Singh et al. [11] derived classical and Bayesian inference for an extension of the exponential distribution under progressive Type-II censored data with binomial removals. Nadarajah and Haghighi [10] derived an extension of the exponential distribution. Aggarwala and Balakrishnan [3] derived recurrence relations for single and product moments of progressive Type-II right censored order statistics from exponential, Pareto and power function distributions and their truncated forms. Abd El-Aty and Mohie El-Din [1] derived recurrence relations for single and double moments of generalized order statistics from the inverted linear exponential distribution and any continuous function. Athar et al. [4] discussed some new moments of progressively Type-II right

□Received September 2017, revised December 2017, in final form January 2018.
□Authors of this article are affiliated to the Department of Mathematics, Faculty of Engineering, at Egyptian Russian University, Cairo, Egypt; Email address of M. M. Mohie El-Din: mrali112@yahoo.com.

© 2018 Susan Rivers’ Cultural Institute, Hsinchu City, Taiwan, Republic of China. JPSS: ISSN 1726-3328
Appendix

1. Acknowledgements

2. On the 55th Birthday of Professor B. M. Golam Kibria
Acknowledgements

The JPSS (and the former JPPS) would like to acknowledge the service of the following probabilists and/or statisticians as referees during the period August 2001 to February 2018. An asterisk indicates refereeing for more than one paper during the period.

**JPSS Referees** (listed in alphabetical order according to last name)


K.K. Achary, Dept. of Statistics, Mangalore U., Mangalore, India.


Abd EL-Baset A. Ahmad, Dept. of Math., Assiut U., Assiut, Egypt.


Alfred A. Akinsete, Dept. of Math., Marshall U., Huntington, WV 25755, USA.

Essam K. Al-Hussaini, Dept. of Statistics & O. R., Kuwait U., Safat 13060, Kuwait.


Cecile Amblard, Laboratoire TIMC, UMR CNRS 5525, 38706 La Tronche, France.

Gokarna Raj Aryal, Dept. of Math., U. of South Florida, Tampa, FL 33620, USA.

Ayman Baklizi *, Dept. of Math., Statistics, and Physics, Qatar U., Doha, Qatar.


Shakti Banerjee, Reader, School of Statistics, Devi Ahilya U., Khandwa Road, Indore-452001, India.

Lucio Barabesi, Dept. di Metodi Quantitativi, U. di Siena, Piazza S. Francesco, 8, 53100 Siena.


Ismihan Bayramoglu, Dept. of Math., Izmir U. of Economics, Balcova, Izmir, Turkey.

Robert J. Beaver, Dept. of Statistics, U. of California at Riverside, Riverside, CA 92521-0002, USA.

Munni Begum *, Dept. of Mathematical Sciences, Ball State U., Muncie, Indiana 47306, USA.

Atanu Biswas, Applied Statistics Unit, Indian Statistical Institute, 203 B. T. Road, Kolkata -700 108, India.

John J. Borkowski *, Dept. of Mathematical Sciences, Montana State U., Bozeman, Montana 59717, USA.

Ronald W. Butler, Dept. of Statistics, Colorado State U., Fort Collins, CO 80523-1877, USA.


Feng-Shun Chai, Institute of Statistical Science, Academia Sinica, Taipei, Taiwan, ROC.

Ping-Shing Chan, Dept. of Statistics, Chinese U. of Hong Kong, Shatin, New Territories, Hong Kong.

Kuo-Hwa Chang *, Dept. of Industrial Engineering, Chung Yuan Christian U., Chung-Li, Taiwan, ROC.

Yi-Ping Chang *, Dept. of Business Math., Soochow U., Taipei, Taiwan, ROC.

Chang-Tai Chao *, Dept. of Statistics, National Cheng-Kung U., Tainan, Taiwan, ROC.

Min-Te Chao *, Inst. of Statistical Sci., Academia Sinica, Taipei, Taiwan, ROC.


Ajit Chaturvedi, Dept. of Statistics, Delhi University, New Delhi, India.

Arijit Chaudhuri, Applied Statistics Unit, Indian Statistical Institute, Kolkata-700108, India.

Chung Chen, School of Management, Syracuse U., Syracuse, NY 13244-2130, USA.

Jie Chen *, Dept. of Math. and Statistics, U. of Missouri-Kansas City, Kansas City, MO 64110, USA.

Mu-Chen Chen *, Dept. of Business Management, Taipei Univ. of Technology, Taipei, Taiwan, ROC.

Philip E. Cheng, Institute of Statistical Science, Academia Sinica, Taipei, Taiwan, ROC.

Chih-Hua Chiao, Dept. of Business Math., Soochow U., Taipei, Taiwan, ROC.

Paul C. Chiou *, Dept. of Math., Lamar U., Beaumont, TX 77710, USA.
**JPSS Referees** (continued 1)

Tzu-Chin R. Chou, Dept. of Applied Statistics & Info. Sci., Ming Chuan U., Taoyuan, Taiwan, ROC.
Gautam Choudhury, Mathematical Sciences Division, Institute of Advanced Study in Science and Technology, Paschim Boragaon, Guwahati-781035, Assam, India.
Po-Huang Chyou *, Marshfield Medical Research Foundation, Marshfield, WI 54449, USA.
M. N. Dehspande, Dept. of Statistics, Institute of Science, Nagpur, India.
Jyoti Divecha, Sardar Patel University, Anand 388120, India.
David Drain, Dept. of Math. & Statistics, U. of Missouri-Rolla, Rolla, MO 65409-0020, USA.
Author Dryver, School of Applied Statistics, NIDA, Thailand.
Md. El-Haj Ebrahem, Dept. of Statistics, Faculty of Science, Yarmouk U., Irbid, Jordan.
Jamie Emerson *, Perdue School of Business, Salisbury U., Salisbury, MD 21801, USA.
Shu-Kai Fan *, Dept. of Industrial Engineering, Yuan-Ze U., Taoyuan, Taiwan, ROC.
Cheng-Der Fuh *, Inst. of Statistical Sci., Academia Sinica, Taipei, Taiwan, ROC.
Paul H. Garthwaite, Dept. of Statistics, The Open U., Milton Keynes, United Kingdom.
Abbas Gerami, Statistical Research Center, Tehran, Iran.
Andrés Suárez González, ETSE Telecomunicación, Universidade de Vigo, 36200 Spain.
Mohamed Habibullah, Dept. of Information, Operations and Analysis, Northeastern U., Boston, MA, USA.
Anwar Hassan *, P. G. Dept. of Statistics, U. of Kashmir, Srinagar 190006, India.
Chien-Pai Han *, Dept. of Math., U. of Texas at Arlington, Arlington, TX 76019, USA.
Jan Hannig, Dept. of Statistics and O. R., U. of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA.
Syed A. Hossain *, Management Science Dept., Rider U., Lawrenceville, NJ 08648, USA.
Chia-Ding Hou *, Dept. of Statistics & Info. Sci., Fu Jen Catholic U., Taipei, Taiwan, ROC.
Chuhsing K. Hsiao, Div. of Biostatistics, Inst. of Epidemiology, National Taiwan U., Taipei, Taiwan, ROC.
Hui-Kuang Hsieh *, Dept. of Math. & Statistics, U. of Massachusetts at Amherst, Amherst, MA 01003, USA.
Yu-Sheng Hsu *, Dept. of Math., National Central Univ., Chung-Li, Taiwan, ROC.
Hsiao-Yun Huang *, Dept. of Statistics & Information Science, Fu Jen Catholic U., Taipei, Taiwan, ROC.
Steve Yih-huei Huang, Dept. of Math., Tamkang U., Tamsui, Taipei, Taiwan, ROC.
J. T. Gene Hwang, Dept. of Math., Cornell U., Ithaca, NY 14853, USA.
Borko D. Jovanovic *, Dept. of Preventive Medicine, Northwestern U., Chicago, IL 60611, USA.
Chihwa Kao *, Center for Policy Research, Syracuse U., Syracuse, NY 13244, USA.
J. C. Ke *, Dept. of Statistics, National Taichung Institute of Technology, Taichung, Taiwan, ROC.
Deepa Khandpal, Dept. of Statistics, The M. S. Univ. of Baroda, Vadodara 2, India.
André I. Khuri *, Dept. of Statistics, U. of Florida, Gainesville, FL 32611-8545, USA.
B. M. Golam Kibria *, Dept. of Statistics, Florida International U., Miami, FL 33199, USA.
Jong-Min Kim *, Division of Science and Mathematics, U. of Minnesota, Morris, MN 56267, USA.
Max King, Deputy Dean, Faculty of Business & Economics, Monash U., Clayton Campus, Clayton, Victoria 3800, Australia.
Show-Long Patrick Koh * (Ph.D, Columbia U., 1982), Taipei, Taiwan, ROC.
Celestin C. Kokonendji, Universite de Pau et des Pays de l'Adour, Laboratoire de Mathematiques Appliquees-UMR 5142 CNRS,Departement Statistisque et Traitement Informatique des Donnees, Avenue de l'Universite-64000 Pau, France.
Andrzej Korzeniowski *, Dept. of Math., U. of Texas at Arlington, Arlington, TX 76019, USA.
Tomasz J. Kozubowski *, Dept. of Math., Univ. of Nevada at Reno, Reno, NV 89557, USA.
Elies Koudier *, College of Business, Ferris State U., Big Rapids, MI 49307, USA.
Kalimuthu Krishnamoorthy, Dept. of Math., U. of Louisiana at Lafayette, LA 70504, USA.
Debasis Kundu, Dept. of Math., Indian Institute of Technology, Kanpur, Pin-208016, India.
Eiji Kurozumi, Dept. of Economics, Hitotsubashi U., 2-1 Naka, Kunitachi, Tokyo, 186-8601, Japan.
**JPSS Referees (continued 2)**

Stephen M. S. Lee*, Dept. of Statistics & Actuarial Sci., The U. of Hong Kong, Hong Kong.
Tai-Ming Lee*, Dept. of Statistics & Information Science, Fu Jen Catholic U., Taipei, Taiwan, ROC.
Tian-Shyug Lee*, Graduate Institute of Management, Fu Jen Catholic U., Taipei, Taiwan, ROC.
Tze-San Lee*, NCEH/EHHE, MS E70, CDC, Atlanta, GA 30333, USA.
Pen-Hwang Liau, Dept. of Math., National Kaohsiung Normal U., Kaohsiung, Taiwan, ROC.
Chien-Tai Lin*, Dept. of Math., Tamkang U., Tamshui, Taipei, Taiwan, ROC.
Shang P. Lin, Dept. of Health Studies (Biostatistics Lab), U. of Chicago, Chicago, IL 60637, USA.
Tsair-chuan Lin, Dept. of Statistics, National Taipei U., San Shia, Taipei County 237, Taiwan, ROC.
Shaw-Hwa Lo*, Dept. of Statistics, Columbia U., New York, NY 10027, USA.
Hung-Yi Lu*, Dept. of Statistics & Information Science, Fu Jen Catholic U., Taipei, Taiwan, ROC.
Hsing Luh*, Dept. of Math. Sciences, National Chengchi U., Taipei, Taiwan, ROC.
Eisa Mahmoodi, Dept. of Statistics, Shiraz U., Shiraz, 71454, Iran.
M. Manoharan, Dept. of Statistics, Calicut U., Kerala, India.
Farzana Abdulla Maraghi, School of Information Systems, Computing and Math., Brunel U., Uxbridge, UK.
Suzanne McCoskey, Dept. of Economics, United States Naval Academy, Annapolis, MD 21402, USA.
Vincent F. Melfi, Dept. of Statistics and Probability, Michigan State U., East Lansing, MI 48824, USA.
Magdi S. Moustafa, Dept. of Math., The American U. in Cairo, Cairo 11511, Egypt.
S. P. Nabar, 501, Nav-swapan' Santacruz Chembur Link Rd., Near University Campus, Vidyananagari, Mumbai 400098, India.
Saralees Nadarajah, Dept. of Statistics, U. of Nebraska, Lincoln, NE 68583, USA.
Valery Nevzorov, Dept. of Prob. & Statistics, St-Petersburg State U., St-Petersburg, Russia.
Lan Ma Nygren, Rider U., Lawrenceville, NJ 08648, USA.
Hernando Ombao, Dept. of Statistics, U. of Illinois at Urbana-Champaign, Champaign, IL 61820, USA.
B. N. Pandey, Dept. of Statistics, Banaras Hindu U., Varanasi 221005, India.
M. N. Patel*, Dept. of Statistics, School of Sciences, Gujarat U., Ahmedabad-380009, India.
W. L. Pearn, Dept. of Indus. Engineering & Management, National Chiao-Tung U., Hsinchu, Taiwan, ROC.
Serge B. Provost*, Dept. of Statistical and Actuarial Sciences, U. of Western Ontario, London, Ontario, Canada N6A 5B7
Mezbah Rahman*, Dept. of Math. & Statistics, Minnesota State U, Mankato, MN 56001, USA.
Harold B. Sackrowitz, Dept. of Statistics, Rutgers U., Piscataway, NJ 08854-8019, USA.
L. N. Sahoo*, Dept. of Statistics, Utkal U., Bhubaneswar 751004, India.
Mohammad Saleh M.*, Dept. of Math., Statistics, and Physics, Qatar Univ., P.O. Box 2713, Doha, Qatar.
Nahid Sanjari F., Statistics Dept., Shiraz U., Shiraz 71454, Iran.
Jose Almer T. Sanqui, Dept. of Mathematical Sciences, Appalachian State U., Boone, NC 28608, USA.
Meckinley Scott, Dept. of Math., U. of Alabama, Tuscaloosa, AL 35478, USA.
Patrizia Semeraro, Dept. of Math., Politecnico, di Torino, 10129 Torino, Italy.
Henri Schurz, Dept. of Math., Southern Illinois U., Carbondale IL 62901-4408, USA.
**JPSS Referees** (continued 3)

Mangala shah, Dept. of Statistics, The M. S. Univ. of Baroda, Vadodara 2, India.
Ashok shanubhogue, Dept. of Statistics, Sardar Patel U., Anand 388120, India.
Yuehjen E. Shao, Dept. of Statistics & Info. Sci., Fu Jen Catholic U., Taipei, Taiwan, ROC.
Ben-Chang Shia, College of Management, Taipei medical University, Taipei, Taiwan, ROC.
R. L. Shinde, North Maharashtra U., Jalgaon, India.
John F. Shortle*, Dept. of Systems Engineering & O. R., George Mason U., Fairfax, VA 22030, USA.
M. Shreehari, Dept. of Statistics, M. S. Univ. of Baroda, Baroda 390 002, India.
G. N. Singh, Dept. of Applied Math., Indian School of Mines U., Dhanbad-826 006, India.
Rajesh Singh, Dept. of Statistics, Amravati U., Maharashtra, India.
Sarjinder Singh, Dept. of Applied Math., Texas A & M Univ. at Kingsville, Kingsville, TX 78363, USA.
Khalaf S. Sultan, Dept. of Statistics & O. R., King Saud U., Riyadh 11451, Saudi Arabia.
Jürgen Symanzik, Dept. of Math. & Statistics, Utah State U., Logan, UT 84322-3900, USA.
Ryszard N. Syski, Dept. of Mathematics, Univ. of Maryland, College Park, MD 20742, USA.
Hideaki Takagi, School of Systems and Information Engineering, U. of Tsukuba, 1-1-1 Tennoudai, Tsukuba-shi, Ibaraki 305-8573, Japan.
Lehana Thabane, Dept. of Clinical Epidemiology and Biostatistics, McMaster U., Hamilton, Ontario, Canada L8S 4K1.
Guo-Liang Tian, Dept. of Statistics & Actuarial Science, U. of Hong Kong, Hong Kong, PROC.
Andrey V. Timofeev, Dept. of Statistics, Speech Technology Center, St.-Petersburg, 196084, Russia.
Fred Torcaso*, Dept. of Math. Sci., The Johns Hopkins U., Baltimore, MD 21218, USA.
Alex Trindade, Dept. of Math. & Statistics, Texas Tech U., Lubbock, TX 79409-1042, U.S.A.
Li-Ju Tsai*, Dept. of International Trade and Finance, Fu Jen Catholic Univ., Taipei, Taiwan, ROC.
R. Vasudeva, Dept. of Statistics, Mysore U., Mysore, India.
Andrei Volodin, School of Math. and Statistics, U. of Western Australia, Crawley, Perth, WA 6009, Australia.
Abdus S. Wahed, Dept. of Biostatistics, U. of Pittsburgh, Pittsburgh, PA 15217, USA.
Yat-Wah Wan, Graduate Institute of Global Operations Strategy and Logistics Management, National Dong Hwa U., Hualien, Taiwan, ROC.
Chia-Li Wang, Institute of Applied Mathematics, National Donghwa U., Hualien, Taiwan, ROC.
Ching-Yun Wang, Div. of Pub. Health Sci., Fred Hutchinson Cancer Research Center, Seattle, WA 98109, USA.
Pu Patrick Wang*, Dept. of Math., U. of Alabama, Tuscaloosa, AL 35478, USA.
Peitsang Wu, Dept. of Industrial & Management Engineering, I-Shou U., Kaohsiung, Taiwan, ROC.
Liugen Xue, College of Applied Sciences, Beijing U. of Technology, Beijing, China.
Keying Ye, Dept. of Statistics, Virginia Polytechnic Institute and State U., Blacksburg, VA 24061, USA.
Calvin K. Yu, Dept. of Indus. Engineering & Management, Mingchi U. of Tech., Taipei, Taiwan, ROC.
Yiqiang Q. Zhao, School of Math. and Statistics, Carleton U., Ottawa, Ontario, Canada K1S 5B6.
Zhen Zhao, CDC/NCHSTP, Mail Stop E-10, 1600 Clifton Road, Atlanta, GA 30333, USA.
Lixing Zhu, Department of Math., Hong Kong Baptist U., Hong Kong, China.
On the 55th Birthday of Professor B. M. Golam Kibria

Kuang-Chao Chang

Fu Jen Catholic University

1. Introduction

Professor B. M. Golam Kibria recently celebrated his 55th birthday on February 1, 2018. As a good friend of Professor Kibria, I wish to celebrate his birthday by publishing this article in the Journal of Probability and Statistical Science (JPSS), where he has been dedicated himself for many years. I also take this opportunity to express my thankfulness to Professor Kibria for all of his outstanding work as an Associate Editor, Coordinating Editor and finally Editor-in-Chief of JPSS.
Professor Kibria is presently a tenured faculty member in the Department of Mathematics and Statistics at the Florida International University (FIU), Miami, FL 33199, USA. Besides serving for *JPSS*, Professor Kibria has been serving as an associate editor and editorial member of many international statistical, mathematical and biostatistical journals. Detailed academic background of Professor Kibria and his contributions to statistics will be given in Sections 2 and 3 respectively. Awards, Honors and recognition will be given in Section 4. A list of his publications is given in Section 5. Finally, some concluding remarks are given in Section 6.

2. Academic Background

Professor B. M. Golam Kibria was born on February 1, 1963 in the District of Faridpur, Bangladesh. He was the youngest child in the family and had a pleasant and wonderful personality. After the completion of his S.S.C and H.S.C. degrees from Faridpur, he was admitted to the Jahangirnagar University, Dhaka, Bangladesh in 1981. He has completed his B. Sc Honors and M. Sc. in Statistics with distinctions from the Jahangirnagar University in 1986 and 1988 respectively. As an extraordinary student, he has received several awards/scholarships: (a) 1986 Chancellor Award, awarded by the President, People’s republic of Bangladesh, (b) 1986 Government Talent Pool Scholarship, for scoring the highest marks in honors level among the students of Jahangirnagar University, Dhaka, Bangladesh. He has completed his B. Sc Honors and M. Sc. in Statistics with distinctions from the Jahangirnagar University in 1986 and 1988 respectively. As an extraordinary student, he has received several awards/scholarships: (a) 1986 Chancellor Award, awarded by the President, People’s republic of Bangladesh, (b) 1986 Government Talent Pool Scholarship, for scoring the highest marks in honors level among the students of Jahangirnagar University, Dhaka, Bangladesh. Professor Kibria was awarded the Canadian Commonwealth Scholarship at Carleton University, Ontario, Canada, where he earned his M. Sc. in Mathematical Statistics in 1993. He was also awarded the Canadian Commonwealth Scholarship at the University of Western Ontario, Ontario, Canada where he has earned his Ph. D. in Statistics. Prior to joining at Florida International University (FIU) in August 2000, he was working as an Assistant Professor in the Department of Statistics, University of British Columbia (UBC), Canada in 1998-2000, and in the Department of Statistical and Actuarial Science at the University of Western Ontario (UWO), Ontario, Canada in 1997. He had also worked as a lecturer in the Department of Statistics at Jahangirnagar University, Dhaka, Bangladesh in 1988-1991. He has taught a variety number of undergraduate and graduate level courses in different universities. Professor Kibria single or jointly supervised 2 Ph. D. and 19 masters students at Florida International University. He has been involved with the committees of 17 master’s thesis and 16 Ph. D. dissertation at FIU. He also has served as an external examiner of 13 Ph. D. and M. Phil theses at different universities in the world.

3. Research Contributions to Statistics

Professor Kibria has made significant contributions in various fields of statistics. He is well known in the world for his research on “ridge regression”. Since 1993, he has about 160
research papers that are published in peer reviewed journals such as Journal of the American Statistical Association, Journal of Multivariate Analysis, IEEE Transactions on Reliability, Stochastic Environmental Research & Risk Assessment, Communications in Statistics-Theory and Methods, Journal of Statistical Computation and Simulation, Metrika, Journal of Statistical Planning and Inference, and Statistical Papers among others. His researches have a wide application in the fields of environmental, health science, physical sciences and transportation engineering. Professor Kibria is a co-author of a book entitled “Normal and Student’s $t$ Distributions and Their Applications, Atlantis Press, Paris, France”. The current citations of his papers is 1540, which certainly reflect his magnificent research work in statistics and related fields. A complete list of Professor Kibria’s publications is given in Section 5.

4. Awards, Honors and Recognition

Professor Kibria awarded the FIU Top Scholar Award in 2016 and the College of Arts, Science and Education Research Award in 2016. He has been awarded summer research awards (2001, 2002, 2003, 2005 and 2007) from the College of Arts and Science at FIU. He is an affiliated faculty in the Department of Environmental Studies and was affiliated researcher in the Lehman Center for Transportation Research (LCTR) at FIU. He is the dissertation advisor in the Department of Mathematics & Statistics and a member of the Graduate Faculty at FIU. He has been working as the principle statistician and a research faculty for the Hurricane Loss Model Project funded by the Florida Office of Insurance Regulation. Professor Kibria has served as the secretary, the treasurer, Vice President and the President of South Florida Chapter of ASA in 2004, 2005, 2006 and 2007 respectively. He has received 2005 Chapter Service Recognition Award in recognition of outstanding and devoted service to the South Florida Chapter of American Statistical Association. He has presented numerous research papers as an invited as well contributor in several universities, statistical conferences and seminars. Besides serving the JPSS and Overseas Managing Editor for the Journal of Statistical Research, Professor Kibria is an editorial member of more than twenty five international statistical, mathematical and biostatistical journals. He is also a reviewer for the Mathematical Reviews. In addition, he is a member of the American Statistical Association, Statistical Society of Canada and Life member of Bangladesh Statistical Association. Professor Kibria is an elected member of International Statistical Institute (ISI) and an elected Fellow of the Royal Statistical Society (FRSS).

5. Publications

5.1 Refereed Journal Publications of Professor Kibria


30. Ahsanullah, M., Shakil, M., Kibria, B. M. G., and George, F. (2015). Distribution of the Product of Bessel Distribution of First Kind and Gamma Distribution - Properties and


44. Abu-Shawiesh, M. O. A., Kibria, B. M. G., and George, F. (2014). A Robust Bivariate Control Chart Alternative to the Hotelling’s $T^2$ Control Chart, *Quality and Reliability*


147. Kibria, B. M. G. and Haq, M. S. (2000). The Multivariate Linear Model with Matric $T$


5.2. Non Refereed Publications


5.3 Publication in Proceedings


6. Summary and Concluding Remarks

Professor Kibria’s contributions in the statistical research and in profession are invaluable. He is one of the top researchers in the area of ridge regression and leading researcher in the world. I am very confident that both graduate students and researchers will be benefitted by knowing his research work. I sincerely wish his healthy and long life.