

CURRICULUM VITAE



Dr. Arun Kumar Sinha

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Vishal Kunj Apartments
Kaji Pur, Road No. 4
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**Experience Highlights
(National Level)**

Vice-Chancellor
Patna University
Patna 800 005, Bihar
(Since 26 April 2013 to 31 January 2014)

Professor and Head
Department of Statistics & Dean (I/C)
School of Mathematics, Statistics and Computer Science
Central University of South Bihar (CUSB)
Gaya-Panchanpur Road, SH -7
Gaya – 824 236, Bihar
INDIA
(Professor since 11 February 2014, Head after a month and Dean (I/c) thereafter under reemployment scheme until 31 December 2018)

Principal
Patna Science College
Patna University
Patna 800 005, Bihar
INDIA
(23 March 2012 to 31 December 2013)

University Professor of Statistics
Department of Statistics
Patna University, Patna-800 005, Bihar
INDIA
(10 November 1986 – 31 December 2013)

Professor and Head of the Department of Statistics &
Honorary Director, Population Research Centre
Department of Statistics, Patna University, Patna 800 005, Bihar
(01 May 2008 - 30 April 2011)

Dean, Faculty of Science, Patna University
(Since 10 October 2009 for two years)

Chief Coordinator
Self Financing / Professional Courses
Patna University, Patna 800 005
(06 November 2009 – 12 April 2012)

Member, Expert Committee
Planning and Development Department
Bihar Planning Board
Government of Bihar
Patna 800 001
(Since Aug. 2008)

Reader in Statistics
Patna University, Patna-800 005, Bihar
INDIA
(14 August 1984 to 09 November 1986)

Lecturer in Statistics
Patna University, Patna-800 005, Bihar
INDIA
(10 November 1970 to 13 August 1984)

(i) **Member Search Committee for the Appointment of Vice-Chancellor, Central University of Jharkhand, Ranchi**

(ii) **Governor- cum - Chancellor's Committees**

- Member of the Committee constituted for framing Draft Statutes governing the Appointment / Promotion of non-teaching officers/employees of Universities Offices, Allied Offices, Post Graduate Departments, Institutes and Constituent Colleges of the Universities of Bihar
- Member of the Committee constituted for framing Draft Statute relating to appointment of Vice-Chancellor and Pro-Vice-Chancellor of the Universities of Bihar
- Member to prepare the draft Vacation Calendar for the Universities of Bihar

- (iii) Nominated **on the Board of Governors of the Indian Institute of Science Education & Research (IISER) Kolkata** (26 September 2017) for a given period.
- (iv) Co-opted as **a member of the Academic Council of Indira Gandhi National Open University (IGNOU)**, New Delhi- 110068 on 05 September 2018 for two years.
- (v) **President, Vijnana Bharti, Bihar, Patna**
- (vi) **Member of Editorial Committees**
 - *Member of the Editorial Board of American Journal of Mathematical and Management Sciences*, American Sciences Press, Inc., USA.
 - **Member** of the Editorial Board of the *International Journal MENDEL*, an International Journal of Science of the Mendelian Society of India located in S. K. Puri, Patna 800 001, Bihar, India.
 - **Member** of the Editorial Board of the *Journal of National Academy of Mathematics, India* published by National Academy of Mathematics, D. D. U. Gorakhpur University, Gorakhpur – 273009.
 - **Chief Editor**, Patna University Journal of Science 2010.
 - **Editor-in-Chief**, Journal of Patna Science College (JPSC, ISSN 2347-9604) 2013.
 - **Member of the Advisory Board** of the **Journal of Patna Science College (JPSC, ISS 2347-9604)** since 2014
 - **Member** of the Editorial Board of the *Journal of Mathematics and Systems Sciences* published by Group of Mathematicians and Engineers Society, N I T, Kurukshetra - 136119, India
 - **Member** of the **National Advisory Body**, Jala-SRI, Watershed Surveillance and Research Institute, Jalgaon, Maharashtra, India
 - Served as a Member of the Editorial Group of *Environmental and Ecological Statistics*, Springer-Verlag, USA

- Worked as a member of an **Editorial Committee constituted by the University Grants Commission (UGC)**, New Delhi, INDIA
 - Served as a Member of the Editorial Board of "*Quantity and Quality in Economic Research*", of the International Society of Statistical Science in Economics, published by the University Press of America, USA
 - Served as the Chair, Development of Master's Degree Curriculum of Statistics at the Central University of South Bihar (CUSB), 2010
 - Chair/member of the **Board of Studies (BoS) in Statistics** of Central University of South Bihar, Patna University and North Eastern Hill University (NEHU), Shilling
 - A member of **Advisory Committee of the Patna University Journal**, India
 - Served as a referee for many National and International Journals of Statistics
- Actively associated with academic activities of many Indian Universities

Experience Highlights (International) *Visiting Professor of Statistics* and Faculty Associate at
Center for Statistical Ecology and Environmental Statistics
Department of Statistics
The Pennsylvania State University
University Park, Pennsylvania, 16802, USA
(June 1991 to May 1994, on leave from Patna University)

Professor and Researcher (Catedra Patrimonial Excelencia)
Department of Probability and Statistics
Centro de Investigacion en Matematicas (CIMAT)
Callejon Jalisco S/N Mineral de Valenciana
Apartado Postal 402
Guanajuato, Gto. 36240, MEXICO
(June 1994 to May 1995, on leave from Patna University)

Consultant
United Nations Environment Programme (UNEP)
Division of Early Warning and Assessment
USGS, EROS DATA Center

47914, and 252 Street
 Sioux Falls, South Dakota – 57198, USA
 (11 Dec. 2002 – 10 Jan. 2003, on leave from Patna University)

Teaching

The Centro de Investigacion en Matematicas (CIMAT), Mexico
 Graduate Course on Environmental Sampling (Fall 1994).

The Pennsylvania State University, USA

- Graduate course (Stat 506): Sampling Theory and Methods, (Summer '91).
- Graduate course (Stat 527): Environmental Modeling and Sampling (Multi-instructional course, Fall 1991).
- Undergraduate course (Stat 401): Expt. Methods (Fall 1991).

Patna University

Graduate and Undergraduate courses: Survey Sampling Theory and Methods, Probability Distributions, Stochastic Processes, Linear Models, Mathematical Statistics, Multivariate Analysis, Statistical Quality Control and Improvement, Applied Statistics, Time Series Analysis, etc.

M.B.A. Course at Patna University

- Advanced Quantitative Techniques

Central University of South Bihar, Patna & Gaya

Statistical Processes and Quality Control, National Development Statistics, Data Mining, Predictive Modeling, Linear Models and Regression Analysis, Multivariate Analysis, Distribution Theory Statistical Computing, etc.

Research

Successfully supervised thirteen students for the award of Ph.D. degree in Statistics at Patna University, India. The titles of the dissertations are:

- Neyman Type A Distribution
(Arvind Kumar, 1986)
- The Bivariate Negative Binomial Distribution and its Application to Population Sciences and other Areas
(Dilip Kumar, 1990)
- The Inverse Gaussian-Poisson Distribution
(Bimlesh Kumar Mishra, 1990)

- The Statistical Analysis of Rainfall Data
(Sudhir Kumar,1992)
- A Statistical Analysis of Some Socio-Demographic Characteristics of Towns and Cities of Bihar
(Ravi Ranjan Sinha,1998)
- The Weighted Negative Binomial Distribution
(Rama Shanker Mishra,1998)
- Statistical Design Applied to Quality Improvement in Printing Technology (Deepak Kumar, 2010)
- Some Contributions to Ranked Set Sampling
(Krishna Pratap Singh, 2010)
- Spatial Statistical Tools in Epidemiological Investigations for Effective Digital Governance
(Pankaj Srivastava, 2011)
- Some Contributions to Theory and Designs of Survey Sampling for Estimating Multiple Characteristics
(Vijay Kumar, 2014)
- Some Contributions to Scan Statistics and their Applications
(Jitendra Kumar, 2014)
- Ranked Set Sampling: An Approach to More Efficient Data Collection
(Rahbar Ali, 2017).
- Improving Quality in Some Service Sectors Using Statistical Quality Control Techniques
(Md. Sarwar Alam, 2017)

Research Papers

1. A Statistical study of deaths due to fever, small pox and cholera in Bihar
(with H. S. M. Q. Akhter)
P.U. Journal, **26**, 9-19. (1971)
2. Abortion as a method of family planning in India
(with H. S. M. Q. Akhter)
The Sunday Searchlight, February 27, III. (1972)
3. Sex sequences of births in India
(with M. L. Srivastava)

- Journal of Biosocial Science* (U.K.), **7**, 233-241. (1975).
4. On the symmetrical bivariate negative binomial distribution
In: *Statistical Theory and Data Analysis*, K. Matusita ed., Elsevier Science Publishers B.V. (North Holland), Amsterdam. pp. 649-657. (1985).
 5. On a probabilistic model for purchasing behavior
In: *Quantity and Quality in Economic Research*, **1**, R. C. Brown, ed., University Press of America, USA, 225-230. (1985).
 6. A statistical study of infant mortality
In: *Contributed Papers*, Book 2, and (The Centenary Session of International Statistical Institute (45th Session), Aug. 12- 22, 1985, Amsterdam, 643-644. (1985).
 7. Some applications of the negative binomial and Neyman type A distributions to ball games
(with A. Kumar and R. Kumar)
Assam Statistical Review, **1** (1), 22-31. (1987).
 8. On a probabilistic model for the determination of level and trend of poverty
In : *Proceedings of the International Conference on Mathematical Modelling in Science and Technology*, Vol. 2, L. S. Srinath, P. Achuthan and S. N. Majhi, eds., Indian Institute of Technology, Madras, INDIA, 274-278. (1988).
 9. An application of the symmetrical bivariate negative binomial distribution
(with Dilip Kumar)
In: *Population Transition in India*, Volume 1, S. N. Singh, ed., B. R. Publishing Corporation, Delhi, INDIA, 435-444. (1989).
 10. The Poisson-inverse Gaussian distribution as a model for morbidity and fertility
(with Bimlesh K. Mishra)
In: *Statistics in Health and Nutrition*, K. Visweswara Rao, et al., eds., National Institute of Nutrition, Indian council of Medical Research, Jamai-Osmania, Hyderabad, INDIA, 437-441, (1990)
 11. Environmental sampling and statistical modeling with examples
(with G. P. Patil and S. D. Gore)
In: *Proceedings of the 16th International Biometric Conference*, Hamilton, New Zealand, 148-188. (1992).
 12. On the distribution of births in human populations
(with R. Kumar)
Canadian Studies in Population, **20**(2), 193-205. (1993).
 13. Ranked set sampling from a finite population in the presence of a trend on a site
(with G. P. Patil and C. Taillie)
Journal of Applied Statistical Science, **1**(1), 51-65. (1993).

14. Certain multivariate considerations in ranked set sampling and composite sampling Designs
(with S. D. Gore, G. P. Patil, and C. Taillie)
In: *Multivariate Environmental Statistics*, G. P. Patil and C. R. Rao, eds., North Holland / Elsevier Science Publishers, New York. pp. 121-148. (1993).
15. Relative precision of ranked set sampling: A comparison with the regression Estimator
(with G. P. Patil and C. Taillie)
Environmetrics , **4**(4), 399-412.(1993)
16. “Ranked set sampling for vegetation research”
(with G. D. Johnson and G. P. Patil)
Abstracta Botanica, **17** (1-2), 87-102. (1993)
17. Ranked set sampling
(with G. P. Patil and C. Taillie)
In: *Handbook of Statistics, Vol. 12: Environmental Statistics*, G. P. Patil and C. R. Rao, eds., North Holland/Elsevier Science Publishers, New York. 167-200, (1994)
18. Environmental chemistry, statistical modeling, and observational economy
(with G. P. Patil and S. D. Gore)
In: *Environmental Statistics, Assessment and Forecasting*, C. Richard Cothorn, and N. Phillip Ross, eds., Lewis Publishers, Ann Arbor, USA. p. 57-97. (1994).
19. Ranked set sampling for multiple characteristics
(with G. P. Patil and C. Taillie)
International Journal of Ecology and Environmental Sciences, **20**, 357-373, (1994),
20. Finite population corrections for ranked set sampling
(with G. P. Patil and C. Taillie)
Annals of the Institute of Statistical Mathematics, **47**(4), 621-636. (1995).
21. Estimation of multiple characteristics by ranked set sampling methods
(with R. C. Norris and G. P. Patil)
Coenoses (The Journal of the International Center for Theoretical and Applied Ecology, Italy), **10** (2-3), 95-111. (1995).
22. Ranked set sampling: Annotated bibliography
(with G. P. Patil and C. Taillie)
Environmental and Ecological Statistics, **2**, 25-54. (1995).
23. Ranked set sampling, coherent rankings, and size-biased permutations
(with G. P. Patil and C. Taillie)
Journal of Statistical Planning and Inference, **63**,311-324, (1997)

24. Ranked set sampling: a bibliography
(with G. P. Patil and C. Taillie)
Environmental and Ecological Statistics, **6**, 91-98, (1999).
25. The zero-truncated symmetrical bivariate negative binomial distribution
(with Rajiv Kumar)
American Journal of Mathematical and Management Sciences, **21** (1&2), 57-68.
(2001).
26. On the effectiveness of the Takahasi's ranked set sample estimator as compared with the regression estimator
(with Victor Perez Abreu, G P Patil and C. Taillie)
American Journal of Mathematical and Management Sciences, **21** (1&2), 145-163.
(2001).
27. Analysis of I.U.D. experience
(with M. L. Srivastava)
Patna University Journal, **29** (1), 24-29, (2002)
28. On some recent developments in ranked set sampling
The Bulletin of Informatics and Cybernetics, **37**, 137-160. (2005).
29. The metabolic syndrome-its prevalence and association with coronary artery disease in type 2 diabetes
(with Vijay Achari and A K Thakur)
Journal, Indian Academy of Clinical Medicine, **7(1):32-38**. (2006).
30. On a bivariate compound Poisson model
Proceedings of the Cherry Bud Workshop 2006 (JAPAN): Building Models from Data, 31- 38 (2006).
31. Comparison of treatment regimens of kala-azar based on culture & sensitivity of amastigotes to sodium antimony gluconate
(with C. P. Thakur and others)
Indian J. Med.Res., **127**, 582-588.(2008)
32. Impact of amphotericin-B in the treatment of Kala-zar on the incidence of PKDL in Bihar, India
(with C. P. Thakur and others)
Indian J. Med. Res., **128**, 38-44.(2008).
33. Short-term Mortality and Complications in ST Elevation Myocardial Infarction-The Heart Hospital Experience
(with V. Achari and others)
Journal of Indian Medical Association, **106**, 650-654. (2008).

34. Applications of ranked set sampling for evaluating the achievement level in elementary education
(with K. P. Singh)
Patna University Journal of Science, **1**, 76-89. (2010).
35. Chance mechanisms generating the models of the size-biased negative binomial distribution
(with R. S. Mishra)
Patna University Journal of Science, **1**, 90-97. (2010).
36. Improving outcome of treatment of Kala-Azar by supplementation of Amphotericin B with physiologic saline and Potassium Chloride
(with C P Thakur and others)
Am. J. Trop. Med. Hyg., **83** (5), 1040-1043 (2010).
37. On estimation of multiple characteristics
(with Vijay Kumar)
Interface between Statistics, Mathematics and Allied Sciences (Edited by Neeraj Tiwari and S. K. Joshi), Excel India Publishers, New Delhi-110067, 50-62. (2011).
38. Estimating underground farm produce by ranked set sampling
(with Vijay Kumar)
PU Journal of Science (ISSN 2249-6165), **3**, 83-91. (2012)
39. A new method of kala-azar elimination : shifting the reservoir of infection from that village”
(with C. P. Thakur and others)
Global Advanced Research Journal of Medicine and Medical Sciences (ISSN:2315-5159), **2**(7), 163-176 (2013).
40. On the determination of reorder level based on negative binomial distribution
Journal of Patna Science College (ISSN 2347-9604), **1**, 143-152. (2013).
41. Sampling of urban places
(with Ravi Ranjan Sinha)
Journal of Patna Science College (ISSN 2347-9604), **2**, 165-176. (2014).
42. Ranked set sampling methods for vegetation research
Int. J. Mendel, (ISSN: 0970-9649), **31** (1-2), 13-22 (2014).
43. Estimating underground farm produce by ranked set sampling with unequal allocations
(with Vijay Kumar)
Int. J. Agricult. Stat. Sci. (ISSN: 0973-1903), **11**, (1), 47-52 (2015).
44. Statistical quality control techniques in service sectors
(with M. S. Alam)

- International Journal of Statistics and Systems (IJSS)* (ISSN 0973-2675), **10**(1), 66-70 (2015).
45. “Estimating the weight of sugarcane by ranked set sampling”
(with Rahbar Ali)
International Journal of Statistics and Systems (IJSS) (ISSN 0973-2675), **10**(1), 93-98 (2015).
46. “Big data and changing role of statistics”
(with Richa Vatsa)
Journal of Patna Science College (ISSN 2347-9604), **3**, 171-178. (2015).
47. On statistical quality control techniques based on ranked set sampling
(with Md. Sarwar Alam and Rahbar Ali)
In *Recent Advances in Mathematics, Statistics and Computer Sciences* (Edited by Sinha, Rajesh, Ranjan and Singh), World Scientific Publishing Co. Pte. Ltd., Singapore, 103-114, (2016).
48. Poverty analysis using scan statistics methods
(with Mukesh Kumar)
In *Recent Advances in Mathematics, Statistics and Computer Sciences* (Edited by Sinha, Rajesh, Ranjan and Singh), World Scientific Publishing Co. Pte. Ltd., Singapore, 136-145, (2016).
49. Spatial analysis of AFP surveillance strategy for polio eradication in India
(with Pankaj Srivastava)
In *Recent Advances in Mathematics, Statistics and Computer Sciences* (Edited by Sinha, Rajesh, Ranjan and Singh), World Scientific Publishing Co. Pte. Ltd., Singapore, 206-217, (2016).
50. On estimating the urban population using minimum information
(with Vijay Kumar and Ravi B P Verma)
In *Recent Advances in Mathematics, Statistics and Computer Sciences* (Edited by Sinha, Rajesh, Ranjan and Singh), World Scientific Publishing Co. Pte. Ltd., Singapore, 239-251, (2016).
51. Comparison of the performance of ranked set sampling with the linear regression estimation
(with Rahbar Ali)
In *Recent Advances in Mathematics, Statistics and Computer Sciences* (Edited by Sinha, Rajesh, Ranjan and Singh), World Scientific Publishing Co. Pte. Ltd., Singapore, 331-342, (2016).
52. Ranked set sampling: As a cost-effective and more efficient data collection method
Statistical Journal of the International Association of Official Statistics (IAOS), **32** (4), 607-611(2016).

53. Concepts, Controversies and Correctness of P-values
(with Richa Vatsa)
Journal of Patna Science College (JPSC, ISSN 2347-9604), **4**, 121-126 (2016).
54. Spatial Crime Hotspots for Crime Against Body
(with Mukesh Kumar and Vikas Singh)
In *Applications of Statistical and Computational Softwares*” (Edited by Shruti. et al. ISBN. No. 978 144 340 00 44), Common Ground Publication, University of Illinois, USA, 71-84 (2017).
55. Exploratory Data Analysis and Afterwards
(with Richa Vatsa)
Journal of Patna Science College (JPSC, ISSN 2347-9604), **5**, 1-6 (2017)
56. Identification of Crime Hot-Spots with Reference to Crime against Children, Women and Senior Citizens in Uttar Pradesh, India.
(with Mukesh Kumar and Vikas Singh)
International Journal of Agricultural and Statistical Sciences, **14** (1),187-197 (2018).
57. The Interface between Statistics and Data Science
(with Richa Vatsa)
Journal of Patna Science College (ISSN 2347-9604), **6**, 125-131 (2018).
58. Spatial Analysis of Crime Hotspots using Scan Statistic
(with Mukesh Kumar and Vikas Singh)
International Journal of Essential Sciences, **12** (1&2),81-90, (2018).
59. Big Data and Machine Learning
(with Richa Vatsa)
Journal of Patna Science College (ISSN 2347-9604), **7**, 73-84. (2019).
60. Estimating Agricultural yields more accurately when grown unground
(with Vijay Kumar)
Bulletin of Mathematics and Statistics Research, **8** (3), 67-78), (2020).
61. Some Characteristics of Ranked Set Sampling
Assam Statistical Review, **32** (2), 53-71. (2020).
62. Celebrating Statistics Day as an Official Statistics Tool
(with Richa Vatsa)
Journal of Patna Science College (ISSN 2347-9604), **8**, 141-51. (2020).

BOOKS

'Recent Advances in Mathematics, Statistics and Computer Science' edited by me along with R. Rajesh, Prabhat Ranjan and Rajesh Pratap Singh was published by *World Scientific Publishing Co. Pte. Ltd., Singapore*. ISBN 978-981-4696-16-6, (2016).

Some of my papers are referred to by

- **Encyclopedia of Statistical Sciences**, Second Edition, Volume 10, Wiley – Interscience (John Wiley & Sons, Inc., Publication).
- **Encyclopedia of Environmetrics**, Vol. 3 (2002), 1684-1690(Edited by A.H. Shaarawi and Walter W. Piegorisch), John Wiley and Sons, USA.
- **David, H. A. and Nagaraja, H. N. (2003). *Order Statistics***. Wiley-Inter Science, A John Wiley & Sons, INC., Publication, USA.
- **Swanson, David and Tayman, Jeff (2012): *Subnational Population Estimates***. Springer

Professional Membership

- International Union for the Scientific Study of Population (IUSSP), Belgium (Elected, 1985)
- International Statistical Institute (ISI), The Netherlands. (Elected, 2001)
- Forum for Interdisciplinary Mathematics, USA (Life Member and Vice President)
- The Indian Society for Probability and Statistics, India. (Life Member and Executive Member 2004-2007)
- The Indian Association for the Study of Population (Life Member)
- The Indian Society of Agricultural Statistics (Life Member)
- The Indian Science Congress Association (Life member)

Organized International Conferences

- **International Conference on Recent Advances in Mathematics Statistics and Computer Science** at the

Central University of South Bihar, B I T Patna Campus, Patna 800014 during 29-31 May 2015. (**General Chair**)

- **19th International Conference of the Forum for Interdisciplinary Mathematics on Interdisciplinary Mathematical and Statistical Techniques** at the Department of Statistics, Patna University, Patna during Dec. 18-20, 2010. (**General Chair**)

Organized National Conferences

- **National Conference on Recent Development in Mathematics and Related Areas** was organized by the Post Graduate Department of Mathematics and Patna Science College, Patna University during 22-24 December 2012 on the occasion of 125th birth anniversary of Srinivasa Ramanujan, one of the greatest mathematical geniuses of India (**Chairperson of the Conference**)

International Level Presentations / Chair & Organizing Sessions

- **Invited speaker** at non-live IPS (Invited Paper Session) 148 of International Statistical Institute World Statistics Congress 2021 (ISIWSC 2021), which is to be open from 11 July to 16 July 2021. The Session is listed for presentation on 14 July 2021. The title of the paper is **Control Charts and Capability Analysis for Statistical Process Control** and the Session's Title is **Statistical Literacy Across Disciplines. Virtual Platform:** <https://virt-us.app/e/isi-world-statistics-congress/>
- **Organized third World Statistics Day (WSD) 2020** jointly with Central University of South Bihar on 20 October 2020 and delivered a lecture on the importance of the day.
- **Presented** an invited talk on **Learning from Professor C. R. Rao, a Living Legend of Statistics** on the occasion of the celebration of his 100th birthday on 10 Sept. 2020 organized by Patna Women's College, Patna, Bihar, India on a virtual platform.
- **Presented** paper entitled '**Youth Empowerment and Sustainable Urban Development**' at the 62nd World Statistics

Congress of International Statistical Institute (ISIWSC2019) held at Kuala Lumpur, Malaysia during 19-23 August 2019.

- An invited paper entitled ‘**Some Facets of Human Environment Index**’ was presented at **the International Conference on New Paradigms in Statistics for Science and Industrial Research** organized jointly by Indian Association for Productivity, Quality & Reliability (IAPQR) & CSIR-Central Glass & Ceramic Research Institute, Kolkata during 4-6 January 2018.
- A joint paper entitled “*On the Detection of the Hotspots of the Occurrences of Some Communicable Diseases*” was presented Dr. Mukesh Kumar, co-author at the *India International Science Festival 2016* held at CSIR-National Physical Laboratory, New Delhi 110012 during 07-11 December 2016.
- A joint paper entitled “**Governance Challenges in Kala-Azar Eradication Strategy in India**” was presented by Dr. Pankaj Srivastava, co-author at the *India International Science Festival 2016* held at CSIR-National Physical Laboratory, New Delhi 110012 during 07-11 December 2016.
- A joint paper entitled “**Estimating Agricultural Yields More Accurately when Grown Underground**” was presented by Dr. Vijay Kumar, co-author at the *India International Science Festival 2016* held at CSIR-National Physical Laboratory, New Delhi 110012 during 07-11 December 2016.
- **Presented** my invited paper entitled “**Ranked set sampling as a cost-effective and more efficient data collection method**” at Special Topic Session (STS) 015 with the title as New Urban Agenda and Statistics organized by Dr. Markandey Rai. The presentation was held on 29 July 2015 during the **60th World Statistics Congress of the International Statistics Institute organized at Rio de Janeiro, Brazil during 26-31 July 2015.**
- Presented an invited paper at **International Conference on Recent Advances in Mathematics Statistics and Computer Science** at the **Central University of South Bihar, B I T Patna Campus, Patna, 800014** during 29-31 May 2015.
- **Delivered** an invited lecture entitled “**Construction of Human Environment Index and Ranking on the Index**” at **Indo-USA Workshop on Environmental Statistics** under the auspices of **Indo-USA collaborative research program** supported by the Department of Science and Technology (DST), Govt. of India

and National Science Foundation (NSF) (USA) held at Indian Statistical Institute, Kolkata during 2-4 March 2015. Also chaired a session on this occasion.

- Presented an invited paper entitled “**On estimating the urban populations using minimum information**” at the **International Conference on Official Statistics organized by the International Association of Official Statistics (IAOS), International Statistical Institute, Da Nang, Vietnam** during 8- 10 October 2014.
- Presented an invited paper on “**In search of leading indicators for constructing composite indicator/ index**” at the international Symposium on Green Economy Indicators held at Beijing, China during 21-22 May 2012.
- Presented invited background paper entitled “**Methods for Developing Composite Index**” at the two days Expert Consultation in New Delhi on “**Statistical Methodologies for Developing Composite Indices**” organized by the United Nations Programme (UNEP) with a collaborative arrangement with Society for Development Studies (SDS), New Delhi, during Dec. 28-29, 2011.
- Presented invited paper entitled “**Geoinformatics of Hotspot Detection for Monitoring the Sex Ratios**” at the International Conference on Frontiers of Interface between Statistics and Sciences organised in honour of Padam Vibhushan Prof. C. R. Rao, by CR Rao Advanced Institute of Mathematics, Statistics & Computer Science and University of Hyderabad, Hyderabad during Dec. 30, 2009 to January 2, 2010,
- Presented invited paper at the International Conference on Statistical Paradigms: **Recent Advances and Reconciliations** (ICSPRAR-2008) on the occasion of Platinum Jubilee Celebrations of the Indian Statistical Institute, Kolkata, India during Jan. 01-04, 2008.
- Organized symposia on **Environmental Statistics and Ranked Set Sampling and delivered invited talks** on the occasion of the International Conference on Computational, Mathematical and Statistical Methods (The Fourteenth International Conference of the Forum for Interdisciplinary Mathematics) at the Indian Institute of Technology-Madras, Chennai, India, Jan. 6-8, 2007.

- Presented invited paper at the **International Conference on Statistics and Informatics in Agricultural Research** organized during Diamond Jubilee Celebration of the Indian Society of Agricultural Statistics at Indian Agricultural Statistics Research Institute, New Delhi, India, Dec. 27 -30, 2006.
- Resource person at the **International Workshop on Digital Governance and Hotspot Geo-informatics for Monitoring, Etiology, Early Warning and Sustainable Management, sponsored by Surveillance Geoinformatics** Project of the Digital Government Research Programme of the United States National Science Foundation held at Jala-SRI, Watershed Surveillance & Research Institute, Moolji Jaitha College, Jalgaon, Maharashtra, India, during December 11-22, 2006.
- Delivered an invited talk entitled **“On a bivariate compound Poisson model”** at the third International Cherry Bud Workshop held at the Center for Integrative Mathematical Sciences, Faculty of Science and Technology, Keio University, Yokohama, Japan during March 27 to 31, 2006.
- Organized a session on ranked set sampling at the *Eleventh International Conference on Interdisciplinary Mathematical and Statistical Techniques*, held during Dec. 27-29, 2004 at the Institute of Engineering and Technology, Lucknow, India with the University of South Alabama, USA as Cosponsor (also *an invited speaker* at the session).
- Invited Speaker and chaired a session at the *International Conference on Recent Statistical Techniques* held at the Department of Statistics, Banaras Hindu University (BHU), Varanasi - 221005, India, during Dec. 29-31, 2003.
- Invited Speaker and chaired a session at the *International Conference on Recent Statistical Techniques* held at the Department of Statistics, Banaras Hindu University (BHU), Varanasi - 221005, India, during Dec. 29-31, 2003.
- Presented an invited paper *at the Sixth International Statistics Conference* held at Tarbiat Modarres University, Tehran, Iran during August 26-28, 2002.
- Chaired a session and presented a paper **in the International Conference on Recent Developments in Statistics and**

Probability and Their Applications on the occasion of First Joint Statistical Meeting organized by International Indian Statistical Association and other Indian Statistical Organizations held at New Delhi, INDIA during December 30, 2000 – January 2, 2001.

- Presented an invited paper at *International Conference on Order Statistics and Extreme Values: Theory and Applications*, Jointly hosted by the Department of Studies in Statistics, University of Mysore, INDIA and Department of Statistics, Ohio State University, Columbus, USA during Dec. 18-20, 2000.
- Organized and chaired two sessions on Environmental Statistics at *International Conference on Statistics, Combinatorics and Related Areas and the Seventh International Conference of the Forum for Interdisciplinary Mathematics* held at Indian Institute Technology-Bombay of Technology-Bombay, Mumbai 400 0076, INDIA with University of South Alabama, Mobile, Alabama, USA as a cosponsor during December 19-21, 2000. Also presented invited papers at Environmental Statistics and Ranked Set Sampling sessions on this occasion.
- Chaired the session on **Recent Advances in Environmental Statistics** and presented an invited paper at International Conference on Statistical Inference, Combinatorics and Related Areas held at Banaras Hindu University, Varanasi 221005, INDIA and organized by the Forum for Interdisciplinary Mathematics, University of South Alabama, Mobile, Alabama, USA during Dec.18-21, 1997.
- Delivered an invited talk at the Department of Statistics, University of Aguascalientes, Mexico on November 3, 1997.
- Delivered an invited talk at the Centro de Investigacion en Matematicas (CIMAT), Guanajuato, Gto 36240, Mexico on October 27, 1997.
- Delivered an invited talk at the Centro de Investigacion en Matematicas (CIMAT), Guanajuato, Gto.336240, Mexico on November 12, 1996.
- Paper at the Second Triennial International Symposium on Probability and Statistics organized at Calcutta University, INDIA during December 30, 1994 to January 2, 1995.

- Paper at the Fifth International Conference on Statistical Methods for the Environmental Sciences held at Burlington, CADADA during August 12-15, 1994.
- Delivered invited talk during Statistical Conference held at the University of Hermosillo, Hermosillo, Mexico in May 1993.
- Invited paper, and chaired a session at the Seventh International Conference on Multivariate Analysis
 - Held at the Pennsylvania State University, University Park, PA, USA during May 5-9, 1992.
 - Held at Delhi, INDIA during Dec. 18-23, 1992. (Organised by Indian Statistical Institute, Delhi University, etc., INDIA)
- Paper at the 3rd Pacific Area Statistical Conference on the Recent Developments in Statistical Theory and Data Analysis held at Chiba, JAPAN during December 11-13, 1991.
- Paper at the First Triennial International Symposium on Probability and Statistics held at Calcutta University, INDIA during Dec. 1991.
- Presented a paper at the South Asian Regional Conference on Population and Development held at New Delhi, INDIA during September 16-18, 1989
- Paper at the International Conference on Mathematical Modeling in Science And Technology held at the Indian Institute of Technology Madras, INDIA during August 10-14, 1988.
- Paper at The Pacific Area Statistical Conference on the Recent Developments in Statistical Theory and Data Analysis held at Tokyo, JAPAN during December 10-12, 1986.
- Delivered an invited talk at the Institute of Statistical Mathematics, Tokyo, Japan in December 1986.
- Paper at the International Conference on Quantity and Quality in Economic Research organized by the International Society of Statistical Science in Economics held during June 17-19, 1984 at Princeton, New Jersey, USA.

- Paper at the 13th International Conference on Stochastic Processes and Their Applications held at Banaras Hindu University, Varanasi, INDIA in December 1983.
- Paper at the Pacific Area Statistical Conference on the Recent Developments in Statistical Theory and Data Analysis held at Tokyo, JAPAN during December 15-17, 1982.

National Level:**Presentations/Chairing & Organizing Sessions/ Resource Persons**

- **Organized 15th Statistics Day of India** jointly with School of Environmental Sciences, Central University of Couth Bihar and delivered a talk on the Celebration of 15th Statistics Day of India on 29 June 2021 on a virtual platform, Google Meet.
- **Delivered** an invited talk on **Working with Uncertainty: A Specific Probability Distribution** at School of Statistics, Gangadhar Meher University, Amruta Vihar, Sambalpur, Odisha, India on 24 Sept. 2020 through a virtual platform.
- **Chaired** a special session on NFHS on 14 February 2020 and presented a paper entitled **'Ranked Set Sampling and its Applications in Population Studies'** at the National Seminar on **'Population, Health and Sustainable Development Goals: Performance and Prioritizing Policies'** organized by International Institute for Population Sciences (IIPS), Deemed University, Mumbai in collaboration with Population Research Centre, Department of Statistics, Patna University during 13-15 February, 2020.
- Delivered an invited talk entitled **'Contributions of Professor P. C. Mahalanobis to Statistics and Economics'** at the 13th Statistics Day Celebration at School of Studies in Statistics Pt. Ravishankar Shukla University, Raipur, Chhatish Garh, India on 29 June 2019.
- As a Resource Person delivered lectures on 08-09 January 2019 on the occasion of Faculty Development Programme (FDP) on **'Research Methodology'** under **Short Term Training Programme (STTP)** organized by the Department of Science and Humanities, Gaya College of Engineering, Gaya, Bihar, 2019.
- Presented an invited paper entitled **'Ranked Set Sampling'** on the occasion of Science Congress in Hindi on 21 September 2018

at the Indian Institute of Science Education and Research (IISER), Kolkata, Mohanpur-741246, West Bengal, 2018.

- Delivered an invited talk on Statistical Computing at the Refresher Course entitled **Recent Trends in Basic Sciences** organized by the UGC-Human Resource Development Centre at the Department of Chemistry, Patna University on 07 March 2017.
- Delivered lectures on **Organizing and Visualizing Data** as a **resource person** at the four-day **National Workshop on Learning Statistical Techniques with SPSS** held at the Department of Statistics, Patna University, Patna 800005 during 19-21 Nov. 2016.
- Delivered a series of invited lectures on *Statistical Methods* at the *Bihar Institute of Public Administration and Rural Development* (BIPARD), Government of Bihar Patna- 801505 in May 2016.
- Delivered lectures on **Research Methodology** as a Resource Person at the Refresher Course for University Faculties conducted at the Department of Law, Patna University during 20 February and 05 March 2016.
- Delivered lectures on **Research Methodology** as a Resource Person at the Refresher Course for University Faculties conducted at the Patna Training College, Patna University during 25 February 2016.
- Presented an invited paper entitled “**Ranked Set Sampling : Theory, Methods and Some Recent Applications**” at the **National Conference on Recent Trends and Developments in Statistics (NCRTDS-2015)** organized by the Department of Statistics, M. D. University, Rohtak, Haryana during 21-23 February 2015.
- Delivered a Prof. A. P. J. Kalam Memorial Lecture entitled “**On Some Recently Reported Applications of Ranked Set Sampling**” at the 2nd Bi-Annual Conference of Jharkhand Society of Mathematical Sciences held at Ranchi College, Ranchi during 21-23 Nov. 2015.
- Delivered an invited lecture on “**Human Development Index**” at the UGC Administrative Staff College, Patna University, Patna 800 005 on 17 December 2015.

- Delivered an invited talk entitled “**Role of Scan Statistics for the Analysis of Geospatial Public Health Data**” at the DST sponsored **Workshop on Geospatial Public Health** organized by Administrative Staff College of India, Hyderabad on 7th August 2014.
- Organized Invited Session (IS-S7) entitled “Measuring and Combining Indicators for Monitoring Environmental Sustainability”, presented paper (oral) entitled “Human Environment Index” and chaired paper presentation session PS-2 of the Section of Mathematical Sciences (including Statistics) at the Ninety Ninth Session of *the Indian Science Congress* at KIIT, Bhubaneswar held during January 3-7, 2012.
- Delivered an invited talk at one day Workshop on e- Governance and Environmental Sampling at the Andhra Pradesh Forest Academy, Hyderabad-500014, India on Feb.2, 2007
- Resource Person at the Refresher Course held at the Department of Mathematics, Patna University during Jan. 27 –Feb. 15, 2007.
- Resource Person at the Orientation Course on Health Statistics for Non-Medical Persons of Bihar, Jharkhand and North-East States, sponsored by the Ministry of Health and Family Welfare, Government of India, New Delhi, India during Nov. 7-11, 2006.
- Presented an invited paper at 25th Annual Conference of Indian Society for Probability and Statistics held at the Department of Statistics, Bangalore University, Bangalore, Karnataka during Dec.28-30, 2005.
- Presented an invited paper at XXIV Annual Conference of Indian Society for Probability and Statistics and National Seminar on Recent Advances in Statistical Theory and Applications held at Department of Statistics, St.Thomas College, Palai (Mahatma Gandhi University, Kottayam), Arunampuram - 686574, Kerala during Nov. 4-6, 2004.
- Resource Person at 2nd Refresher Course held at the Department of Applied Economics & Commerce, Patna Univ. during March 15 – April 05, 2004.
- Delivered extension lectures on Ranked Set Sampling at the Department of Statistics, Maharashi Dayanand University, Rohtak-124001, Harayana on Jan.15 and 16, 2004.

- Resource Person at Orientation Programme held at the UGC-Academic Staff College, Ranchi University, Ranchi-834008, Jharkhand during Nov.11, 2003 to Dec. 3, 2003.
- Invited speaker at the National Seminar on Advances in Mathematical, Statistical and Computational Methods in Science and Technology organized by Dept. of App. Mathematics, the Indian School of Mines. Dhanabad – 826004, Jharkhand, INDIA held during Nov. 29-30, 2001.
- Resource Person to teach Bayesian Analysis at the University Grants Commission, INDIA sponsored Refresher Course in Statistics, organized by the Department of Statistics, Gauhati University, Guwahati- 781014, INDIA during August 2-11, 2001.
- Resource Person to teach applications of Internet and other Computer Applications at the University Grants Commission sponsored *Refresher Course on Ancient Indian Epigraphy and Numismatics* organized by the Department of Ancient Indian History and Archaeology, Patna University, INDIA during March 25, 2001 to April 14, 2001.
- Resource Person to teach applications of Internet and Statistical Software's at the University Grants Commission sponsored Refresher Course on Modern Approaches in Plant Science, organized by Department of Botany, Patna University, INDIA during March 20, 2001 to April 9, 2001.
- Presented invited paper at the XX Annual Conference of Indian Society for Probability and Statistics and National Seminar on Industries Oriented Research sponsored by the University Grants Commission, INDIA and organised by the School of Studies, Pandit Ravi Shankar Shukla University, Raipur - 492010, Chhatisgarh, INDIA during February 19-21, 2001.
- Delivered an invited talk at the Post Graduate Department of Statistics, Utkal University, Bhubaneswar, Orissa, INDIA on Sept.19, 2000.
- Delivered an invited talk at Indian Agricultural Statistics Research Institute, Library Avenue, New Delhi-110012, INDIA on May 20, 2000.
- Resource Person to teach sampling methods at the Third National Workshop on Biostatistics and Biometry organized by the

Department of Zoology, Banaras Hindu University, Varanasi 221005, INDIA during December 25-30, 1998.

- Resource Person to teach Statistical and Probabilistic Methods at the University Grants Commission sponsored Refresher Course on Botany Today organized by University Department of Botany, L. N. Mithila University, Darbhanga, Bihar, INDIA held during March 3 – 22, 1997.
- Presented invited paper at the XVII Annual Conference of Indian Society for Probability and Statistics and National Seminar on New Dimensions in Theoretical and Applied Statistics organized by the Department of Statistics, Banaras Hindu University, Vranasi-221005, INDIA during February 10-13, 1997.
- Chaired a technical session and presented an invited paper at XIV Annual Conference of Indian Society for Medical Statistics and National CME on Research Methodology and Clinical Epidemiology organized by AFM College, Pune, INDIA during Nov. 30 - Dec. 2, 1996.
- Presented an invited paper at the University Grants Commission sponsored National Seminar on Stochastic Processes, Statistical Inference, and Sample Survey held at Sambalpur University, Orissa, INDIA, December 21-26, 1983.
- Resource Person to teach some topics of Demography at the University Grants Commission Sponsored Orientation Course of Population Studies held at Department of Statistics, Patna University, Patna, INDIA during May-June 1983.
- Resource Person to teach Sampling Techniques at the University Grants Commission sponsored Summer Institute in Statistics for Social Scientists held at Department of Statistics, Patna University, Patna-800005, INDIA during May-June 1977.

Experience in Environmental Statistics

- Published several papers on ranked set sampling designs, which have tremendous applications for conducting environmental and monitoring investigations with observational economy.
- Developed and conducted analysis of the Human Environment Index (HEI) for the United Nations Environment Programme (UNEP).

Experience in Population Studies

- Actively associated with Rapid Household Survey (Under Reproductive and Child Health Project) and National Rural Health Mission (NRHM) Survey sponsored by Ministry of Health & Family Welfare, Government of India and conducted by Population Research Centre, Department of Statistics, Patna University, Patna, India during 1998-2006 and 2009-2010 respectively.
- Developed and investigated univariate and bivariate probability models to study the dynamics of human populations (several research papers in this area).

Main Areas of Interest

Survey Sampling, Theory and Methods, Probability Distributions, Statistical Quality Control and Improvement, Order Statistics, Environmental Statistics, Statistical Computing, Design of Exp., Business Statistics, Statistics Learning, Data Mining, etc.

Computing Skill

Statistical Packages: Minitab, Axum, S-plus, SPSS, Mathematica.
Processing Packages: Latex, Scientific Word and Microsoft Office
Operating Systems: WINDOWS

Education

Ph.D. in Statistics, Patna University (1984)

The title of the dissertation:

"The Negative Binomial Distribution and its Role in Operations Research and Population Studies".

1967-69 M. Sc. (Statistics). Secured **First Position in First Class at the joint M. A. and M. Sc. (Statistics) Examination 1969**, Patna University, Patna 800 005, INDIA

1965-67 B.Sc. (Honours in Statistics with Mathematics and Physics). Secured **First Position in First Class at the joint B. A. and B. Sc. (Honours in Statistics) Examination 1967**, Patna University, Patna – 800 005, INDIA

Academic Awards Won

Recipient of the **National Merit Scholarship** during 1967-69. The **University Gold Medal** was awarded for securing the First Position in First Class at the joint M. A. and M. Sc. (Statistics) Examination 1969 of Patna University

Honored

- **Forum for Interdisciplinary Mathematics (FIM), USA honored in 2004 for outstanding contributions to Mathematical Sciences.**
- **Honored for my contributions as the Vice-Chancellor of Patna University on 25 August 2018**

Personal Data

Nationality: Indian
Date of Birth: 01 January 1949
Marital Status: Married
Health: Excellent

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References

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