Dr. Said Farooq Shah

Assistant Professor of Statistics | University of Peshawar
Department of Statistics, Road No. 2, University Campus, Peshawar, Pakistan
farooqshahqau@uop.edu.pk

CURRENT POSITION

Assistant Professor, Department of Statistics — Since 19 November 2025
University of Peshawar, Peshawar, Pakistan

EDUCATION

PhD in Statistics — 2019
Quaid-i-Azam University, Islamabad, Pakistan

- **Dissertation:** *Topics in Qualitative Randomized Response Modeling*
- **Supervisor:** Prof. Dr. Zawar Hussain
- **Foreign reviewers:** Prof. Dr. Winfried Stute; Prof. Dr. Pranesh Kumar
- **Local reviewers:** Prof. Dr. Muhammad Aslam; Dr. Tahir Mehmood

MPhil in Statistics — 2013
Quaid-i-Azam University, Islamabad, Pakistan

- **Dissertation:** *The Weibull Distribution for Paired Comparison Modeling and the Bayesian Analysis of Developed Model*
- **Supervisor:** Prof. Dr. Muhammad Aslam

MSc in Statistics — 2011
Quaid-i-Azam University, Islamabad, Pakistan

BSc in Computer Science, Mathematics and Statistics — 2008
University of Malakand, Chakdara, Khyber Pakhtunkhwa, Pakistan

ACADEMIC APPOINTMENTS

Assistant Professor, Department of Statistics — Nov 2025 – Present
University of Peshawar, Peshawar, Pakistan

- Teaching at postgraduate, graduate and undergraduate levels; supervision of MPhil and PhD research scholars.

Lecturer, Department of Statistics — Oct 2016 – Nov 2025
University of Peshawar, Peshawar, Pakistan

- Taught graduate and undergraduate classes and supervised undergraduate, MPhil and PhD research scholars.

Visiting Lecturer — 2016 – 2017
Riphah International University, Islamabad, Pakistan

- Served concurrently as Course Supervisor.

Visiting Lecturer — 2016
FAST National University of Computer and Emerging Sciences, Islamabad, Pakistan

Visiting Lecturer — 2015 – 2016
National University of Sciences and Technology, Islamabad, Pakistan

Visiting Lecturer — 2015
Federal Urdu University of Arts, Science and Technology, Islamabad, Pakistan

RELATED PROFESSIONAL EXPERIENCE

Deputy Director, Population Research Centre (PRC), Peshawar

- Directs research, training and data activities of the Centre alongside departmental duties.

Research Associate Sep 2013 – Sep 2015
Department of Mathematics and Statistics, International Islamic University, Islamabad, Pakistan

Statistician and Data Analyst 2013
AAN Associates, Islamabad, Pakistan

- Two-month engagement on UNICEF-supported projects.

DEPARTMENTAL AND INSTITUTIONAL RESPONSIBILITIES

Department of Statistics, University of Peshawar

- Teaching Basic Statistics, Sampling, Operations Research and Time Series Analysis to postgraduate, graduate and undergraduate classes.
- Supervision of MPhil and PhD research students.
- Convener, Anti-Harassment Committee.
- Member, Finance and Purchase Committee.
- Assistant Coordinator, MPhil and PhD programmes.
- In-charge, Computer Laboratory.
- Secretary, ASRB Sub-Committee, Faculty of Numerical & Physical Sciences

University of PeshawarPROFESSIONAL SERVICE

- Member, National Advisory Board, Statistics, Computing and Interdisciplinary Research, since 2020.
- Member, Board of Studies, Department of Economics, University of Swabi, Pakistan, 2022–2024.
- Viva examiner, Khyber Pakhtunkhwa Public Service Commission, for recruitment of Subject Specialists (BPS-17) and Lecturers in Statistics (BPS-17).
- Reviewer for international journals in statistics, mathematics and the social sciences.

GRADUATE RESEARCH SUPERVISION

Supervisor or co-supervisor for 3 PhD and 14 MPhil scholars; 12 theses completed and 5 in progress.

Student	Degree	Thesis Title	Status	Year	Role
Nida Khan	PhD	Development of efficient estimators for sensitive proportion and its monitoring through control charts	Completed	2022	Co-supervisor
Neelam	PhD	Development of new efficient randomized response techniques and their comparison with existing models	Ongoing	—	Co-supervisor
Aimel Zafar	PhD	Advancing the analysis of regression to the mean: Classical and Bayesian approaches	Ongoing	—	Supervisor
Neelam	MPhil	Development of efficient estimators for sensitive proportion and mean in sample surveys	Completed	2020	Co-supervisor
Syed Fasih Ullah	MPhil	Statistical modelling of the contraceptive prevalence rate in Pakistan using sampling weights from PDHS 2019	Completed	2022	Co-supervisor
Maher Ali	MPhil	A study of consumption of safe drinking water and its determinants through a weighted multinomial logistic model	Completed	2023	Supervisor
Yasir Khan	MPhil	Development of efficient imputation methods based on k-nearest neighbours	Completed	2023	Supervisor
Rida Batool	MPhil	Exploring respondent behaviour in complex surveys: An analysis using machine learning models	Completed	2023	Supervisor
Qazi Wajih Ur Rehman	MPhil	Assessing the impact of the calf feedlot fattening project on farmers in District Peshawar: Motivations, benefits and challenges	Completed	2023	Supervisor
Hassan Yar Ud Din	MPhil	Modelling of stress and its coping techniques using random forest: A case study of undergraduate students in District Peshawar	Completed	2023	Supervisor
Salman Rauf	MPhil	Forecasting of wheat production in Pakistan using machine learning techniques	Completed	2024	Supervisor

Student	Degree	Thesis Title	Status	Year	Role
Muhammad Haroon	MPhil	Assessing the quality of survey-based demographic data in Pakistan: Statistical techniques, analysis and current state	Completed	2024	Supervisor
Abbas Ali	MPhil	Small area estimation of fertility rates for Pakistan	Completed	2024	Supervisor
Musa Khan	MPhil	Development of an enhanced randomised response technique and its applicability in Pakistan's national surveys	Completed	2024	Supervisor
Ashfaq Ahmad	MPhil	Household determinants of diarrhoea among children in Pakistan	Ongoing	—	Supervisor
Summiya Bibi	MPhil	Statistical analysis of occupational injuries among disabled persons in Pakistan	Ongoing	—	Supervisor
Meerullah	MPhil	COVID-19 impact on short-term inflation: A statistical analysis	Ongoing	—	Supervisor

RESEARCH PROJECTS

- **Economic empowerment and socioeconomic integration of refugee women in Pakistan.** Funded by SDPI Pakistan. Completed 2024.
- **Early marriage and its socioeconomic consequences in Ex-FATA: A comprehensive analysis of labour force participation and financial autonomy.** Submitted to UNFPA for funding.
- **Data quality and privacy in Pakistan's official statistics: Challenges and solutions.** Submitted to the Higher Education Commission (HEC) Pakistan for funding.

SCHOLARLY PUBLICATIONS

Journal Articles (Published and Accepted)

1. Iftikhar, H., Shah, S. F., Rodrigues, P. C., Alamri, O. A., & Alsaedi, B. S. O. (2026). A novel kernel regression-based decomposition hybrid framework for forecasting cryptocurrency markets. *IEEE Access, 14*, 133335–133360. https://doi.org/10.1109/ACCESS.2026.3727697
2. Iftikhar, H., Shah, S. F., Almuhayfith, F. E., & Rodrigues, P. C. (2026). A kernel regression-based hybrid forecasting framework for highly volatile energy commodity markets. *AIMS Mathematics, 11*(8), 24877–24912. https://doi.org/10.3934/math.20261000
3. Iftikhar, H., Shah, S. F., Almuhayfith, F. E., & Rodrigues, P. C. (2026). A flexible kernel regression decomposition-based hybrid framework for forecasting foreign exchange rates: Uncovering symmetric and asymmetric market dynamics. *Symmetry, 18*(8), 1372. https://doi.org/10.3390/sym18081372
4. Shah, S. F., Khan, M., Javeed, M., & Iqbal, M. (2026). Quantitative randomized response technique for sensitive economic data: Evidence from the national surveys of Pakistan. *Asia-Pacific Sustainable Development Journal, 33*(1).
5. Khan, Y., Shah, S. F., & Ali, M. (2026). Enhancing imputation accuracy of the weighted k-nearest neighbour algorithm using non-Gaussian kernel functions. *International Journal of Data Science and Analytics, 21*(1), 72.
6. Khan, M., Shah, S. F., & Javeed, M. (2025). Development of an enhanced randomized response technique for estimating the mean of sensitive characteristics in sample surveys. *Communications in Statistics – Simulation and Computation*, 1–19.
7. Osama, M., Javed, M., Shah, S. F., & Burki, I. (2025). A novel flexible exponentiated XLindley distribution with applications to modelling COVID-19 mortality and precipitation. *Journal of Probability and Statistical Science, 23*(1).
8. Javed, M., Shah, S. F., Osama, M., Atif, M., & Farooq, M. (2025). New bivariate type-2 Gumbel distribution based on the Farlie–Gumbel–Morgenstern copula: Properties and its application in survival analysis. *Applications and Applied Mathematics, 20*(2).
9. Hafeez, W., Aziz, N., Shabbir, J., Shah, S. F., & Khan, A. A. K. A. (2025). Construction of quality regions based on consumer's and producer's risks for a two-sided group chain sampling plan with binomial distribution. *Thailand Statistician, 23*(2), 407–419.
10. Hafeez, W., Aziz, N., Shah, S. F., & Khan, A. A. (2025). Designing a Bayesian modified group chain sampling plan for quality regions based on the average number of defectives. *Thailand Statistician, 23*(1), 228–242.
11. Ali, A., Arsh, A., Rahman, G., Haq, I. U., & Shah, S. F. (2024). Wheelchair users' function and satisfaction with modified wheelchair and intermediate wheelchair services in Pakistan. *Assistive Technology*, 1–9.

12. Khan, Y., Shah, S. F., & Asim, S. M. (2024). A novel k-nearest neighbours algorithm for missing data imputation. *Journal of Applied Statistics*. https://doi.org/10.1080/02664763.2024.2414357
13. Ali, M., Shah, S. F., Khan, Y., Asim, S. M., & Ullah, S. F. (2023). A study on the consumption of safe drinking water and its determinants using the weighted multinomial logistic model. *AQUA – Water Infrastructure, Ecosystems and Society, 72*(12), 2422–2445.
14. Ali, R., Bashir, K., Ahmad, S., Ullah, A., Shah, S. F., Ali, Q., & Ahmad, A. (2023). Bioremediation of heavy metals from industrial effluents using *Bacillus pakistanensis* and *Lysinibacillus composti*. *Sustainability, 15*(9), 7591.
15. Javed, M., Asim, S. M., Khalil, A., Shah, S. F., & Almaspoor, Z. (2022). New Rayleigh flexible Weibull extension (RFWE) distribution with applications to real and simulated data. *Modelling and Simulation in Engineering, 2022*.
16. Khan, N., Shah, S. F., & Asim, S. M. (2022). Efficient Bayes estimators of sensitive proportion with simple and mixture priors using direct and indirect responses. *Communications in Statistics – Theory and Methods*, 1–30.
17. Omer, T., Hussain, Z., Qasim, M., Shah, S. F., & Khan, A. A. (2021). Two different classes of shrinkage estimators for the scale parameter of the Rayleigh distribution. *Journal of Modern Applied Statistical Methods, 19*(1), 8.
18. Farooq, M., Zaman, Q., Ijaz, M., Shah, S. F., & Kilai, M. (2021). A novel approach to increase the goodness of fit with an application to real and simulated data sets. *Mathematical Problems in Engineering, 2021*, 1–11.
19. Asif, M., Hussain, Z., Asghar, Z., Hussain, M. I., Raftab, M., Shah, S. F., & Khan, A. A. (2021). Statistical evidence of a power law distribution in the upper tail of world billionaires' data 2010–20. *Physica A: Statistical Mechanics and Its Applications*, 126198.
20. Khan, P., Khan, Y., & Shah, S. F. (2021). Statistical analysis of yearly consumption expenditure of households on durable goods, non-durable goods and services in Pakistan. *Statistics, Computing and Interdisciplinary Research, 3*(2), 13–37.
21. Shah, S. F., Hussain, Z., Riaz, M., & Cheema, S. A. (2020). Shewhart-type charts for masked data: A strategy for handling the privacy issue. *Mathematical Problems in Engineering, 2020*.
22. Aslam, M., Asghar, Z., Hussain, Z., & Shah, S. F. (2020). A modified T-X family of distributions: Classical and Bayesian analysis. *Journal of Taibah University for Science, 14*(1), 254–264.
23. Aslam, M., Ley, C., Hussain, Z., Shah, S. F., & Asghar, Z. (2020). A new generator for proposing flexible lifetime distributions and its properties. *PLoS ONE, 15*(4), e0231908.
24. Shah, S. F., Cheema, S. A., Hussain, Z., & Shah, E. A. (2020). Masking data: A solution to social desirability bias in paired comparison experiments. *Communications in Statistics – Simulation and Computation*, 1–19.
25. Shah, S. F., & Hussain, Z. (2019). An application of the Hermite distribution in sensitive surveys. *Journal of Statistical Theory and Applications, 18*(4), 361–366.
26. Shah, S. F., Hussain, Z., & Cheema, S. A. (2019). Combining answers to direct and indirect questions: An implementation of Kuk's randomized response model. *Communications in Statistics – Theory and Methods*, 1–17.
27. Asmat, A., Ali, U., & Shah, S. F. (2017). Permissive parenting style of parents predicting psychopathology in their children. *Journal of Pakistan Psychiatric Society, 14*(1).
28. Pervez, Z., Shah, S. F., Hussain, Z., & Philippou, A. N. (2017). An application of the negative binomial distribution of order k in sensitive surveys. *Communications in Statistics – Simulation and Computation, 46*(8), 6654–6660.
29. Hussain, Z., Shabbir, J., Pervez, Z., Shah, S. F., & Khan, M. (2017). Generalized geometric distribution of order k: A flexible choice to randomize the response. *Communications in Statistics – Simulation and Computation, 46*(6), 4708–4721.
30. Hussain, Z., Pervez, Z., Shah, S. F., & Shabbir, J. (2015). Estimation of sensitive proportion using the moment generating function. *Science International (Lahore), 27*(4).
31. Ahmad, I., Shah, S. F., Mahmood, I., & Ahmad, Z. (2013). Modelling of monsoon rainfall in Pakistan based on the Kappa distribution. *Science International (Lahore), 25*(2), 333–336.

Book Chapters

1. Shah, S. F. (2026). Marriage, family formation and changing fertility aspirations (Chapter 5). In *State of Pakistan Population Report 2026*. UNFPA Pakistan.
2. Shah, S. F. (2025). Importance of female education in fertility management (Chapter 9). In *State of Pakistan Population Report 2025*. UNFPA Pakistan.
3. Cheema, S. A., & Shah, S. F. (2023). Dealing with responses contaminated with social desirability bias while studying socially stigmatized behaviours (Chapter 7). In C. Maheshkar & J. Sonwalkar (Eds.), *Handbook of Research on Cultural and Cross-Cultural Psychology*. Vernon Press.

Policy Briefs

1. Gender-responsive climate action plan for displaced populations in Khyber Pakhtunkhwa. SDPI Pakistan.
2. Importance of female education in fertility management.

Working Papers

1. Developing a climate vulnerability index for under-served populations in Peshawar: Evidence for an inclusive policy response. SDPI Pakistan, 2026.
2. Economic empowerment and socioeconomic integration of refugee women in Pakistan. SDPI Pakistan, December 2024.

TRAININGS AND WORKSHOPS

Organised

- One-day workshop on Data Merging and Analysis of PDHS and PDS Datasets Using SPSS and R, Population Research Centre, Peshawar, 12 February 2025.

Attended

- Inter-Provincial Workshop of Population Research Centres 2024 — Population and Demographic Research in Pakistan: Data Scarcity or Lack of Priority. Centre of Excellence on Population and Wellbeing Studies (CePwS), S3H, NUST Islamabad, 19–20 December 2024.
- Training on survey methodologies: sampling techniques, questionnaire design and data collection tools, and data quality control measures. Pakistan Bureau of Statistics and UNFPA Pakistan, Islamabad, 16–19 December 2024.
- Three-day training on Persuading with Data. SDPI Pakistan and UNFPA Pakistan, Ramada Hotel, Lahore, 23–26 September 2024.
- Inter-Provincial Workshop of Population Research Centres 2023 — Past, Present and Future of Population Studies and Demographic Research. CePwS, S3H, NUST Islamabad, 30 November – 1 December 2023.
- Training module on Adopting a Gender-Focused Research Methodology. Population Council Pakistan, Islamabad, 4–7 October 2023.
- Training on Demographic Analysis and Population Projections (DAPPS). UNFPA, Abbottabad, 25–29 September 2023.
- Virtual training on Understanding Harassment, Legal Provisions and Roles of Duty Bearers and Right Holders. University of Peshawar, 7 September 2020.
- Training on the effective implementation of the Protection Against Harassment of Women at the Workplace Act 2010. Islamabad, 3–5 August 2018.
- Workshop on Faculty Development. University of Utah and Pakistan Academy of Sciences, Islamabad, 10–11 August 2017.

TECHNICAL SKILLS

- **Statistical computing:** R, IBM SPSS Statistics, Wolfram Mathematica
- **Data handling and reporting:** MS Excel
- **Applied areas:** complex survey analysis and sampling weights, randomized response and sensitive-data methods, machine learning for survey and forecasting applications, demographic estimation and projection