Wajiha Batool **Awan**

Profile

Experienced Lecturer in Statistics with a demonstrated history of working in higher education and research. Proficient in statistical analysis, R programming, SPSS, Tableau, and Microsoft Office. Proven track record in teaching, curriculum development, and research, with a strong emphasis on statistical modeling. Actively engaged in research, contributing significantly to projects and publications in applying statistics to diverse fields such as climatology, epidemiology, and agriculture.

Contact

wajihaawan5@gmail.com
wajiha.stat@pu.edu.pk
pu.edu.pk/wajihabatool
orcid.org/wajihabatool
linkedin.com/wajihaawan
researchgate.net/wajiha
+92 324 4704179

Languages

Urdu — **Native**
English — **C1 (Advanced)**

Strengths

- Statistical modelling
- Time series analysis
- Predictive modelling
- Data handling
- Data wrangling & cleaning
- Data visualisation & results communication

Experience

Lecturer in Statistics **10/2019–Present**
College of Statistical Sciences
University of the Punjab, Lahore

Lecturer in Statistics **09/2016–10/2019**
Department of Statistics
Govt. College Women University, Faisalabad

Lecturer in Statistics **08/2015–08/2016**
Department of Statistics
Govt. Queen Mary College, Lahore

Visiting Lecturer in Statistics **10/2014–06/2016**
Department of Philosophy
University of the Punjab, Lahore

Visiting Lecturer in Statistics **09/2013–02/2014**
Institute of Biochemistry & Biotechnology
University of the Punjab, Lahore

Education

PhD in Statistics (in progress) **2023–Present**
College of Statistical Sciences, University of the Punjab, Lahore
Research in statistics (details on request).

M. Phil. (Statistics) **2013–2015**
College of Statistical Sciences, University of the Punjab, Lahore
CGPA: 3.85 / 4.00

MSc (Statistics) — Gold Medalist **2010–2012**
College of Statistical Sciences, University of the Punjab, Lahore
Marks: 1031/1200 (85.9%)

BSc (Statistics & Mathematics) **2008–2010**
Department of Statistics, Govt. Queen Mary College, Lahore
Marks: 617/800 (77.1%)

FSc (Pre-Engineering) **2006–2008**
Army Public School & College, Attock
Marks: 795/1100 (72.3%)

Matriculation (Science) **2004–2006**
Army Public School & College, Attock
Marks: 902/1050 (85.9%)

Research Projects

M. Phil. Thesis:New Method for Estimating Ridge Parameter and Their Comparison with Existing Ones **2013–2015**

Key insights:

- Proposed three new methods to estimate the ridge parameter k for multicollinear regression, improving the bias–variance trade-off.
- Assessed via extensive Monte Carlo simulations using MSE as the criterion against classical ridge k estimators.
- New estimators ranked best across all two-predictor settings and were competitive (often top-2) in four-predictor cases; recommended for practitioners.

MSc Thesis: Statistical Univariate Time-Series Modeling and Volatility Analysis of Electricity Generation and Demand in Pakistan using the ARCH Family of Models **2010–2012**

Key insights:

- Ensured stationarity (differencing) and identified ARIMA models for generation and demand using the Box–Jenkins approach.
- Detected volatility via the ARCH–LM test; fitted ARCH/GARCH models to capture residual clustering in both series.
- Best models by evaluation criteria: GARCH(1,3) for electricity generation and ARCH(2) for demand; delivered accurate forecasts.

Teaching Portfolio

- Introductory Statistics
- Regression Analysis
- Econometrics
- Nonparametric Methods
- Time Series Analysis
- Sampling Techniques
- Statistical Decision Making
- Statistical Computing (SPSS, Excel)

Teaching Highlights

- 300+ students mentored in Applied Statistics & Decision Making
- 400+ students taught Introductory Statistics across Botany, Zoology, Food Science, Business Administration & Chemistry
- 200+ BS students taught Econometrics, Regression Analysis & Sampling Techniques
- 40+ BS research projects supervised

Soft Skills

- Teaching & curriculum development
- Student supervision
- Collaboration & communication with cross-disciplinary teams
- Project planning & organisation

Software & Tools

- R Programming
- Python
- SPSS
- Tableau
- LaTeX
- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint

Conferences & Workshops

- Attended & organised **15+** academic workshops and seminars

Grants & Funding

Optimizing Predictive Performance of Meta-Heuristic-Driven Hybrid Models in Epidemiology **2024–2025**

University of the Punjab — Grant: PKR 200,000

Key insights:

- Developed hybrid models integrating meta-heuristic optimisation with ML classifiers.
- Achieved over 98% accuracy in breast cancer prediction on the study data.
- Delivered a reproducible analysis pipeline for future medical-prediction tasks.

A regression-based analysis of factors affecting students' intentions to emigrate for higher education **2022–2023**

University of the Punjab — Grant: PKR 200,000

Key insights:

- Conducted a large-scale survey and applied regression modelling.
- Identified key push–pull determinants influencing emigration intentions.
- Provided evidence to inform institutional/student-support policies.

Awareness about Artificial Intelligence in Digital Education among Academicians of HEIs **2021–2022**

University of the Punjab — Grant: PKR 200,000

Key insights:

- Employed the UTAUT framework with a nationwide survey of academicians.
- Revealed drivers of AI adoption in HEIs; model explained $\sim 72\%$ of variance in intentions.
- Suggested training and support actions to increase adoption readiness.

Publications

Development of standardized PM2.5 concentration index (SPM2.5I) for monitoring and forecasting air pollution characteristics **2025**

Theoretical and Applied Climatology. https://doi.org/10.1007/s00704-025-05798-0

Authors: Awan WB, Ali Z

[Impact Factor: 2.7]

Key insights:

- Proposes a probabilistic PM2.5 index and forecasting workflow.
- Demonstrates practical use on Pakistan air-quality data.
- Supports air-quality monitoring, early warnings, and evidence-based mitigation planning.

An application of neutrosophic statistics: extending relative risk and odds ratios to handle uncertainty in epidemiology and biostatistics **2025**

JP Journal of Biostatistics. https://doi.org/10.17654/0973514325001

Authors: Sherwani RAK, Awan WB, Faheem M, Janjua AA, Albassam M, Aslam M

[Impact Factor: 0.1]

Key insights:

- Defines uncertainty-aware versions of relative risk and odds ratio.
- Shows how conclusions differ from classical measures under indeterminate data.
- Enables more cautious, robust public-health decisions when data are incomplete or imprecise.

A unified procedure for the probabilistic assessment and forecasting temperature characteristics under global climate change **2024**

Environment, Development and Sustainability. https://doi.org/10.1007/s10668-024-05020-7

Authors: Awan WB, Batool A, Ali Z, Xu Z, Niaz R, Sammen SS

[Impact Factor: 4.9]

Key insights:

- Introduces a unified probabilistic index and forecasting approach for temperature

- Focus areas:
  - Statistics
  - Research methods
  - Public health
  - Digital census

Achievements & Awards

- Incentive award
  Based on research publications, 2021
- DPCC scholarship
  University of the Punjab — M. Phil. 2013–2015
- Topper
  M. Phil. (Statistics), 2013–2015
- Merit scholarship
  University of the Punjab — MSc 2011–2012
- Merit-based Laptop
  Punjab Youth Program, Mar 2012
- Gold Medalist
  MSc (Statistics), 2010–2012

References

Dr Sohail Chand
Principal & Professor
College of Statistical Sciences,
University of the Punjab, Lahore
sohail.stat@pu.edu.pk
+92 321 863 2986

Dr Zulfiqar Ali
Assistant Professor
College of Statistical Sciences,
University of the Punjab, Lahore
zulfiqa.stat@pu.edu.pk
+92 302 615 3043

Updated on: 14th September 2025

characteristics.
- Compares modelling strategies within one consistent framework.
- Informs climate-risk assessment, adaptation planning, and sectoral preparedness.

Analysis of COVID-19 data using neutrosophic Kruskal–Wallis H test **2021**
BMC Medical Research Methodology. https://doi.org/10.1186/s12874-021-01410-x
Authors: Sherwani RAK, Shakeel H, Awan WB, Faheem M, Aslam M
[Impact Factor: 4.402]
Key insights:

- Extends Kruskal–Wallis H to neutrosophic settings for interval/indeterminate observations.
- COVID-19 analyses illustrate changes in inference when uncertainty is modelled.
- Strengthens guidance when surveillance data are noisy or partially observed.

A new neutrosophic sign test: an application to COVID-19 data **2021**
PLOS ONE. https://doi.org/10.1371/journal.pone.0255671
Authors: Sherwani RAK, Shakeel H, Saleem M, Awan WB, Aslam M, Farooq M
[Impact Factor: 3.24]
Key insights:

- Develops one- and two-sample neutrosophic sign tests for indeterminate/interval data.
- Shows differences from classical tests in pandemic data analyses.
- Encourages more reliable inference for time-sensitive public-health decisions.