

HASNAIN AHMED ALVE

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RESEARCH INTERESTS

- Spatial Statistics and Mixed-Effects Modeling
- Hierarchical Bayesian Modeling and MCMC Methods
- Statistical Computing and Algorithm Development for Bayesian Inference

EDUCATION

B.S. in Statistics (Honors) | University of Dhaka **2019-2022**

CGPA 3.87 out of 4.00 (The exam held in 2023 due to COVID-19)

- Selected to receive the **Dean's Award** in the upcoming convocation
- Relevant Courses:
 - Statistical Theory: Probability and Probability Distributions, Stochastic Process, ANOVA and Linear Inference
 - Methodology: Generalized Linear Models, Multivariate Analysis, Time Series Analysis, Design and Analysis of Experiment
 - Mathematical Foundation: Real Analysis, Mathematical Methods, Linear Algebra, Calculus, Ordinary Differential Equations and Analytical Geometry

ENGLISH PROFICIENCY TEST

International English Language Testing System (IELTS) | Overall: 7.5 **October 19, 2024**

- Speaking: 8.0 • Listening: 8.0 • Reading: 8.0 • Writing: 6.5

RESEARCH EXPERIENCES

Research (Ongoing) | University of Dhaka **Feb 2024 – Present**

Generalized Linear Mixed Models (GLMMs) with Correlated Random Effects: An Application to BDHS Data

- Applying spatial correlation models (Markov Random Field) to analyze geographical patterns in inadequate ANC visits using Bangladesh Demographic and Health Survey (BDHS) data
- Implementing mixed-effects models using R (*hglm*, *dhglm* packages) to account for hierarchical structure in survey data
- Conducting simulation studies to compare the performance of independent vs. spatially correlated random effects

Undergraduate Research Project | University of Dhaka **Jan 2023 – Dec 2023**

Exploring Socio-economic Factors Associated with Primary School Dropout in Bangladesh

Supervisor: Dr. Wasimul Bari, Professor

- Analyzed MICS 2019 data (n=17,769) to identify predictors of primary school dropout
- Implemented logistic regression models in R and SPSS to analyze survey data
- Utilized chi-square tests, odds ratio analysis, and inferential statistics to evaluate socio-economic impacts

ACADEMIC ACHIEVEMENTS

- **Merit Scholarships:** Awarded in PSC, JSC, and HSC examinations (national secondary and higher secondary merit awards)
- **NST Fellowship:** Received the National Science and Technology Fellowship for the ongoing research
- **Programming Competition Champion:** Organized by QMH Statistics Club, University of Dhaka
- **Data Analysis Competition Champion** (World Statistics Day, 2020): Organized by QMH Statistics Club, University of Dhaka
- **Statistical Quiz Contest Champion:** Organized by QMH Statistics Club, University of Dhaka

PRESENTATION EXPERIENCES

Class Presentation | Research Methodology Course

- Presented on the introduction, purpose, and steps in the solution of a research topic, along with the stages of the research process based on course materials

Data Analysis Presentation | Data Analysis Competition (World Statistics Day, 2020)

- Presented “Rapid Increase of C-section Rate in Bangladesh: What Is Behind?”
- Explained statistical methodologies and key findings to faculty and student audience

TECHNICAL COMPETENCIES

1. Statistical Software and Programming

- **R:** Advanced data analysis, statistical modeling with packages such as *tidyverse*, *ggplot2*, *hglm*, *dhglm*, and *caret* (in progress)
- **Python:** Basic data analysis with *pandas*, *numpy*, *statsmodels*, and machine learning with *scikit-learn* (in progress)
- **SPSS, Stata & SAS:** Statistical analysis, survey data processing, longitudinal data analysis

2. Database and Data Management

- **Data Cleaning:** Experience with large-scale survey datasets
- **Microsoft Excel:** Advanced data analysis with pivot tables and introductory VBA for automation
- **MySQL:** Basic database design and data extraction

3. Documentation and Presentation

- **LaTeX:** Scientific documentation, thesis writing, mathematical typesetting
- **R-Markdown & Quarto:** Dynamic report generation
- **Microsoft Office Suite:** Word for scientific reporting, PowerPoint for presentations

STUDENT WORK EXPERIENCE

Vice President | Correlation (Statistics Community of University Hall) 2023 - Present

- Organized statistical workshops and research methodology seminars
- Coordinated with faculty to raise funds for financially needy students and community initiatives

Statistical Programmer | StatClinix 2022 – Present

- Founding member of a clinical data analysis startup
- Performed data analysis for medical professionals using statistical expertise and R programming.

Statistical Instructor | Private Tutoring 2019 - Present

- Taught Probability, Biostatistics, and Advanced Statistics to university students
- Tutoring Statistics A Level students in (Cambridge International Curriculum)

EXTRACURRICULAR ACTIVITIES AND CERTIFICATIONS

- **World Record Participation:** Contributed to *Lakho Konthe Shonar Bangla* event in 2014, setting the record for most people singing a national/regional anthem simultaneously
- **Basketball:** Participant in the Bir Sreshtho Jahangir Smriti Tournament: **Team Runner-up** and **Top Scorer** of the team
- **Football:** Captain of *Regression Roamers* in Statistics Football Carnival Season 2: **Runner-Up**
- **Acting:** Key role in a play at Dhaka Residential Model College's Cultural Festival: **1st Runner-Up**
- **Wall Magazine Submission:** Participated in the Language Festival organized by Notre Dame English Club
- **Chess:** Strategic player with a Chess.com ELO rating of 1517