

# KANIZ FATEMA

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## EXPERIENCE

### Teaching Assistant

#### University of South Carolina

August 2023 – Ongoing

SC, USA

- Served as a lab instructor, guiding students through hands-on experiments.
- Graded assignments, tutored, and mentored students.

### Research Assistant

#### International Centre for Diarrhoeal Disease Research

February 2023 – June 2023

Dhaka, Bangladesh

- Conducted service provider and client exit surveys for COVID-19 vaccination campaign.
- Performed vaccine center observations and lot quality assurance sampling.

## PROJECTS

### EM Algorithm for Imputing Missing Data in Healthcare Records: Joint Modeling of Longitudinal and Survival Data

#### University of South Carolina

September 2024 – November 2024

SC, USA

- Leveraged the **EM algorithm** to address missing data in healthcare records; Compared Newton-Raphson and EM for parameter estimation.
- Handled incomplete observations and complex outcome dependencies.

### Evaluating the Effects of Biochar on Growth and Elemental Accumulation in Multiple Crops

#### University of South Carolina

February 2025 – April 2025

SC, USA

- Investigated biochar impact on carrot, lettuce, soybean, and sweetcorn using **PCA, K-means, and ANOVA**.
- Analyzed crop, soil, and biochar datasets to explore treatment interactions and elemental uptake.

## PUBLICATIONS

Das, H., Jannat, Z., Fatema, K., Momo, J. E. T., Ali, M. W., Alam, N., ... & Wahed, T. (2024). Prevalence of and factors associated with zero-dose and under-immunized children in selected areas of Bangladesh: Findings from Lot Quality Assurance Sampling Survey. *Vaccine*, 42(13), 3247–3256. <https://doi.org/10.1016/j.vaccine.2024.02.048>

- Collected and processed data using **KoboToolbox**, converted them into **STATA** for univariate and bivariate analyses, and utilized **RStudio** to perform dominance analysis revealing a high prevalence of zero-dose and under-immunized (ZD/UI) children in specific geographic pockets of Bangladesh.

Kundu, S., Das, P., Rahman, M. A., Al Banna, M. H., Fatema, K., Islam, M. A., ... & Hossain, A. (2022). Socio-economic inequalities in minimum dietary diversity among Bangladeshi children aged 6–23 months: A decomposition analysis. *Scientific Reports*, 12(1), Article 21712. doi:10.1038/s41598-022-26305-9

- Measured socio-economic inequalities in achieving minimum dietary diversity (MDD) and identified their determinants using Concentration Index (CIX) and concentration curve analyses; applied CIX decomposition to assess contributing factors employing **R** and **SPSS** for data analysis.

## SUMMARY

Graduate student and researcher with hands-on experience in **spatio-temporal modeling**, **statistical modeling**, and **public health research**. Skilled in **R**, **Python**, **SQL**, and **SPSS** for data extraction, preprocessing, visualization, and inferential analysis. Experienced in applying **causal inference**, and **biostatistical techniques** to healthcare and large-scale survey datasets to generate actionable insights.

## EDUCATION

### Ph.D. student in Statistics

#### University of South Carolina

Aug 2023 – Ongoing

SC, USA

Thesis title: Spatio-Temporal Data Analysis.

### M.Sc. in Statistics

#### University of Dhaka

Jan 2021 – Oct 2022

Bangladesh

### B.Sc. in Statistics

#### University of Dhaka

Jan 2016 – Jan 2020

Bangladesh

## INDEPENDENT STUDIES & RESEARCH

### Introduction to Causal Inference

#### Supervised by Dr. Ray Bai

Summer 2024 | University of South Carolina

### MS Thesis: Identification and Relative Importance of Predictors of Antenatal Care Count Data in Bangladesh

Nov 2020 – Dec 2022 | University of Dhaka

- Investigated determinants of antenatal care utilization among Bangladeshi mothers using **Poisson** and **Negative Binomial** regression models.
- Applied **dominance analysis** to identify key predictors and developed an **R** program to compute general dominance statistics.

## SKILLS

C R Python

SQL SPSS STATA SAS TOra

LaTeX Overleaf R markdown

PowerPoint MS Office MS Excel

MS Word Azure