Arnab Samanta

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Areas of Interest	• Econometrics, Development Economics, Urban Studies, Health Economics, Labor Economics, AI, Machine Learning, NLP, Causal Inference, Historical Panel Data
Qualification Highlights	• Graduate in **Statistics** with **Development Economics**, **Econometrics**, **Real Analysis**, **Linear Models**, and **Advanced Time Series** courses. 5+ years of research experience specializing in **RCT design , data analysis, econometrics** and behavioral economics • Proficient in **R**, **Python**, **Stata**, **SAS**, **C++** , **SQL**, **HTML**, **CSS**, **oTree**, and **MATLAB**. • Experienced in **Data Mining**, **Visualization**, **Large Data Analysis Execution**, **Results Interpretation**, and **Report Writing**. Strong skills in **critical thinking**, **communication**, and **collaboration** with diverse backgrounds. • Excellent **organizational skills** with the ability to **manage multiple projects**. Demonstrated **attention to detail** in all aspects of work. Capable of **working independently** and utilizing various **scripting languages** for data manipulation.

Education and Test Scores

Degree	Institution	Year
B.Sc.(Hons) in Statistics	University of Calcutta	2015
M.Sc. in Statistics	University of Calcutta	2017

GRE Score: Quantitative: 170, Verbal: 158

IIT JAM Rank: All India Rank 86

ISI (M.Stat) Rank: All India Top 25

Certificate Courses

Course Name and Institution	Year
Managing Successful Field Research (MSFR), World Bank	2024
Macroeconometric Forcasting/Macroeconomics for Climate Change, IMF	2024

Research and Publications

1. **R-package (DHSr)**: R-package to facilitate developing regression summary statistics datasets from repeated nesetd regressions on large datasets (e.g., DHS) and a novel panel/spatial-panel econometric clustering tool (under CRAN review). [Github Documentation]
2. **Community Effect on Educational Participation in Contemporary India: A District Level Analysis(Working Paper)**: I address my previous limitations by developing district-level mixed-effects regression models to analyze educational participation in India as a compound decision problem. The study examines variations in gender, caste, and religion, explores inter-district spillover, and uses Markov Chain Analysis to assess education's impact on wealth transitions and pre-market discrimination within similarly skilled groups. [Link: Draft Paper]

Other Research:

3. **Multidimensional Poverty Analysis: assessing poverty patterns among different demographic groups of India**: (Published at Journal of Progressive Research in Social Sciences Vol 13) [JPRSS]
4. **Two Case Studies: Statistically Observable Data for LGBTQI+ Individuals in the Indian Subcontinent**
   - Non-parametric analysis on transgender individuals matched with their most similar male/female counterparts from the same households to assess the effect of being transgender on education and health deprivation
   - Comparing scores for GAD-7, PHQ-9, and GHQ-12 mental health indicators between LGBTQI+ students and a control group of heterosexual students of the same age from 28 different Indian cities, during the COVID-19 pandemic
5. **MSc Dissertations:**
   - **Time Series and Regression Analysis of Measles Cases (1928-1972)**: Applied ARIMA and GARCH models for prediction and used VAR and SEM models to capture instantaneous causality.
   - **Randomized Response Technique for Multiple Categories**: Developed a generalized RRT for populations with multiple categories to reduce bias in survey responses.

Academic Work Experience and Collaborations

Institution	Position	Responsibilities
Cambridge/ Kingston University PI: Prof. Jalal Siddiki	**Research Assistant & Co-author**	**1.** We measure **home ownership segregation** within specific **travel-to-work areas**, where the level of diversity in home ownership is represented by an **entropy index**. **2.** Research objective is to assess the influence of home ownership segregation on **inter-generational upward mobility** using **historical and cross-sectional data** from the **European Central Bank**. **3.** I am supervising the **empirical section - writing** and **coding (Stata)**.
Indian Institute of Management, Ahmedabad PI: Prof. Jeevant Rampal and Prof. Shantanu Khanna	**Programmer/Associate**	**Project 1:** Designing a **lab-in-field** experiment to evaluate a **novel matching mechanism** for assigning Indian bureaucrats, comparing it to the current method, and testing empirical versus theoretical findings on equilibrium and strategy-proof properties. Tools used: R, Python, HTML, oTree; Survey Population: UG students/job aspirants. **Project 2:** Assisted to create an ideal dataset for **NGO Swadhaar FinAccess** for social-network/peer-effect analysis among individuals near the poverty line in India.

University of Calcutta Supervisor: Prof. Sugata Sen Roy	**Graduate Research Apprentice**	**1.** Computed **Multidimensional Poverty Index** using **IPUMS DHS data**. **2.** Applied analytical tools to assess government policies, introducing neural networks and unsupervised methods. **3.** Adapted a **Cluster Analysis-based Missing Data imputation method**. **4.** Conducted literature reviews and academic writing for research publications. **5.** Performed literature reviews of public finance literature to assist senior fellows' research.

Industry Work Experience

Organization	Designation and Duration	Job Deliverables
GSK/Cytel	**Senior Data Analyst (May 2024 - Present)**	**1.** Lead **Health Economist/Data Analyst** for a **Clinical Trial** to research efficacy of a new **respiratory disease medication**, optimizing **Carbon Footprint** reduction. **2.** Developing **R packages/Dashboard** for data analysis.
IQVIA Biotech	**Statistical Programmer II (July 2022 – April 2024)**	**1.** Developed and documented programs for **Phase 3 clinical trials**, adhering to **FDA guidelines**. **2.** Interacted with global **stakeholders** across the **EU, USA, and Japan**. **3.** Enhanced process **quality and efficiency** using **AI and ML**. **4.** Trained **group members** and **field-enumerators** on new processes and **Electronic Data Capture** tools. **5.** Managed multiple **projects simultaneously**. Awards: **Excellence in Data Innovation 2023**.
Clinipace Clinical Research	**Senior Statistical Programmer (Sep 2021 – June 2022)**	**1.** Lead **Statistician** for multiple **randomized controlled trials**. **2.** Designed and modified **Randomized Controlled Trial**. **3.** Created complex **statistical tables and graphs**. Utilized **MATLAB** for various analyses.
Novartis Healthcare Pvt. Ltd.	**Statistical Programmer (Apr 2019 – June 2021)**	**1.** Lead **SAS Statistical Programmer** for **clinical trials**. **2.** Designed and modified **clinical trials**. **3.** Collaborated globally on **data quality**. **4. SME** for **AI-based clinical programming**. **5.** Utilized **scripting for automation**. Awards: **Best SME 2020**, **IMPACT Performer 2019**.
Novartis Healthcare Pvt. Ltd.	**Associate Statistical Programmer (Aug 2017 – Apr 2019)**	**1.** Cleaned and analyzed **clinical trial datasets** using **SAS and R**. **2.** Ensured robustness in **P21 checks** and developed outputs. **3.** Organized **departmental activities**. **4.** Implemented knowledge in **clinical data standards**. **5.** Edited and finalized **clinical reports**.

- **Conference Volunteering:** Participated in the "Ninth International Triennial Calcutta Symposium on Probability and Statistics", organized by the Department of Statistics, University of Calcutta.
- **Pre-College Academic Achievement:** Recipient of a State-level Scholarship for Excellence in Secondary Exam (Awarded by the Government of India to the top 1% of students).
- **PhD Thesis Assistance:**
  - Assisted Dr. Kunal Datta in his PhD thesis "Mixed-halide perovskite semiconductors for multijunction photovoltaics" – submitted to TU Eindhoven in The Netherlands.
  - Supported Dr. Saurav Ghosh (University of Calcutta) in his paper "Prevalence of Work-related Musculoskeletal Disorders in Traffic Police Personnel in Maintaining Transportation: A Cross-sectional Study" (submitted to the Journal of Transport and Health).

Additional Courses

- Advanced Linear Algebra, UT Austin
- Stanford University CS229 (Machine Learning), CS230 (Deep Learning), CS231 (Deep Learning for Computer Vision)
- Microeconomic Theory I-IV (graduation level Microeconomics course 14.121, 14.122, 14.123, 14.124) - MIT
- Spatial Data Analysis course by Prof. Michael J. Pyrcz (University of Texas)

Personal Information

Language Proficiency: English, Bengali, Hindi
Base SAS: 9.4 **Other Software Knowledge:** R, Python, MATLAB, ArcGIS, QGIS, STATA, MINITAB

I hereby declare that the above information is correct to the best of my knowledge.
Date: 19-Oct-2024 Place: Kolkata **Arnab Samanta**