Manu Singh Burson

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SUMMARY

Research Scientist specializing in causal inference, Bayesian methods, and experimentation design, with 9+ years of experience building statistical infrastructure for high-stakes decision-making across academia, international development, and industry.

EDUCATION

Columbia University Sep 2019 – 2025
Ph.D., in Political Science (Comparative Politics and Statistical Methodology)

Columbia University May 2016
M.A, in Applied Statistics (Data Science Concentration)

University of Pune Jul 2012
B.E, in Mechanical Engineering (Distinction, Top 2.5% of graduating class)

EXPERIENCE

Research Scientist II, Amazon (Weblab) – Seattle Jun 2025 – Present

- Designed the inference layer for multi-metric analysis in Amazon's experimentation platform, implementing SUR (Seemingly Unrelated Regression) estimation with robust standard errors and delta method variance propagation across thousands of experiments.
- Shipped a Bayesian priors which is calibrated to correct systematic effect size exaggeration. Live in production, delivering a 1.8pp increase in launch rates.

Research Fellow, The UN, Department of Peace Operations – New York Dec 2024 – Jun 2025

- Built an analysis pipeline integrating social media and digital news APIs with open-source LLMs to detect and track disinformation campaigns targeting UN peacekeeping operations.

Adjunct Instructor, New York University – New York Jan 2025 – May 2025

- Taught Statistics for Behavioral and Social Sciences II, covering regression, causal inference, and hypothesis testing for graduate students.

Data Consultant, FiveThirtyEight, ABC News Network – New York Aug 2024 – Dec 2024

- Stress-tested the Bayesian election forecast model through backtesting, sensitivity analysis, and code review, identifying and resolving algorithmic vulnerabilities that improved numerical stability for the 2024 election cycle

Graduate Researcher, Columbia University – New York Sep 2019 -– Present

- Sole-authored an award-winning study of political bot manipulation using Dynamic Difference-in-Differences and NLP on 382 Congressional Twitter accounts, revealing 30% bot-inflated media visibility. Won two APSA awards for methodological innovation
- Estimated a 17% increase in nationalistic goods consumption following right-wing sentiment surges using Regression Discontinuity in Time (RDiT) on 1TB of consumer behavior data.
- Co-developed a Bayesian Multidimensional Scaling model to estimate social group perceptions, revealing previously undetectable racial and religious bias.
- Conducted the largest study to date of women's reservations in Indian local governance, exploiting lottery-assigned quotas as a natural experiment across 5,000+ villages spanning 2005-2023. Found no meaningful effects on public works or infrastructure, challenging influential prior findings.
- Led weekly discussion sections for graduate-level statistics and methods courses spanning M.A. and Ph.D. students.

Research Specialist II, Princeton University – Princeton Jun 2016 -– Apr 2019

- Applied machine learning to create novel socioeconomic indicators for Afghanistan, combining satellite imagery, cellular network data, and topographic features, with results validated through field surveys.
- Created ensemble machine learning models for conflict prediction with 96% accuracy five years out used for informing early warning systems by the World Bank.
- Applied causal inference and time-series methods to quantify the impact of $26M in program investments across

398 districts in Afghanistan

Predictive Analytics Fellow and Consultant, UN OCHA, Office for the Coordination of Humanitarian Affairs– The Hague and New York — Jun 2018 -– Aug 2022

- Selected from 700+ applicants for UN OCHA fellowship; built a predictive model processing real-time data streams to forecast food insecurity and socio-economic impacts of COVID-19 in conflict-affected countries

Data Consultant, German Ministry of Economic Cooperation and Development – New York, NY — Feb 2018 -– Jun 2020

- Evaluated German development aid in Afghanistan using satellite imagery and multiple data sources (surveys, conflict data, aid records) to construct metrics for development impact.

SKILLS

Programming: Python, R (Advanced), Stan, SQL

Research Design: Experimental Methods (A/B Testing, RCTs), Quasi-experimental Design, Survey Methodology

Statistical Analysis: Causal Inference (DiD, RDD, IV, Matching), Bayesian Modeling, Time Series Forecasting

Advanced Analytics: Machine Learning, Natural Language Processing, High-dimensional Analytics, Spatial Statistics

Tools: AWS, SageMaker, PySpark, Git, ArcGIS/ArcPy, Data Visualization

SELECTED PAPERS AND MEDIA (out of total 9)

- **Manu Singh, *Social media bots influence political news coverage***
  - Winner of the 2023 Best Student Paper Award in Information, Technology, and Politics at APSA
  - Early Career Fellowship Award in Elections, Public Opinion, and Voting Behavior at APSA
- Dejan Kovac, Manu Singh, Jacob N. Shapiro, *Public events boost nationalist identity* R&R at the Journal of Comparative Economics
- Donald Green, Manu Singh, Gaurav Sood, *New Evidence on the Effects of Randomly Assigned Reservations for Women Leaders in Indian Local Government*
- Andrew Gelman, Manu Singh, Yotam Margalit, David Halpbern, *Mapping mental identities using Bayesian multilevel modeling*

AWARDS AND GRANTS

United Nations Secretary-General's Award	2025
Electoral Integrity Project: Junior Fellow and grant awardee	2023-2024
Society for Political Methodology Travel Award	2024
Experimental Laboratory for Social Sciences: Dissertation Grant, Columbia University	2020; 2023
SPARK Award Political Communication Section, APSA	2023
Dissertation Development Grant, Columbia University	2022; 2023
Dean's Fellowship, Columbia University	2019

SELECTED INVITED PRESENTATIONS AND CONFERENCES

NYAAPOR & New York Open Statistical Programming Meetup	Oct 2024
Northeast Workshop in Empirical Political Science (NEWEPS 23)	Oct 2024
Meta's Computational Social Science Seminar	Oct 2024
American Political Science Association	Sep 2023; Sep 2024
Midwest Political Science Association	Apr 2022; Apr 2024
Society for Political Methodology	Jul 2024
ACM Conference on Economics and Computation, Yale University	Jun 2024
Empirical Studies of Conflict, Princeton University	Apr 2020, May 2021