

Maurice Wanyonyi

Statistician / Researcher / Data Scientist / Lecturer

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Profile

Versatile and highly accomplished Statistician with over 5 years of progressive experience in data science, statistical modeling, and applied machine learning. Skilled in translating complex data into actionable insights that influence policy, inform strategy, and drive innovation. Expert in R, Python, STATA, MATLAB, Power BI, Tableau, and Shiny. Adept at research, capacity building, and evidence-based consulting, with a passion for mentorship and sustainable development through data-driven solutions.

Research Interests

Machine learning applications in healthcare and finance; statistical modeling for policy; survival analysis; ensemble learning; explainable AI; time series analysis; stochastic modeling; Bayesian inference.

Education

- 2023–Present **Ph.D. in Statistics**, *University of Embu*, Kenya
- 2019–2021 **M.Sc. in Statistics**, *University of Embu*, Kenya
- 2015–2019 **B.Sc. in Statistics**, *University of Embu*, Kenya
- 2011–2014 **KCSE**, *Gidea Mixed Secondary School*, Kenya

Experience

- 2024–Present **Teaching Assistant**, *University of Embu*
 - Develop and upload learning modules on Moodle.
 - Teach undergraduate courses, supervise students, and grade examinations.
 - Conduct research, write grant proposals, and contribute to curriculum development.
 - Participate in departmental seminars and research collaborations.
- 2021–2024 **Part-Time Lecturer**, *University of Embu*
 - Designed lesson plans and delivered lectures, tutorials, and demonstrations.
 - Graded coursework, supervised projects, and evaluated student progress.
 - Fostered interactive learning environments and integrated modern data tools.
- 2021 **Data Intern**, *Kenya National Bureau of Statistics (KNBS)*
 - Cleaned datasets, supported policy planning through statistical analysis.
 - Built survey metadata and tested survey instruments for data quality.

Curriculum Review Experience

- Role** Conducted full curriculum reviews for: PhD in Applied Mathematics; PhD in Statistics; MSc in Statistics; BSc in Statistics; and BSc in Mathematics and Computer Science.
- Impact** Aligned programs with international standards, accreditation frameworks, and industry trends; incorporated data-driven research and blended learning modalities.

Workshops Attended

- 2025 Africa Universities' Day Celebration 2025, organized by the Association of African Universities (AAU) under the theme "The Future of Learning in Africa: Technology, Innovation, Skills, and Inclusive Growth." Held in hybrid format (physical at the University of Professional Studies, Accra, Ghana, and online), 10–14 November 2025.
- 2025 Kenya Open Education Knowledge Exchange (KOEKE) In-Person Workshop, held in collaboration with the Global OER Graduate Network (GO-GN) and the Kenya Libraries and Information Services Consortium (KLISC), held at Lemaiyan Suites, Naivasha, Kenya, 29 October–1st November 2025.
- 2025 Integration of Artificial Intelligence (AI) in Teaching and Learning, University of Embu

- 2025 Grant Writing for Early Career Researchers and RSTI/IP Policy Sensitization, University of Embu
- 2025 Publishing Workshop for Postgraduate Students, University of Embu
- 2021 Data Analysis using R/RStudio, University of Embu
- 2020 Postgraduate E-Resources Workshop, University of Embu
- 2020 Publication Process Workshop, Elsevier (Virtual Workshop)
- 2019 Proposal and Thesis Writing Workshop, University of Embu

Skills and Expertise

Data Analysis	Expert in R, Python, MATLAB, STATA, SPSS, and LaTeX.
Machine Learning & AI	Predictive modeling, ensemble methods, and explainable AI.
Visualization	Data visualization using Matplotlib, Seaborn, Plotly, ggplot2 & Shiny for interactive and publication-ready graphics.
Research Design	Sampling, impact evaluations, and quantitative/qualitative analysis.
Programming	Automation, data pipelines, and reproducible analytics.
Leadership	Project management, stakeholder engagement, and team mentorship.
Compliance	Knowledge of General Data Protection Regulation (GDPR) and Kenya Data Protection Act.

Publications

- **Wanyonyi, M.**, Akelo, J. G., Njenga, V. N., Keraro, F. O., & Kioko, T. M. (2025). *Integrating Bayesian Inference and Supervised Learning for Predictive Modeling of Coffee Rust Incidence Among Kenyan Smallholder Farmers*. PLOS Climate (Under consideration)
- **Wanyonyi, M.**, Gogo, J. A., Njenga, V. N., Kiluyi, J. W., & Wafula, I. (2025). *Optimization of Nutritional Composition in a Five-Component Porridge Blend Using a Quadratic Mixture Design*. General Letters in Mathematics (Under consideration).
- **Wanyonyi, M.**, Gogo, J. A., Njenga, V. N., Kimutai, K. A., Malenge, M., Wafula, J. K., Keraro, O. F., & Mungania, J. M. (2025). *Explainable AI for Real-Time Fraud Detection in Mobile Money Transactions in Kenya*. General Letters in Mathematics (Accepted).
- **Wanyonyi, M.**, Morris, Z. N., Musyoka, F. M., Makaa, D., & Kitavi, D. M. (2025). *Balancing Interpretability and Accuracy: A Comparative Evaluation of Logistic Regression and Machine Learning Approaches for Coronary Heart Disease Risk Prediction*. IAENG International Journal of Computer Science (Accepted).
- **Wanyonyi, M.**, Kioko, T. M., Wafula, J. K., Keraro, O. F., Gogo, J. A., & Maiyo, A. K. (2025). *Modelling and Forecasting the Impact of Exchange Rates, Public Debt, and Tourism Inflows on Kenya's Economic Growth Using Machine Learning*. General Letters in Mathematics (Accepted).
- **Wanyonyi, M.**, Morris, Z. N., Musyoka, F. M., & Kitavi, D. M. (2025). *Enhanced Machine Learning and Hybrid Ensemble Approaches for Coronary Heart Disease Prediction*. PLOS ONE (Under Review).
- **Wanyonyi, M.**, Morris, Z. N., Musyoka, F. M., & Kitavi, D. M. (2025). *Predicting Coronary Heart Disease Using Classical Statistical Models: Logistic Regression and Cox Proportional Hazards*. IAENG International Journal of Applied Mathematics (Accepted).
- Ouma, F. O., Atitwa, E. B., Morris, Z. N., & **Wanyonyi, M.** (2025). *Comparative Analysis of Spline-Based and Standard Frailty Models*. IAENG International Journal of Applied Mathematics, **55**(11), 3630–3649.
- Kioko, T. M., & **Wanyonyi, M.** (2025). *Impact of Public Debt on Private Investment in Kenya*. Asian Journal of Probability and Statistics, **27**(4), 122–131. DOI: 10.9734/ajpas/2025/v27i4744.
- **Wanyonyi, M.**, Kiluyi, J. W., & Okango, A. A. (2025). *Optimization of a Functional Beverage Formulation*. Asian Journal of Probability and Statistics, **27**(1), 1–16. DOI: 10.9734/ajpas/2025/v27i1699.
- Keraro, O. F., Morris, Z. N., Kitavi, D. M. & **Wanyonyi, M.** (2024). *Forecasting Kenya's Public Debt Using Time Series Analysis*. International Journal of Advanced and Applied Sciences, **11**(8), 119–126. DOI: 10.21833/ijaas.2024.08.013.
- **Wanyonyi, M.**, & Mbithi, J. (2024). *Tourism and Economic Growth in Kenya*. Asian Journal of Probability and Statistics, **26**(8), 107–117. DOI: 10.9734/ajpas/2024/v26i8640.
- **Wanyonyi, M.** (2023). *Modeling the Manufacturing Sector's Contribution to Kenya's GDP*. Media Statistika, **15**(2),

117–128. DOI: 10.14710/medstat.15.2.117-128.

- Mugambi, J. M., Atitwa, E. B., Morris, Z. N., & **Wanyonyi, M.** (2022). *Probabilistic Analysis of COVID-19 Transmission in Kenya*. International Journal of Advanced and Applied Sciences, 10(3), 108–113. DOI: 10.21833/ijaas.2023.03.014.
- Gechore, D. O., Atitwa, E. B., Kimani, P., & **Wanyonyi, M.** (2022). *Predicting Tourist Inflows to Kenya Using SARIMA*. African Journal of Hospitality, Tourism and Leisure, 11(6), 1913–1923.
- Kinyili, M., & **Wanyonyi, M.** (2022). *Forecasting COVID-19 Deaths in South Africa*. General Letters in Mathematics, 11(2), 26–35.
- **Wanyonyi, M.**, Kitavi, D. M., Mugo, D. M., & Atitwa, E. B. (2021). *COVID-19 Prediction in Kenya Using the ARIMA Model*. International Journal of Electrical Engineering and Technology, 12(8), 105–114.

Conference Presentations

- **Wanyonyi, M.** (2025). *Enhanced Machine Learning and Hybrid Ensemble Approaches for Coronary Heart Disease Prediction*. Paper accepted for presentation at the *9th International Conference on Science, Technology, Innovation and Entrepreneurship (STI&E 2025)*, Dedan Kimathi University of Technology (DeKUT), Nyeri, Kenya, 5th to 7th November 2025. (Physical Presentation)
- Kioko, T. M., **Wanyonyi, M.** (2025). *Impact of Public Debt on Private Investment in Kenya*. Paper was presented at the *8th International Multidisciplinary Research Conference*, held at Gretsia University, Thika, Kenya, on 18th of August 2025 (Virtual Presentation).

Awards

2019–2021 Full Studentship, Master of Science (MSc) in Statistics, University of Embu

Referees

Dr. Dominic M. Kitavi	Senior Lecturer, University of Embu	<i>kitavi.dominic@embuni.ac.ke, +254 710 239449</i>
Dr. Zakayo N. Morris	Lecturer, University of Embu	<i>ndiku.morris@embuni.ac.ke, +254 726 670862</i>
Dr. Faith M. Musyoka	Senior Lecturer, University of Embu	<i>mueni.faith@embuni.ac.ke, +254 737 766052</i>