KASSIM TAWIAH

Curriculum Vitae

Current address: Department of Mathematics and Statistics,
University of Energy and Natural Resources, P. O. Box 214, Sunyani, Ghana.

Mobile: +233 20 9180591

Email: kassim.tawiah@uenr.edu.gh
Languages spoken/Written: English and Fante
ORCID **:** https://orcid.org/0000-0003-0195-225X
Scopus : https://scopus.com/authid/detail.uri?authorId=57216203505
Web of Science: https://www.webofscience.com/wos/author/record/AAX-1193-2021
Researchgate: https://www.researchgate.net/profile/Kassim-Tawiah
Google scholar: https://scholar.google.com/citations?user=zpjYtQ8AAAAJ&hl=en&oi=ao

Teaching Philosophy: I endeavour to work with other faculty members to create a serene classroom environment, engage and collaborate with students, and adequately and effectively prepare them to master current concepts and theories in mathematics and statistics and their applications in the real world so that they can have enormous knowledge and skills to impact society.

Research Philosophy: I wish to engage other faculty members and researchers worldwide to handle data efficiently and develop new ideas and add up to existing ones in the areas of biostatistics, mixed models, overdispersed models, applied statistics, mathematical statistics, machine learning, and time series and impact society with it.

Key skill
Microsoft Excel, Microsoft Word, Microsoft PowerPoint, Programming in R

Education and Training:
Kwame Nkrumah University of Science and Technology, Kumasi
Doctor of Philosophy in Mathematical Statistics , November 1, 2025.

University of Ghana, Accra
Master of Philosophy Statistics, July 2015

University of Education, Winneba
Diploma in Education, August 2015

University of Cape Coast, Cape Coast
Bachelor of Science Mathematics and Statistics, May 2009

Swedru Senior High School, Agona Swedru
S.S.S.C.E General Science, August 2002

Career History

Lecturer (Mathematics and Statistics); 2020 to date

Assistant Lecturer (Mathematics and Statistics); 2018 to 2020
Department of Mathematics and Statistics, University of Energy and Natural Resources, Sunyani, Ghana

Part-time Lecturer (Mathematics and Statistics); 2016 to 2019

College of Distance Education, University of Cape Coast, Cape Coast, Ghana

Lecturer (Mathematics and Statistics); 2017 to 2019

Sandwich Programme, College of Distance Education, University of Cape Coast, Cape Coast, Ghana

Mathematics Tutor; 2010 to 2018

Makessim Senior High Technical School, Ghana Education Service, Mankessim, Ghana.

Publications

1. Iddrisu , A., Bukari, F. K., Opoku-Ameyaw, K., Afriyie, G. O., & **Tawiah, K.** (2020). Factors that determine the likelihood of giving birth to the first child within 10 months after marriage. *Journal of Pregnancy*, vol. 2020, Article ID 4675907, 12 pages, 2020. https://doi.org/10.1155/2020/4675907
2. Iddrisu, A., **Tawiah, K.**, Bukari, F. K., & Kumi, W. (2020). Frequentist and Bayesian Regression Approaches for Determining Risk Factors of Child Mortality in Ghana. *BioMed Research International*, vol. 2020, Article ID 8168479, 10 pages, 2020. https://doi.org/10.1155/2020/8168479
3. **Tawiah, K.**, Iddi, S., & Lotsi, A. (2020). On zero-inflated hierarchical Poisson models with application to maternal mortality data. *International Journal of Mathematics and Mathematical Sciences*,vol. 2020, Article ID 1407320, 8 pages, 2020. https://doi.org/10.1155/2020/1407320
4. **Tawiah, K.,** Iddrisu, W. A., & Asosega, K. A. (2021). Zero-inflated time series modeling of COVID-19 death in Ghana. *Journal of Environmental and Public health*, vol. 2021, Article ID 5543977, 9 pages, https://doi.org/10.1155/2021/5543977
5. Dwamena, H.A, **Tawiah, K**., & Serwaa, A.K.A. (2022). Effect of rainfall, temperature, and relative humidity on the yield of cassava, yam, and maize in the Ashanti Region of Ghana. *International Journal of Agronomy*, vol. 2022, Article ID 9077383, , https://doi.org/10.1155/2022/9077383
6. Asosega, K.A., Iddrisu, W.A., **Tawiah, K.**, Opoku, A.A., & Okyere, E. (2022). Comparing Bayesian and maximum likelihood methods in structural equation modelling of university student satisfaction: An empirical analysis, *Education Research*

International, vol. 2022, article ID 3665669 , https://doi.org/10.1155/2022/3665669

7. Daniyal, M., **Tawiah, K.**, Muhammadullah, S., & Opoku-Ameyaw, K. (2022). Comparison of conventional modelling techniques with the neural network autoregressive model (NNAR): Application to COVID-19 data. *Journal of Healthcare Engineering*, vol. 2022, article ID 4802743 , https://doi.org/10.1155/2022/4802743
8. Shehzad, F., Rajab, M., Daniyal, M., Ahmed, R. & **Tawiah, T**. (2022). Optimal Circular Balanced Repeated Measurements Designs for v=p through the Method of Cyclic Shift (MCS) Rule II. *Mathematical Problems in Engineering*, vol. 2022, Article ID 2875183. https://doi.org/10.1155/2022/2875183
9. Khan, A., Qureshi, M., Daniyal, M., & **Tawiah, K.** (2022). Impact of Sociocultural Factors on Contraceptive Use: A Case Study of Pakistan. *BioMed Research International*, vol. *2022*. https://doi.org/10.1155/2022/2939166
10. Khan, M. D., Daniyal, M., Hassan, A., Saeed, M. A., & **Tawiah, K.** (2022). Empirical Analysis With Legislative Solutions of Workplace Cyberbullying: A Case Study of Female Nurses in Pakistan. *International Journal of Cyber Behavior, Psychology and Learning (IJCBPL)*, *12*(1), 1-11. http://doi.org/10.4018/IJCBPL.308303
11. Qureshi, M., Daniyal, M., & **Tawiah, K.** (2022). Comparative Evaluation of the Multilayer Perceptron Approach with Conventional ARIMA in Modelling and Prediction of COVID-19 Daily Death Cases. *Journal of Healthcare Engineering*, vol. 2022, Article ID 4864920. https://doi.org/10.1155/2022/4864920
12. Khan, M. D., Daniyal, M., Abid, K., **Tawiah, K**., Tebha, S. S., & Essar, M. Y. (2023). Analysis of adolescents' perception and awareness level for Sexual and Reproductive Health Rights in Pakistan. *Health Science Reports*, *6*(1), e982. doi:10.1002/hsr2.982
13. Afriyie, J.K., **Tawiah, K**., Pels, W.A., Addai-Henne, S., Dwamena, H.A., Odame Owiredu, E., Amening Ayeh, S.A., & Eshun. J. (2023). A supervised machine learning algorithm for detecting and predicting fraud in credit card transactions. *Decision Analytics Journal*, 6, 100163, https://doi.org/10.1016/j.dajour.2023.100163.
14. Khan, A., Qureshi, M., Daniyal, M., & **Tawiah, K**. (2023). A Novel Study on Machine Learning Algorithm-Based Cardiovascular Disease Prediction. *Health & Social Care in the Community*, vol. 2023, Article ID 1406060. https://doi.org/10.1155/2023/1406060
15. Danish, F., Jan, R., Daniyal, M., & **Tawiah, K.** (2023). Optimum Stratification Using Dynamic Programming with a Mixture of Ratio and Product Estimators under Super Population Model. *Mathematical Problems in Engineering*, vol. 2023, Article ID 3149912. https://doi.org/10.1155/2023/3149912
16. **Tawiah, K.**, Asampana Asosega, K., Ansah, R. K., Appiah, S. T., Otoo, D., Aponye, I. A., ... & Addai, I. M. (2023). Confirmed Malaria Cases in Children under Five Years: The Influence of Suspected Cases, Tested Cases, and Climatic Conditions. *Health & Social Care in the Community*, vol *2023*, Article ID 8469372. https://doi.org/10.1155/2023/8469372
17. Daniyal, M., **Tawiah, K**., Qureshi, M., Haseeb, M., Asosega, K. A., Kamal, M., & Rehman, M. U. (2023). An autoregressive distributed lag approach for estimating the nexus between CO2 emissions and economic determinants in Pakistan. *Plos one*, *18*(5), e0285854. https://doi.org/10.1063/5.0225968

18. **Tawiah, K**., Daniyal, M., & Qureshi, M. (2023). Pakistan CO2 Emission Modelling and Forecasting: A Linear and Nonlinear Time Series Approach. *Journal of Environmental and Public Health*, *2023*. Article ID 5903362. https://doi.org/10.1155/2023/5903362
19. Ansah, R. K., Boadi, R. K., Obeng-Denteh, W., & **Tawiah, K**. (2023). Inverse problem for the quartic mean-field Ising model. *The European Physical Journal Plus*, *138*(7), 626. https://doi.org/10.1140/epjp/s13360-023-04251-3
20. Iftikhar, H., Daniyal, M., Qureshi, M., **Tawiah**, **K.**, Ansah, R. K., & Afriyie, J. K. (2023). A hybrid forecasting technique for infection and death from the mpox virus. *Digital Health*, *9*, 20552076231204748. https://doi.org/10.1177/20552076231204748
21. Qureshi, M., Khan, A., Daniyal, M., & **Tawiah, K.**, & Mehmood, Z. (2023). A Comparative Analysis of Traditional SARIMA and Machine Learning Models for CPI Data Modelling in Pakistan. *Applied Computational Intelligence and Soft Computing*, vol. 2023, Article ID 3236617. https://doi.org/10.1155/2023/3236617
22. **Tawiah, K.**, Asosega, K. A., Iddi, S., Opoku, A. A., Abdul, I. W., Ansah, R. K., ... & Adebanji, A. O. (2024). Assessment of Neonatal Mortality and Associated Hospital-Related Factors in Healthcare Facilities Within Sunyani and Sunyani West Municipal Assemblies in Bono Region, Ghana. *Health Services Insights*, *17*, 11786329241258836.
23. Ansah, R. K., Tackie, S., Twum, R. A., **Tawiah, K**., Boadi, R. K., Addo, D. A., ... & Zigli, D. D. (2024). The relationship between anaemia and the use of treated bed nets among pregnant and non-pregnant women in Ghana. *Plos one*, *19*(5), e0300431. https://doi.org/10.1371/journal.pone.0300431
24. Ansah, R. K., Boadi, R. K., Obeng-Denteh, W., **Tawiah, K.**, & Appiah, S. T. (2024). Exploring mean field spin models with multiple populations: A theoretical framework. *AIP Advances*, *14*(5). https://doi.org/10.1063/5.0194693
25. Ansah, R. K., Ablordeppey, P., Boadi, R. K., & **Tawiah, K**. (2024). Numerical simulations of AI–human interaction using quintic mean-field Ising model. *AIP Advances*, *14*(8). https://doi.org/10.1063/5.0225968
26. Ansah, R. K., Opoku, A. A., **Tawiah, K.**, Boadi, R. K., Gana, B. N. A., Tackie, S., ... & Ampofo Mills, S. M. (2024). Mathematical modelling of decision making: the case of motor insurance choices. *Journal of Mathematics in Industry*, *14*(1), 12.
27. Ansah, R. K., **Tawiah, K.**, Asosega, K. A., Kwofie, C., Kumi, W., & Yalley, E. (2024). The Effect of Sociodemographic Factors on Female Educational Attainment: An Application of the Multipopulation Curie–Weiss Model. *Journal of Applied Mathematics*, *2024*(1), 9773407.
28. Ansah, R. K., Boadi, R. K., Obeng-Denteh, W., Asosega, K. A., & **Tawiah, K.** (2025). Exploring cooking fuel choices among Ghanaian women of reproductive age: A socio-economic analysis from a statistical mechanics perspective. *PloS one*, *20*(1), e0317004.
29. Asosega, K. A., Adebanji, A. O., Aidoo, E. N., Owusu-Dabo, E., & **Tawiah, K**. (2025). Malaria prevalence dynamics and risk covariates among children under 5 in Ghana: insights from a Bayesian multilevel approach. *BMJ open*, *15*(3), e088910.

Conference Paper Presentation

1. **Tawiah, K**., Iddi, S., and Lotsi, A. (2020). Zero-inflated models application to maternal mortality data. Third International Conference on Mathematics and Statistics, 2020 (AUS-ICMS'20), The American University of Sharjah, UAE. February 6-9, 2020.

2. **Tawiah, K.**, Iddi, S., and Lotsi, A. (2020). On zero-inflated hierarchical Poisson models with application to maternal mortality data. World Statistics Day and International Year of women in Statistics and Data Science Symposium, KNUST, Ghana. October 20, 2020.

3. **Tawiah, K.**, Ansah, R.K., Asosega, K.A., Appiah, S.T., and Tackie, S. (2024). Examining the underscoring factors affecting access to good toilet facilities among Ghanaian women. 2024 International Biometric Conference, Atlanta, USA.

4. **Tawiah, K.**, Ahafianyo, G., Asosega, K.A., Ansah, R.K., Bukari, F.K. (2024). Ghana's annual temperature forecasting: a machine learning approach. 2024 International Biometric Conference, Atlanta, USA.

Conference Participation

1. International conference on Science, Technology, and Health Innovation for Sustainable Development, University of Energy and Natural Resources, Sunyani, Ghana. August 23-25, 2023.

Workshops/Seminars Attended

1. Intellectual Property (IP) Workshop, UENR. September 20, 2019
2. NVIDIA Deep Learning Institute: Fundamentals of Accelerated Computing with CUDA C/C++, UENR. October 29, 2019
3. UENR-ACU Professional Development Interactive Seminar, Feb. 21, 2019
4. Good Assessment Practices in Higher Education: Improving Teaching and Learning, UENR. January 16-17, 2019
5. Applications of Numerical Methods in Statistics in R, KNUST. October, 21-22, 2020
6. African Mathematical School in Mathematical Methods in Analysis and Probability, AIMS Ghana, August 16-27, 2021.
7. How to write a successful grant proposal by the National Institute of Statistical Sciences, USA, November 4, 2021
8. IHoR Research Leadership and Grant Writing Workshop, the MRC Unit The Gambia at LSHTM, Fajara, June 30-3 July, 2025.

Journal Peer Review for Publications

1. Health Science Reports, Wiley (10 review activities)
2. PLoS ONE (1 review activities)
3. Environmental Science and Pollution Research, Springer (3 review activities)
4. Discover Sustainability, Springer link (2 review activities)
5. BMC Women's Health, Springer Nature (3 review activities)
6. Scientific Programming, Hindawi (1 review activity)
7. IAES International Journal of Artificial Intelligence (1 review activity)
8. International Journal of Medical Informatics (1 review activity)
9. Asian Journal of Probability and Statistics (4 review activities)
10. Scientific Reports (3 review activity)

Grants/Funds Won

University of Ghana-Carnegie Corporation "Next Generation of Academics in Africa Project".

Erasmus + Staff exchange scholar: Cantemir University, Targu Maures, Romania

Winter 2026 African Presidential Scholar, Department of Statistics, University of Michigan, Ann Arbor, U.S.A.

Society Membership

Royal Statistical Society, UK.
Fellow; 2020-2023; membership number: 203410
Member of the International Development Section Committee.

International Biometric Society-Ghana Chapter
Member; 2021 to date; membership number: 1406437

American Statistical Association, USA
Member; 2021-2023: membership number: 245525

Service to Community

1. Advocate for all-inclusive education, eradication of teenage pregnancy, and a public health awareness expert in rural areas in Ghana.

2. As a student academic counsellor, I help shape students for a career in statistics as well as cope with life in the university.
3. Team Leader/ Supervisor: Lot Quality Assurance Survey and Independent Monitoring of first round of MOPV2 Vaccination exercise in Tano South District, Ahafo Region, Ghana by the Ghana Health Service and World Health Organization
4. Examiner for Elective/Further Mathematics, West African Examinations' Council, Ghana.

Research Interest:

Biostatistics, mixed models, overdispersed models, applied statistics, mathematical statistics modelling, machine learning, time series

Referees

Prof. Samuel Iddi
Department of Statistics and Actuarial Science
University of Ghana, Accra, Ghana.
Email: siddi@ug.edu.gh
Mobile : +233 267603243

Prof. Nana Kena Frempong
Department of Statistics and Actuarial Science
Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
Email: nkf.cos@gmail.com
Mobile : +23320999488

Prof. Alex Akwasi Opoku
Department of Mathematics and Statistics
University of Energy and Natural Resources, Sunyani, Ghana
Email: alex.opoku@uenr.edu.gh
Mobile : +233505038580