Simon Kojo Appiah, PhD

Department of Statistics and Actuarial Science

College of Science, Kwame Nkrumah University of Science and Technology (KNUST)

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Academic Degrees/Certificates:

- PhD Applied Statistics, 2014
- MSc Mathematics, 1995
- BSc Mathematics (2nd Upper), 1991
- GCE Advanced/Ordinary Level, 1986/1984

Institutions Attended:

- Edith Cowan University (ECU), Perth, Western Australia, 2009-2014.
- Kwame Nkrumah University of Science and Technology (KNUST), Ghana, 1988-1995
- Tema Secondary School, Ghana, 1984-1986
- Obuasi Secondary Technical School, Ghana, 1979-1984

Teaching Experience:

- Associate Professor, Department of Statistics and Actuarial Science, Kwame Nkrumah University of Science and Technology, Ghana, 2021 - date
- Senior Lecturer, Department of Statistics and Actuarial Science, Kwame Nkrumah University of Science and Technology, Ghana, 2019-2021
- Senior Lecturer/Lecturer, Department of Mathematics, Kwame Nkrumah University of Science and Technology, Ghana, 1998-2019.
- Adjunct Senior Lecturer, Department of Economics and Statistics, St. Margaret College, Ghana, 2016-2018.
- Teaching Assistant/Demonstrator in Mathematics/Statistics, School of Engineering, Edith Cowan University, Western Australia, 2010-2013.
- Lecturer/Adjunct Lecturer, Department of Statistics and Computer Studies, Kumasi Technical University, Ghana, 1996-2008.
- Teaching Assistant/Demonstrator, Department of Mathematics, Kwame Nkrumah University of Science and Technology, Ghana, 1992-1994.
- Mathematics Tutor, Atwimaman Secondary School, Ghana, 1992-1996.

Course Units Taught:

Undergraduate Level:

 Statistical Methods/Probability and Statistics; Regression Analysis; Non-Parametric Statistics; Sample Survey Theory; Multivariate Data Analysis; Statistical Quality Control; Operations Research; Survival Analysis; Quantitative Methods/Research Methodology; Numerical Methods; Calculus/Algebra

Postgraduate Level:

 Statistical Theory/Mathematical Methods; Statistical Models; Design of Investigations/Advanced Sample Survey Methods; Spatial Statistics: Non-Parametric Methods

Academic Positions:

- Non-Professorial Representative of College of Science on Academic Board, KNUST, Ghana, August 2021- September 2022
- Chairman, Postgraduate Admissions Committee, Department of Statistics and Actuarial Science, Kwame Nkrumah University of Science and Technology, Ghana, 2020 – date
- Patron, Ghana Association of Statistics Students (GASS), Kwame Nkrumah University of Science and Technology, Ghana, 2022 - date

Curriculum Vitae

- Examinations Officer, Department of Mathematics/Statistics and Actuarial Science, Kwame Nkrumah University of Science and Technology, Ghana, August 2017- January 2022.
- Visiting Fellow/Researcher, School of Engineering, Edith Cowan University, Perth, Western Australia, 2015.
- SOAR Ambassador (peer-to-peer support for HDR students), Graduate Research School, Edith Cowan University, Western Australia, 2010-2011.
- Head, Department Mathematics, Kwame Nkrumah University of Science and Technology, Ghana, 2005.
- Examinations Officer, Department of Mathematics, Kwame Nkrumah University of Science and Technology, Ghana, 1999-2002.
- Head, Department of Statistics and Computer Studies, Kumasi Technical University, Ghana, 1997-1998.
- Examinations Officer, Department of Statistics and Computer Studies, Kumasi Technical University, Ghana, 1996-1997.

Research Activities:

Theses Submitted for Award of Degrees:

- **PhD:** Space-time statistical analysis of malaria morbidity incidence cases in Ghana: A geostatistical modelling approach, 2014. http://ro.ecu.edu.au/theses/1398.
- MSc: An optimal investment policy for some selected projects at the Ghana Investments Centre, 1995.

Publications (Refereed Journal Articles/Conference):

- Basintale D. Iddrisu, Kwadzokpui Precious Kwablah, Emmanuel B. Agyemang Prempeh, Johnson S. Azorlibu, Solomon D. Akrong, Cynthia Sena Kpeglo, David Adedia, Atinuke O. Adebanji, Simon Kojo Appiah (2022). Statistical analysis of misfiling causes in Higher Education: A test construction, Asian Journal of Education and Social Studies, 33(3): 33-44. https://doi.org/10.9734/AJESS/2022/v33i330793
- Yarhands Dissou Arthur, **Simon Kojo Appiah**, Kwadwo Amo-Asante, Bright Asare (2022). Modeling student's interest in mathematics: Role of history of mathematics, peer-assisted learning, and student's perception, EURASIA Journal of Mathematics, Science and Technology Education, 2022, 18(10): em2168. https://doi.org/10.29333/ejmste/12458
- Simon Kojo Appiah, Kingsley Wirekoh, Eric Nimako Aidoo, Samuel Dua Oduro, Yarhands Dissou Arthur (2022). A model-based clustering of expectation-maximization and K-means algorithms in crime hotspot analysis, *Research in Mathematics*, 9(1): 1-12. https://doi.org/10.1080/27684830.2022.2073662
- David Adedia, Atinuke O. Adebanji, Simon Kojo Appiah (2022). Performance evaluation of discrepancy function estimators in the presence of outliers, *International Journal of Statistics and Economics*, 23(1): 11-33: http://www.ceser.in/ceserp/index.php/bse/issue/view/714
- Eric N. Aidoo, Simon K. Appiah, Gaston E. Awashie, Alexander Boateng, Godfred Darko (2021).
 Geographically weighted principal component analysis for characterizing the spatial heterogeneity and connectivity of soil heavy metals in Kumasi, Ghana, *Heliyon*, 7(9): e08039.
 https://doi.org/10.1016/j.heliyon.2021.e08039
- Alexander Boateng, Simon Kojo Appiah, and Daniel Maposa (2021). An integer-valued modelling and forecast of COVID-19 cases in Ghana: A review and comparative study, *Transylvanian Review*, 29(3): 15712-15721. http://www.transylvanianreviewjournal.com/ojsfolder/index.php/TR/article/view/668
- Eric N. Aidoo, Richard T. Ampofo, Gaston E. Awashie, **Simon K. Appiah** & Atinuke O. Adebanji (2021). Modelling COVID-19 incidence in the African sub-region using smooth transition autoregressive model, *Modeling Earth Systems and Environment*. https://doi.org/10.1007/s40808-021-01136-1
- Eric N. Aidoo, Atinuke O. Adebanji, Gaston E. Awashie & Simon K. Appiah (2021). The effects of weather on the spread of COVID-19: Evidence from Ghana, *Bulletin of the National Research Centre*, 45:20. https://doi.org/10.1186/s42269-021-00484-3
- Sampson Twumasi-Ankrah, Michael Owusu, **Simon Kojo Appiah**, Wilhemina Adoma Pels, Doris Arthur (2021). Forecasting COVID-19 confirmed cases in Ghana: A model selection approach, *Traektoriâ Nauki = Path of Science*, 7(2): 4001-4010. https://dx.doi.org/10.22178/pos.67-2
- David Adedia, Atinuke O. Adebanji, Simon K. Appiah (2021). Calculating non-centrality parameter for power analysis under structural equation modelling: An alternative, *Pakistan Journal of Statistics and Operation Research*, 17(1): 273-289. http://dx.doi.org/10.18187/pjsor.v17i1.3148
- Sampson Twumasi-Ankrah, Simon Kojo Appiah, Doris Arthur, Wilhelmina Adoma Pels, Jonathan Kwaku Afriyie, Danielson Nartey (2021). Comparison of outlier detection techniques in non-stationary time series data, Global Journal of Pure and Applied Sciences, 27(1): 55-60. https://dx.doi.org/10.4314/gjpas.v27i1.7

- David Adedia, Atinuke O. Adebanji, Simon K. Appiah (2020). Comparative analysis of some structural
 equation model estimation methods with application to coronary heart disease risk, *Journal of Probability*and Statistics, 2020, Article ID: 4181426. https://doi.org/10.1155/2020/418142
- Aidoo, E.N., **Appiah, S.K.** & Boateng, A. (2020): Brief research report: A Monte Carlo simulation study of small sample bias in ordered logit model under multicollinearity, *The Journal of Experimental Education*, 88 (1):1-9. https://doi.org/10.1080/00220973.2019.1708233
- David Adedia, Livingstone Asem, Simon K. Appiah, Salifu Nanga, Yeboah Boateng, Kwabena O. Duedu (2020). Assessment of hypertension-induced deaths in Ghana: A nation-wide study from 2012 to 2016. *Journal of Data Analysis and Information Processing*, 8(3): 158-170. https://doi.org/10.4236/jdaip.2020.83009
- Aidoo, E.N., Ackaah, W., Appiah, S.K., Appiah, E.K., Addae, J. & Alhassan, H. (2019). A bivariate probit analysis of child passenger's sitting behaviour and restraint use in motor vehicle, *Accident Analysis and Prevention*, 129:225-229. https://doi.org/10.1016/j.aap.2019.05.022
- Asamoah Owusu, D, Appiah S.K. & Danso, A.A.A. (2019). Estimating exposures for a mortality study
 of a national pension scheme. *Journal of Mathematical Statistical Analysis*, 2(2): 204
- Appiah, S.K., E.N. Aidoo, D. Asamoah Owusu, M.W. Nuonabuor (2018). Geostatistical analysis of contamination of soils in an urban area in Ghana, World Academy of Science, Engineering and Technology, International Journal of Mathematical and Computational Sciences, 12: 139-147. http://doi.org/10.5281/zenodo.1317444
- Appiah, S.K., E.N. Aidoo, D. Asamoah Owusu & M.W. Nuonabuor (2018). Multivariate geostatistical analysis of contamination of soils in an urban area in Ghana, 20th International Conference on Spatial Statistics and Geostatistics (ICSSG), June, 2018, New York: Conference Proceedings, 20(6): Part II, 131-138
- Frempong, N.K., Bukari, F.K., Appiah, S.K. & Owusu, D.A. (2018). Investigating heterogeneity in mortality of male pensioners. *Journal of Biostatistics and Biometric Applications*, 3(2): 203. ISSN: 2455-765X
- Adedia, D., Nanga, S., Appiah, S.K., Lotsi, A. & Abaye, D.A. (2018). Box-Jenkins' methodology in predicting maternal mortality records from a public health facility in Ghana, *Open Journal of Applied Sciences*, 8(6): 189-202. https://doi.org/10.4236/ojapps.2018.86016
- Amoh-Gyimah, R., Aidoo, E.N., Akaateba, M.A. & Appiah, S.K. (2017). The effect of natural and built environmental characteristics on pedestrian-vehicle crash severity in Ghana. *International Journal of Injury Control and Safety Promotion*, 24(4):459-468. https://doi.org/10.1080/17457300.2016.1232274.
- Appiah, S.K., Apau, J., Andoh, A., Armah, D. & Yeboah, G. (2017). Estimation of risk levels of water-quality parameters in groundwater in a local community of Ghana, *Journal of Scientific and Engineering Research*, 4(9): 528-539. http://jsaer.com/archive/volume-4-issue-9-2017
- Peprah, A.K., Appiah, S.K., & Amponsah, S.K. (2017). An optimal cooling schedule using a simulated annealing based approach, *Applied Mathematics*, 8(8): 1195-1210. https://doi.org/10.4236/am.2017.88090
- Dissou Arthur, Y., Asiedu-Addo, S, & **Appiah**, S.K. (2017). Gender stereotype and motivation in learning statistics among tertiary students in Ghana, *IEJME-Mathematics Education*, 11(6): 599-608.
- Amponsah, S.K., Appiah, S.K. & Peprah, A.K., Siaw-Yeboah, F. (2016). Simulated annealing approach
 to solution of integrated circuit problems, *Journal of Asian Scientific Research*, 6(8): 128-137.
 https://doi.org/10.18488/journal.2/2016.6.8/2.8.128.137
- Appiah, S.K., Asamoah Owusu, D. & Ahiale, E.B. (2016). A survival analysis approach to estimating funding liquidity risk in banks. *International Journal of Statistics and Applications*, 2016 6(4): 259-266; doi: 10.5923/j.statistics.20160604.07.
- Adedia, D., Adebanji, A. & Appiah, S.K. (2016). Leverage effects on robust regression estimators. Journal of Mathematics Theory and Modelling, 6(7), 53-61.
- Asamoah Owusu, D., Appiah, S.K., Omari-Sasu, A.Y. & Owusu, G.S. (2016). Pension fund asset allocation under the Makorwitz Model: A Case of the national pension scheme in Ghana. Applied Mathematics, 6(4): 86-91; doi: 10.5923/j.am.20160604.04.
- Asamoah Owusu, D., Appiah, S.K., Omari-Sasu, A.Y & Berimah, R.T. (2016). Pricing and profit testing
 of 'key man' life policy of insurance companies in Ghana. *International Journal of Finance and Accounting*, 5 (4): 202-208; doi: 10.5923/j.ijfa. 20160504.05.
- Bashiru I.I. Saeed, Appiah, S.K., Nsowah-Nuamah, N.N.N, Musah, A.A.I. & Munyakazi, L. (2014).
 Equivalence in generalised linear models: Set-to-zero, sum-to-zero, restrictions, and extra sum of squares methods. *International Journal of Statistics and Probability*, 3(4), 42-53; doi: 10.5539/ijsp.v3n4p42.
- Dissou Arthur, Y., Baah Gyamfi, K. & **Appiah**, S.K. (2013). Probability distributional analysis of hourly solar irradiation in Kumasi-Ghana. *International Journal of Business and Social Research*, 3(3), 63-75.

- Apau, J., **Appiah, S.K.**, & Marmon-Halm, M. (2012). Assessment of water quality parameters of Kpeshi Lagoon of Ghana. *Journal of Science and Technology*, 32(1), 22-31.
- Appiah, S.K., Mueller, U., & Cross, J. (2011). Spatio-temporal modelling of malaria incidence for evaluation of public health policy interventions in Ghana, West Africa. 19th International Congress on Modelling and Simulation (MODSIM). Modelling and Simulation Society of Australia and New Zealand, F. Chan, D. Msrinova & R.S. Anderson (eds), December, 2011 Perth, Australia.
- Appiah, S.K. (2014). Space-time statistical analysis of malaria morbidity incidence cases in Ghana: A geostatistical modelling approach (which can be retrieved from http://ro.ecu.edu.au/theses/1398).
- Appiah, S.K., U. Mueller & J. Cross (2012). Exploratory analysis of malaria risk in Ghana, West Africa. A poster presented at Edith Cowan University (ECU) Research industry engagement, September 2012, Perth, Western Australia.

Book Publication:

- Abdul-Aziz Ibn Musah & Simon Kojo Appiah (2014), Application of Extreme Value Theory, the Daily Brent Crude Oil Price, 18 March, 2014, LAP Lambert Academic Publishing
- Appiah, S.K. & Dissou Arthur, Y. (2013). Introduction to statistics with SPSS for tertiary students. Kumasi, Fresh Publications.
- Appiah, S.K. (2009). *Probability and statistics I & II (MATH 271/272)*, (for BSc Actuarial Science II), Kumasi, Institute of Distance Learning (IDL), KNUST, Ghana.
- Appiah, S.K. & Asamoah Owusu, D. (2009). *Introduction to probability and statistics (MATH 166)*, (for BSc Actuarial Science I), Kumasi, Institute of Distance Learning (IDL), KNUST, Ghana.
- Appiah, S.K. & Asamoah Owusu, D. (2009), *Statistical Methods (MATH 153/154)*, (for BA Social Science I), Kumasi, Institute of Distance Learning (IDL), KNUST, Ghana.

PhD Theses Supervised/Supervising:

- David Adedia (2020): Discrepancy function estimation for power analysis in structural equation modelling, Department of Statistics and Actuarial Science, KNUST, Ghana (completed).
- Derrick Asamoah Owusu (2019): Estimating actuarial present value factors for annuity business using a non-parametric graduation approach, Department of Statistics and Actuarial Science, KNUST, Ghana (completed)
- Alex Kwaku Peprah (2018): A simulated annealing-based approach to optimal cooling schedule, Department of Mathematics, KNUST, Ghana (completed).
- Carol Fredua Amoako-Yirenkyi: Development of a novel model-based recommender system in collaborative filtering of admissions, Department of Statistics and Actuarial Science, KNUST, Ghana (ongoing)
- Awura Amma Adomaa Danso: Spatial modelling of mortality rates for pricing of insurance products in Ghana, Department of Statistics and Actuarial Science, KNUST, Ghana (ongoing)
- Sandra Addai-Henne, Spatio-temporal modelling of mortality using a Bayesian framework, Department of Statistics and Actuarial Science, KNUST, Ghana (ongoing)
- Buckman Akuffo: A hybrid forecast model in the presence of structural breaks using wavelet and forecast reconciliation, Department of Statistics and Actuarial Science, KNUST, Ghana (ongoing)
- John Kwadey Okutu: Generalized families of Ramos-Louzada distribution: Statistical properties and applications, Department of Statistics and Actuarial Science, KNUST, Ghana (ongoing).

PhD Theses Examined:

- Francis Feehi Torgbor (2021): Techniques for improving climate information for agriculture: Application in Ghana with emphasis on PICSA, Department of Statistics and Actuarial Science, University of Cape Coast, Ghana.
- Charles Sebil (2020): Optimal mathematical model of green logistics on solid waste management, Department of Mathematics, KNUST, Ghana.
- Maxwell Akwasi Boateng (2019): A new class of convex combination-based Archimedean copulas, Department of Statistics and Actuarial Science, KNUST, Ghana
- Lous Asiedu (2016): Statistical evaluation of enhanced face recognition techniques under variable constraints, Department of Mathematics, KNUST, Ghana.

Conferences/Seminars/Workshops:

- Laboratory for Interdisciplinary Statistical Analysis (LISA) 2020 Sustainability Symposium: "Creating institutional statistical analysis and data science capability", May 2-6, 2022, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana.
- KNUST Online Teaching Training Course by Quality Assurance and Planning Unit, August 20-24, 2021, KNUST, Kumasi, Ghana.
- World Statistics Day and International Year of Women in Statistics & Data Science Symposium:
 "Connecting the world with data we can trust", October 20-22, 2020, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana.
- SDGs in Ghana: The role of Statistics and Data Science, November 25, 2019, Department of Statistics and Actuarial Science, KNUST, Ghana
- Workshop for Senior Members due for retirement in July, 2024-2026 on theme: "Retiring Gracefully", Great Hall Conference Room, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, 28th May, 2019.
- Phase I of KNUST-Laboratory for Interdisciplinary Statistical Analysis (KNUST-LISA) Workshop on "Building capacity of female scientists in data analysis for decision making and strategic planning", April 1-5, 2019, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana.
- 8th KNUST Summer School 2018 under the theme 'Improving quality of higher education through
 effective measurement' by Quality Assurance and Planning Unit, August 20-24, 2018, Great Hall,
 KNUST, Ghana.
- 20th International Conference on Spatial Statistics and Geostatistics (ICSSG), June 3-4, 2018, New York, USA.
- Building Stronger Universities (BSU) III Workshop: "Strengthening stakeholder collaboration for innovation and demand driven research", November 28-30, 2017, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana.
- Guest Speaker, Association of Mathematics and Statistics Students (AMSS) of KNUST Seminar on finalists' orientation under the theme "Empowering our passion and sustaining our lives", 5th September, 2018, Department of Mathematics, KNUST, Ghana.
- Workshop on the operations/management of features of Academic Record Management Information System (ARMIS), UITS Directorate, KNUST, March, 21-22, 2018.
- 30th Biennial Conference of Ghana Science Association: *The "Galamsey" Menace: The Role of Science, Technology and Innovation for Sustainable Development*", Koforidua, Ghana, July 24-27, 2017.
- 6th KNUST Summer School 2016 under the theme 'Strengthening the linkage amongst academia, industry and government', August 15-17, 2016, Quality Assurance Unit, KNUST, Ghana
- 21st International Congress on Modelling and Simulation (MODSIM). Modelling and Simulation Society of Australia and New Zealand, November 29-December 4, 2015, Gold Coast, Queensland, Australia.
- Poster presentation: "Exploratory analysis of malaria risk in Ghana, West Africa", Edith Cowan University (ECU) Research Industry Engagement 2012, September 2012, Perth, Western Australia.
- 19th International Congress on Modelling and Simulation (MODSIM). Modelling and Simulation Society of Australia and New Zealand, December, 2011, Perth, Australia.
- 10th Regional College on Modelling, Simulation and Optimization, University of Cape Coast, April, 2008.
- 32nd Conference on Stochastic Processes and their Applications, University of Illinois at Urbana-Champaign, USA, August 6–10, 2007.
- 10th bi-annual conference of Sub-Saharan African Network of International Biometry (SUSAN-IBS), Kwame Nkrumah University of Science & Technology (KNUST), Kumasi, Ghana, July 23–27, 2007.
- Resource Person, Training Workshop for SSS Mathematics Teachers in Ashanti Region, KNUST, Kumasi, January, 2005.
- Workshop on improved pedagogy and research proposal writing for Academic Staff, organized by the Quality Assurance Unit, KNUST, February 9-13, 2004.
- 8th Edward A. Bouchet Regional College on Functional Analysis and its Application to Differential Equations, Kwabenya, Accra, Ghana, July 8–19, 2002.
- 4th Regional School on Modelling, Simulation and Optimization Accra, April 1-12, 2002
- Regional Workshop on Functional Analysis and its Applications, Institute of Mathematical Sciences (IMS), Kwabenya, Accra, Ghana, July, 1995.

Curriculum Vitae

Research Areas/Interests:

- Mathematical Statistics:
- Spatial Statistics (Geostatistics):
- Optimization and Operations Research:
 - Public health, environmental, safety, and financial/insurance data
 - Operations of organisations/manufacturing.

Membership:

- Fellow, Royal Statistical Society (RSS)
- Member, International Biometry Society (IBS)
- Member, World Academy of Science, Engineering and Technology (WASET)
- Member, Editorial Review Board on Mathematical and Computational Sciences, International Research Conference (IRC) Scientific and Technical Committee
- Member, Modelling and Simulation Society of Australia and New Zealand
- Student Member, Statistical Society of Australia (SSA)
- Member, Sub-Saharan Africa Network-IBS (SUSAN-IBS), Ghana
- Member, Ghana Science Association (GSA)
- Member, Mathematics Association of Ghana (MAG)
- Member, University Teachers Association of Ghana (UTAG), Ghana
- Fellow, Unity Hall of Residence, Kwame Nkrumah University of Science and Technology (KNUST), Ghana.

Reviews/Moderations/Assessments:

- Reviewer, Applied Mathematics
- Reviewer, Science Journal of Applied Mathematics and Statistics
- Reviewer, Journal of Science and Technology (JUST), Kumasi, Ghana.
- External Examiner/Moderator, Department of Statistics, University of Venda, South Africa
- Moderator, Department of Statistics, Regent University College of Science and Technology, Ghana.
- External Assessor, C.K. Tedam University of Technology and Applied Sciences (CKT-UTAS), Ghana.
- External Assessor, National Council for Tertiary Education (NCTE): Promotions in College of Education, Ghana.

Awards:

- KNUST Research Fund (KReF) Grant (GH¢30,000) for collaborative research: Cutaneous leishmaniasis vector incriminating project in Ghana, 2018/2019.
- Best paper award, ICSSG 2018: 20th International Conference on Spatial Statistics and Geostatistics, June 2018
- PhD Scholarship (Stipend), School of Engineering, Edith Cowan University (ECU), Western Australia (AD \$80,000), awarded by the Australia Government via ECU, 2009-2013.
- PhD Scholarship (Tuition), School of Engineering, Edith Cowan University (ECU), Western Australia (AD \$60,000), awarded by the Australia Government via ECU, 2009-2013.