

CURRICULUM VITAE

NAME : RICHARD ONYINO SIMWA, PhD

PLACE OF BIRTH: EMUHAYA SUB-COUNTY, VIHIGA COUNTY

NATIONALITY: KENYAN

MARITAL STATUS: MARRIED

POSTAL ADDRESS: P.O. BOX 452-00515 Nairobi

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AREA OF SPECIALIZATION: ACTUARIAL SCIENCE AND STATISTICS

(I) ACADEMIC QUALIFICATION

a.) UNIVERSITY EDUCATION

<u>Degree</u>	<u>Date</u>	<u>Institution (Scholarship Award)</u>
PhD (Math. -Applied Statistics)	1995-1998	Makerere /Tuebigen University(DAAD)
MSc. (Math. Statistics)	1987-89	University of Nairobi (DAAD)
PGDip. (Actuarial Science)	1990-91	University of London, UK(British Council)
Bsc. (Double Mathematics)	1984-87	University of Nairobi.

b.) HIGH SCHOOL EDUCATION

A- level (1981-82), Maseno National School (3-principals);

O-level (1977-80), Kakamega High School (1-st Div)

(II) PROFESSIONAL QUALIFICATION IN ACTUARIAL

PASSED 4 OUT OF 5 PROFESSIONAL EXAMINATIONS PAPERS ON ACTUARIAL TECHNIQUES BY FACULTY OF ACTUARIES EXAMINATIONS BODY.

(III) WORKING EXPERIENCE

a.) University Teaching and Research

Designation	Place	Date
Ass. Professor	Daystar University	15/01/2024 to Date
Ass. Professor /Professor	KCA/MKSU University	2018 to 01/01/2024
Associate Professor	University of Nairobi	2009 to 2018
Senior Lecturer	University of Nairobi	2002 to 2009
Lecturer	University of Nairobi	1998 to 2002
Assistant Lecturer	University of Nairobi	1993 to 1998
Tutorial Fellow	University of Nairobi	1989 to 1993

b.) Attraction of Donar Funding to University

i.) 3 Research Projects, each leading to PhD award . Donars include **DAAD, NRF, HELP** Scholarship, awarded to **3 PhD** students under my supervision, at the University of Nairobi.

ii.) Donar Research Funding by the government of Germany, under DAAD scholarships for my **Msc and PhD** Research at the University of Nairobi and Makerere University respectively.

iii) **2 AMMSI** Research Scholarship; a) My Post-Doc Research at Makerere University,

(b) Msc Student Award

iv.) As a DAAD scholar, have been sponsored to conferences/workshops, and obtained financial support for the University of Nairobi on several occasions . These benefits are available to DAAD scholars throughout .

vi.) **British Council Scholarship** for Post Graduate Diploma in Actuarial Science at The City University, UK.

c.) ADMINISTRATIVE RESPONSIBILITIES

1.) **Head**, Division of Actuarial Science and Financial Mathematics,

School of Mathematics, University of Nairobi (1998-2002, 2014-2018)

2.)**Acting Director**, School of Mathematics, UoN; several Appointments , between 2014- 2018.

3.) **Program Co-ordinator**, PhD in Finance, KCA University

4.) **Program Leader**, Bsc in Statistics and Economics, KCA University

5.) **Academic Leader**, Bsc in Actuarial Science, KCA University

(IV) Publications

a.) Articles

(32 articles, CUE Publication Points Total =113.99 Points)

(CUE: Commission of University Education, points appear in brackets)

1. Kamun, J. S., Nyakundi, C. and **Simwa, R.O.**(2023a) A comparison of two sample approaches to regression calibration for measurement error correction. International journal of Statistics and Applied Mathematics, Vol. 14, P. 46-50 **(1.33)**
2. Kamun, J. S., Nyakundi, C. and **Simwa, R.O.**(2023b).Two Sample Approaches to Regression Calibration for Measurement of Error Correction. International Journal for Statistical Distributions and Applications. Vol. 9(1) P.35-40 **(1.33)**
3. Kalovwe, S. Mwaniki,I. & **Simwa R. O.**(2022) European Option Pricing Under the Regime-Switching GARCH Model. Financial Mathematics and Application, Vol.7(1)pp 1-12, <https://DOI.ORG/10.54379/FMAA-2022-1> **(1.33)**
4. Mwirigi, N., Sewe, S., Wainaina, M. & **Simwa,R.O.** (2022) Weibull Distribution as the Choice Model for State-Specific Failure Rates in HIV/AIDS Progression. Mathematics and Statistics. Vol.10(3),pp.588-602, DOI: 10.13189/ms.2022.100315. Horizon Research Publishing Corporation, USA. **(1.33)**
5. Mwirigi, N., **Simwa, R.O.** Wainaina, M. & Sewe, S. (2022). Bayesian Model Averaging in Modeling of State Specific Failure Rates in HIV/AIDS Progression. Mathematics and Statistics. Vol.10(4),pp.782-798, DOI: 10.13189/ms.2022.100409. Horizon Research Publishing Corporation, USA. **(2.67)**
6. Kamun, S., **Simwa,R.O.** & Sewe, W.(2021a). On Derivation of the Semi-Parametric Weighted Likelihood Estimator SPW, and the Weighted Conditional Pseudo Likelihood Estimator , WPCE. Far East Journal of Theoretical Statistics. Vol.62(2), p81-90 **(2.67)**
7. Kamun,S., **Simwa, R.O.** & Sewe, W.(2021b). Comparison of the New Estimators: The Semi-Parametric Likelihood Estimator, SPW and the Conditional Weighted Pseudo Likelihood Estimator, WPCE. American Journal of Theoretical and Applied Statistics. Vol.10(4) p.202-207 **(2.67)**
8. Kalovwe,S., Mwaniki, J.I. & Simwa,R.O.(2020a). Modelling Stock Returns and Trading Volume in Regime Switching World. Financial Mathematics and Applications. ISSN: 2217-7795. URL: www.ILIRIAS.com/FMAA. Vol.6(1). P.1-4 **(1.33)**
9. Odiwour,C. ,Onyango, F. & Simwa, R.O.(2020). Approximation of ruin probabilities under Financial Constraints. Applied Mathematical Sciences. Vol.14, No.7, pp301-310 **(1.33)**
10. Kalovwe,S., Mwaniki, J.I. & Simwa,R.O.(2020b). On Stock Return Volatility and Trading Volume of Nairobi Security Exchange. Research in Mathematics and Statistics Journal. Vol. 8, No.1. p 1-10. **(1.33)**

11. Simwa, R. O.(2018a). On the Variation of the Probability Distribution of Future Life-Time: a case of Kenyan Mortality Experience. *Biometrics and Biostatistics International Journal*. Vol. 7(2) 141-145 (8)
12. Simwa, R. O. (2018 b). On Unemployment Insurance Assuming Non-Zero Mortality with Application to USA Economy. *European Journal of Statistics and Probability*, Vol. 6(2) 1-11 (8)
13. Simwa, R.O.(2018c). On Carbon Emission Credits Options Pricing. *International Journal of Innovation, Engineering and Science Research*.Vol.2 (2), 8-22. (8)
14. Kikechi C. B., Simwa, R.O. and Pokhariyal, G.P. (2018). On Local Linear Regression Estimation of Finite Population Total in Model Based Surveys. *American Journal of Theoretical and Applied Statistics*. Vol. 7(3) 92-101 (2.67)
15. Ondieki, I. O. and Simwa , R.O.(2017). Modelling of Volatility of Interest Rates and Treasury Bill Rates using ARCH/GARCH family Models and their Effect on Pension Fund. *International Journal of Engineering , Sciences and Management Research*. Vol. 4(11) 81-101. (4)
16. Kikechi, C. B., Simwa, R.O. and Pokhariyal, G.P. (2017). On Local Linear Regression Estimation in Sampling Surveys. *Far East Journal of Theoretical Statistics*, Vol. 53(5) 291-311. (2.67)
17. Simwa, R. O. Muhati, N. and Chikamai, L.(2017). On Derivation of the Probability of Infection in the Presence of Treatment. *Science Journal of Applied Mathematics and Statistics*. Vol. 5, 169-173. (4)
18. Simwa, R.O.(2017). On the Determination and Distribution of the Basic Reproduction Number for HIV Pandemic with Tuberculosis Co-Infections in the Presence of Treatment. *ICASTOR Journal of Mathematical Sciences*. Vol. 11(1)1-13. (8)
19. Ndung'u M. R., Pokhariyal, G.P. and Simwa, R. O.(2017). Mathematical Model for the Transmission of Endemic Malaria under Periodically varying Climatic Conditions. *Asian Journal of Mathematics and Computer Research*. Vol. 16(2)113-128 (1.33)
20. Ndung'u M. R., Pokhariyal, G.P. and Simwa, R. O.(2016). Modelling the Effects of Periodic Temperature on Malaria Transmission Dynamics. *Asian Journal of Mathematics and Computer Research*. Vol. 13 (2) 91-105 (1.33)
21. Simwa, R.O., Kithinji, M.M and Otieno J.A.M (2016). Application of Burr XII Mixture Distributions to Model Unemployment Duration in Pricing Unemployment Duration Assuming USA Data. *International Journal of Statistical Distributions and Applications*. Vol. 2(3) Page 27-34. (4)
22. Simwa, R.O. , Nyongesa, L. K & Okoth W.(2016). On Estimation of the Two-Stage Adoptive Group Testing Prevalence Estimator with Allowance for Errors. *International Journal of Emerging Technology and Research*. Vol. 3(4) 63-70. (4)
23. Simwa, R.O., Wasike, A. and Pokhariyal, G.P.(2016). An HIV/AIDS model with Information on Individual's HIV/ADS Status. *International Journal of Emerging Technology and Research*. Vol. 3(4) 71-76. (4)
24. Pokhariyal, G.P., Simwa, R.O et al(2015). Model for HIV infection and Data Base.

Jour of International Research in Med. and Pharmaceutical Sciences.

Vol 5 (3), 134-140

(4)

25. Odundo F., Simwa R.O. and Ongati, O.(2013). Mathematical Modeling of HIV infection. *International Journal of Mathematical Archives* Vol 4 (12), 62 -9 72. (2.67)
26. Kwach, B., Ongati, O. and Simwa, R.O. (2011). Mathematical model for Detecting Diabetes in the Blood. *Applied Mathematical Sciences*, Vol.5(6) 279-286. (1.33)
27. Simwa, R. O. (2006). On Statistical Modeling of Droughts and Floods Insurance Products in Developing Countries. *Advances and Applications in Statistics*. Volume 6, Number 2, pp 241 – 248 . (8)
- 28.. Simwa, R. O. (2005). A Model for the CD4 Cell Counts in an HIV/AIDS Patient and its application in Treatment Interventions. *American Journal of Infectious Diseases*.,vol. 1, No. 1: 61 – 65 (8)
29. Manene, M.M. and Simwa, R. O. (2004). The Performance of One-type Step-wise Group Screening Designs. *s.*, vol.46, No.2-3, pp303-321. (4)
30. Pokhariyal, G.P. and Simwa, R. O. (2004). A model For HIV Infection and its Application. *Far East Journal of Applied Mathematics (FEJAM)*, Vol. 62 (2), pp 151 – 160. (4)
31. Simwa, R. O. (2003). On Empirical Modeling of HIV/AIDS pandemic with Application to East Africa. *African Journal of Science and Technology*. Vol. 4, No. 1,pp. 104 – 109. (8)
32. Simwa, R. O. and Pokhariyal G.P. (2003). A Dynamical Model for Stage-Specific HIV/AIDS epidemic with Application to Sub-Saharan Africa. *Applied Mathematics and Computation*, Vol. 146, No. 1, pp 93 – 104 (4)

b.) Conference Attendance and Conference Papers

(9 articles, Total points = 18)

33. Kalovwe ,S. , Mwaniki, M.J and Simwa , R.O.(2022) The European Option Pricing based on regime-switching Models. In: *The Proceedings of ‘ Inter Disciplinary Conference on Innovation and Sustainability’*. Kenya School of Monetary Studies, Nairobi, Kenya. 10-12th , Oct.2022. (2)
34. Simwa, R.O. (2016) On Pricing of Unemployment Insurance with Application to USA Economy and Labour Unions. **In:** EAUMP Conference proceedings-Kampala (2)
35. Simwa, R. O . (2013). Mathematical Models on Infectious Diseases.**In:** Conference Presentation. “2nd Strathmore University International Mathematics Conference (SIMC)” (2)
36. Biomathematics Epidemic Modeling Conference (France / Morocco Initiative), July, 2009.

Naivasha, Kenya.

(Attended)

37. MITACS CANADA-AFRICA BIOMATHEMATICS NETWORK MEETING, 11 – 13 NOV., 2007, Kampala (AMMSI SCHOLARSHIP). (Attended)

38. Wachira, P.M., Ogingo, E. Dindi, E. and Simwa, R.O.(2011). Limiting Loss of Superior Genotypes in Early Stages of Sugarcane Varieties Selection in Kenya. In: Proceedings for International Biometric Society(Australian Region), 4-8, December, 2011. (2)

37. Simwa, R. O. (2005). Modeling the CD4 cells Counts in an HIV/AIDS patient. In: Conference Proceedings: First International Conference on Modeling, Simulation and Applied Optimization. American University of Sharjah, Dubai (Feb 2005). (2)

38. Simwa, R. O. (2003). HIV/AIDS stage specific modeling and the possible interventions. **In:** Conference Proceedings: International Conference of the Network PDE, Modeling and Control. University of Dakar, Senegal (13-th to 20-th, Dec., 2003). (2)

39. Simwa, R. O. (2003). Stochastic modeling of the CD4 counts in an HIV patients with Application to treatment Interventions. In: The proceedings of the FIRST PAN AFRICAN BIOMATHEMATICS CONGRESS. 8-th to 12-th Dec., 2003. Department of Mathematics, Makerere University Edition, Kampala, Uganda. (2)

40. Simwa, R. O. (2003). A vaccine/Treatment model for the HIV/AIDS pandemic with application to sub-Saharan Africa. In: The Proceedings of the International Biometric Society. (IBS), SUSAN chapter. University of Natal, S. Africa. 7-th to 11-th, July, 2003 (2)

41. Simwa, R. O. (2000). On modeling Stage-specific HIV Incidences with Application To East Africa. In: The Proceedings of the XXth International Biometric Conference, July 1 – 7, 2000. Volume I, Page 144. University of California at Berkeley Edition. Los Angeles. San Francisco. USA. (2)

c.) Reviewer for Journals

1. American Mathematical Society: Reviewer Number **044127**
2. Advanced Journal of Physical Sciences.
3. Kenya National Academy of Sciences

GRANT TOTAL = 131.99 PUBLICATION POINTS

(V) Research Supervisions

a.) PhD Theses Supervisions (10)

1. Successfully Completed PhD Supervisions (8)

(i). Statistical Modeling the HIV and AIDS Epidemic with Application to Malawi.

(2010) Dr. Daisy Salifa, Department of Actuarial Science and Statistics, JKUAT University.

(ii).Mathematical and Statistical Population Models: Elephants Population Modeling

(2013) Dr. John M. Ndiritu,

School of Mathematics, University of Nairobi. Awarded **DAAD Scholarship**.

(iii) Statistical/Mathematical Modelling of HIV infection and Tuberculosis in the Presence of ARVs and Mother to Child Transmission. (2014)

Dr. Francis Okello Odundo,

Department of Statistics and Actuarial Science, JOOUST

(iv) Mathematica/Statistical Modeling of the Effects of Periodic Environmental Factors on Endemic Malaria (2017)

Dr. Reuben Muiruri Ndung'u , School of Mathematics , University of Nairobi

(v) Robust Model Based Estimation of Finite Population Totals Using The

Procedure of Local Linear Regression. Dr. C. B. Kikechi. Department

of Mathematics, UoN. **2018.** Awarded **National Research Fund(NRF)** Scholarship.

(vi) On Statistical Modelling HIV/AIDS Pandemic Incorporating Treatment, with Application to Kenyan Data, by Dr. Murigi, N., CUEA University, **2022**

(vii) Statistical Comparison of performance of Security Exchange Markets in the Developing and Developed Economies. Dr. Sabastian Kalovwe. School of

Mathematics, University of Nairobi , **2022.** Awarded **HELP Scholarship**.

(Viii) Derivation of Estimators for small size populations. Dr. Samuel Kamun, CUEA .

University **2023.**(Defended and PASSED on **11-07-23**)

2. PhD Supervisions in Progress (2)

(i) Joint Modeling of Longitudinal/Survival Data Analysis with Application to AIDs Data. .

Department of Mathematics , Moi University. By Antony Mulinge.

(ii) Stochastic Modeling of Survival Data. PAUST UNIVERSITY, JKUAT.

By Bouzir Youcef

(b.) MSc. Theses/Projects Supervisions (36)

1. Estimation of the Basic Reproduction Number for HIV/AIDS Tuberculosis Co-Infection in the Presence of Treatment(2016). Nelson L. Muhati, Dept of Maths, Kibabii University
2. Pricing Unemployment Insurance using Burr XII Mixture Distribution and CAPM with Application to USA Data (2016). Martin K. Mutwiri, School of Maths, University of Nairobi. Awarded AMMSI Scholarship.
3. Modeling of Volatility of Interest and Treasury Bill Rates using ARCH/GARCH family models and their Effect on Pension Fund (2016). Isaac O. Ondieki
4. Statistical Forecasting Mortality rates and Modelling Longevity risk using Lee Carter Mosdel. (2015) Naomi Wairimu Ngugi.
5. Development of an Unemployment Insurance Product (2015). Beatrice C. Korir
- 6.. Modelling the Growth of Pension Funds using Generalized Linear Model (Gamma)(2014). Johnston Akwimbi
7. The Choice of Actuarial Funding Methods for Funded Pension Benefit Schemes. (2014) Onwonga, E. O., SoM, UoN.
8. An Actuarial Multi-State Modelling of Long Term Care Insurance Products: A case Study of the Kenyan Insurance Industry (2013). Peter KipKoech Cherutich. SoM, UoN.
9. Application of Panal Data Models on the Relation between Fertlity and Women Education.(2013) Daniel K. Mbithi. Department of Mathematics, CUEA.
10. Modeling Time-to-Sexual Debut among Kenyan Youths: The Cox PH Regression Model Approach (2011) Samuel K. Kirichu, SOM, UON .
11. Sampling Weights Truncation in Household Sample Surveys using Mean Square Error Procedure.(2011). John K. Bore
12. A generalized Two-Stage Adaptive Pool Testing Procedure for estimating the prevalence of a Trait. Ms Ann Okoth, Dept of Maths, MMUST, 2011.
13. Construction Procedure for t-Designs, Mr. Chibayi, J. , Dept of Maths, MMUST, 2012
14. Some properties of Balanced Incomplete Block Designs by Ogutu, D.O. Department of Mathematics and Applied Statistics, Maseno University, 2009.
- 15 Multi-Regression Modelling of Mode of Delivery, Maternal and Perinatal Outcomes in Kakamega District, Kenya, by Mr. Obaga E. Oketch, Department of Mathematics, MMUST, 2010.
16. Comparative Study of Block Design for Test Families versus Control Experiments, by Maina P.

W. Department of Mathematics and Applied Statistics, Maseno University, 2008

17. An HIV/T.B. Mathematical model by Omondi C., Department of Mathematics and Applied Statistics, Maseno University, 2010.

18. Analysis of Variance and Design of Experiments on Sugarcane Farming in Western Kenya by Wachira E., Department of Mathematics and Applied Statistics, Maseno University, 2010.

19. An extension of the Leslie matrix model for estimating population sizes of migrating species, by Otumba, E.O. Department of Mathematics and Applied Statistics, Maseno University, 2003.

20. A stage specific HIV/AIDS vaccine model, by Odenyi, L., Department of Mathematics and Applied Statistics, Maseno University, 2003.

21. Premium Rating model for a Benevolent fund, by Arori, J. Department of mathematics and applied statistics, Maseno University, 2005.

22. Modeling of HIV/AIDS Epidemic Vaccination with specific to the Leakey-Type of Vaccine in Kenya, by Amunga, M.T., Dept of Maths and Applied Statistics, Maseno University, 2008.

23. A Diabetes Mathematical model. Kwach, O., Dept of Maths and Applied Statistics, Maseno University, 2008.

24. An HIV/AIDS and Tuberculosis Mathematical Model. Odundo, J., Dept of Maths and Applied Statistics, Maseno University, 2008.

25. A model for HIV/AIDS vaccine incorporating Intra-Host viral mutation. By Rono, S. , Dept of Maths and Applied Statistics, Maseno University, 2009.

26. On Modelling Fish Harvesting in Lake Victoria using Predator-Prey Model. Ms Jael Ombogo, Dept of Maths and Applied Statistics, Maseno University, 2011.

27. Study on Statistical Modelling of Sexual Debut in Kenya by Kirichu, S.K., SOM, UON (2011)

28. Modelling Credit Risk for Personal Loans Using Product-Limit Estimator (2010) by Wekesa O.A., School of Mathematics, UoN.

29. Logit Model Analysis of Factors Influencing Early Female Marriage in Kenya (2009), by Kinyanjui J.N., School of Mathematics, UoN.

30. Statistical Analysis of poverty levels in a population, by Chege, J., School of Mathematics,

UoN. Completed in 2009.

31. NSE portfolio model, by Kitati, UoN. Completed 2009.

32. A study of vegetation distribution in Mt. Kenya region, by Ingwe, M., School of Mathematics, UoN. Completed in 2006.

33. Application of Markov Chain Model in Studying Progress of Secondary School Students during the Free Secondary Education: Case Study of Kisii Central District, Kisii County, Kenya By M.J. Nyandwaki, Maseno University, 2013.

34. Variance of Ratio Estimators, by Miriam Wambui Kahoro, Deptment of Math. and Comp. Sc., CUEA, 2012.

35.) Modelling the Growth of Pensions Funds in Kenya, by Akwimbi, J., Sch. of Maths, UoN, 2013

36.) Analysis of Panel Data on the Relationship between Fertility and Women Education, . . . by Mbithi, D. k., Department of Math. and Comp. , CUEA, 2013

c.) Undergraduate Projects Supervisions (45+)

37. Bsc (Actuarial Science) , UoN, Supervision (2002-2018) 30+ Projects Supervisions.

38. Bachelors in Commerce/Stat.s & Econ.s/Actuarial Science Projects (**KCA** University, 2021-2023). 15+ Project Supervisions

(VI) EXTERNAL EXAMINER APPOINTMENTS

a.) Current Appointments:

1. University of Nairobi, Actuarial Science:PhD-Msc-Undergraduate

(May,2020 to Dec, 2023)

2. Garissa University, Actuarial Science & Stat.s (March 2020 to Date)

3. PAUST, JKUAT, Financial Maths & Stat.s (Sept., 2022 to Date)

b.) Previous Appointments:

1. **SEKU**, Dept of Mathematics, External Examiner (Statistics and Actuarial Sc.), 2019-2020

2. **JKUAT**: ODeL, JUJA CAMPUS ,2013-15

3. **JKUAT**: DEPT OF APPLIED SCIENCES and IT, KAREN CAMPUS . 2013-15

4. **MAKERERE UNIVERSITY**: Dept of Mathematics (1 PhD, 4 Msc theses, 2010-2013)

5. Nelson Mandela University, Pretoria, South Africa (1 PhD thesis, 2013)

- 6 JKUAT, Dept of Stats & Act Sc. (Bsc & Msc) , 2008-2012
7. Egerton University. Department of mathematics. PhD thesis in statistics, April, 2017.
8. JOOUST, Bondo, SMAS, PhD (Actuarial Science), April, 2017
9. Masinde Muliro University of Science and Technology (1 PhD(2015), 9 Msc thes, 2009-2014).
10. MAASAI MARA UNIVERSITY, External Subject Expert: Statistics Prog.s, July, 2015

(VII) MEMBERSHIP TO PROFESSIONAL SOCIETIES

1. FA (Faculty of Actuaries, UK)
2. TASK (The Actuarial Society of Kenya)
3. KNSS (Kenya National Statistical Society)

(VIII) Referees

- 1.) **Prof. Ivivi Mwaniki**, University of Nairobi, Department of Mathematics,
(0711349438)
- 2.) **Prof. M. Kimathi**, Machakos University, Department of Mathematics,
Statistics and Actuarial Science, (0735226085)
- 3.) **DR. Joshua Were**, Maseno University , School of Mathematics (0722914420)

Richard Onyino Simwa, PhD

Date :- 31-08-2024

Signature: _ ____

