

# LOHUWA MAMUDU, Ph.D.

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## EDUCATION BACKGROUND

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- **Ph.D., University of South Florida (USF), Tampa, Florida, USA** Aug 2017 – June 2021
  - Ph.D. in **Statistics**
  - **Dissertation:** Data-Driven Analytical Modeling of Multiple Myeloma Cancer, U.S. Crop Production and Monitoring Process.
- **Masters, East Tennessee State University (ETSU), Johnson City, Tennessee, USA.** Jan 2016 – Aug 2017
  - Master of Science in **Mathematical Science**
  - **Thesis:** Modeling Students Enrollment at ETSU Using Discrete-Time Markov Chain. [LINK](#)
- **Bachelor, University for Development Studies (UDS), Upper East Region, Navrongo, Ghana.** Aug 2010 – May 2014
  - Bachelor of Science in **Mathematics with Economics**
  - **Final Project:** Assessing the Impact of Agricultural Development Bank (ADB) on Farmers.

## PROFESSIONAL CERTIFICATION

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- Post – Crisis Leadership Certificate, USF MUMA College of Business. Click for [Certificate Credential](#) July 2020
- Machine Learning, Data Science and Deep Learning with Python from [udemy.com](https://www.udemy.com) 2018 - present

## SKILLS

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|------------------------------|---------------------------|---------------------------|
| • Supervised Learning        | • Machine Learning        | • Deep Learning           |
| • Unsupervised Learning      | • Bayesian Analysis       | • Neural Network          |
| • Multivariate Data Analysis | • Mathematical Statistics | • Non-parametric Analysis |
| • Statistical Modeling       | • Statistical Methods     | • BIG Data Analysis       |
| • Survival Analysis          | • Time Series Analysis    | • Regression Analysis     |

## WORK & PROFESSIONAL EXPERIENCE

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- **Assistant Professor of Statistics** Aug 2021 – present
  - Department of Public Health, California State University, Fullerton, CA
- **Freelance Data Analyst (Research Collaborator)** June 2020 – present
  - U.S. National Institute of Health (NIH), Bethesda, MD
- **Instructor & Graduate Teaching Assistant** Aug 2018 – Aug 2021
  - Department of Math & Statistics, USF, Tampa, FL.
- **Treasurer** May 2018 – Aug 2021
  - America Statistical Association (ASA) USF-Student chapter
- **Graduate Teaching Assistant** January 2016 – Jul 2017
  - Department of Math & Statistics, ETSU, Johnson City, TN.
- **Instructor & Teaching Assistant** August 2014 – Jul 2015
  - Department of Math with Economics, UDS, Navrongo, Ghana.
- **Administrator** 2015
  - Defeat Corruption School (Elementary school), Obuasi – Ghana.

## RESEARCH INTEREST & FOCUS

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My research interest is data-driven and interdisciplinarily focused on statistical/analytical modeling and the application of both qualitative and quantitative data statistical methods.

- **Health Science**

Developing and improving data-driven statistical/analytical and survival models for both invasive (malignant) and noninvasive (nonmalignant) cancer diseases to enhance the therapeutic/treatment strategy. Investigating the parametric and non-parametric analysis of cancer survivorship. Assessing disparity and association of risk factors for invasive cancer and infectious diseases. Performing geospatial analysis to assess the disparity in cancer incidence burden and infectious disease outcome. Investigating cancer surgical treatment association with sociodemographic factors, health insurance coverage, cancer stage,

and the length of duration of treatment after diagnoses, factors that influence the delay in cancer treatment, and their contribution to the various stages of cancer. Investigating depression, psychological distress, and anxiety utilizing immigration health data. I have further interest in the statistical analysis of Magnetic Resonance Imaging (MRI) on cancer detection, genetics/genomics, and methods for big data. More so, I am assessing the influence of the risk factors on the treatment delay of cancer diseases. I have an interest in developing hierarchical regression models, latent factorization models, nonparametric Bayesian models, models for sequential data, mixture models, machine learning algorithms, and improving the robustness of model misspecification and the accuracy of classification of stages for various cancer diseases.

- **Economics & Finance**

Creating a statistical model to monitor the production process (increase, constant, or decrease), and improve efficiency. Developing and improving data-driven statistical models to monitor changes in stock prices. Assessing and forecasting the returns of investment portfolios in the financial market, including parametric and non-parametric analysis. Analyzing finance BIG DATA and Improving the clustering of financial investment portfolios. Working on building statistical models to assess the factors contributing to predicting the profitability level of various business segments.

- **Cybersecurity**

Developing and improving data-driven statistical models to identify the factors contributing to the vulnerability score or level of cyber-attacks. Improving the accuracy of prediction of vulnerability in a system and assessing the impact of the vulnerability level utilizing the non-homogeneous Poisson process (NHPP). Furthermore, performing parametric and non-parametric analysis of the vulnerability score of a system to estimate the probability of a given vulnerability score.

- **Environmental Science**

Developing and improving the classification accuracy of factors contributing to global warming according to the level of impact. Developing linear and nonlinear statistical models to determine the factors contributing to the attributable factors causing climate change/global warming, utilizing both parametric and non-parametric techniques. Performing Response Surface Optimization Analysis.

#### RESEARCH PUBLICATIONS

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1. Tsokos CP, **Mamudu L\***. A Real Data-Driven Analytical Model for Testing for the Novel Coronavirus Disease, COVID-19. *J Med - Clin Res & Rev.* 2021; 5(7): 1-8. [LINK](#)
2. Salmeron, B., **Mamudu, L.**, Liu, X. *et al.* Assessing health disparities in breast cancer incidence burden in Tennessee: geospatial analysis. *BMC Women's Health* **21**, 186 (2021). <https://doi.org/10.1186/s12905-021-01274-9>
3. **Mamudu, L\*** and Tsokos, C. (2021) A New Statistical Modeling Approach for Survival Analysis of Cancer Patients—Multiple Myeloma Cancer. *Open Journal of Applied Sciences*, **10**, 365-378. doi: [10.4236/ojapps.2021.104027](https://doi.org/10.4236/ojapps.2021.104027).
4. **Lohuwa Mamudu<sup>1\*</sup>**, Chris P Tsokos<sup>2</sup> (2020) Data-Driven Statistical Modeling and Analysis of the Survival Times of Multiple Myeloma Cancer. *Health Sci J* 14:1. [LINK](#)
5. **Lohuwa Mamudu<sup>1\*</sup>**, Chris P. Tsokos<sup>2</sup> (2020). Parametric and Non- Parametric Analysis of the Survival Times of Patients with Multiple Myeloma Cancer. *Open Journal of Applied Sciences*, **10**, 118-134. [LINK](#)
6. **Lohuwa Mamudu<sup>1\*</sup>**, Chris P Tsokos<sup>12</sup>, Otunuga Oluwaseun E<sup>3</sup> (2020). Survival Analysis of Multiple Myeloma Cancer Using the Cox-PH Model. *Medical & Clinical Research Journal* ISSN 2577 – 8005. [LINK](#)
7. **Mamudu Lohuwa\***, Michele Joyner. "Modeling Student Enrollment at ETSU Using a Discrete-Time Markov Chain Model" (2017). *Electronic Theses and Dissertations*. Paper 3310. <https://dc.etsu.edu/etd/3310>

#### PATEENT PAPERS

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1. **Mamudu Lohuwa<sup>1\*</sup>**, Tsokos Chris P.<sup>2</sup> (2020). System and Methods Utilizing Real Data-Driven Models for Predicting and Optimizing Crop Production. Patent No. 20A078: 20A079PR (292107 – 8610)
2. **Mamudu Lohuwa**, Tsokos Chris P. (2020) A Stochastic Analytical Model that Monitor the Returns of Production Process (Under Patent Consideration). Disclosure No. 21A091

#### REVIEW PAPERS

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1. Faustine Williams, **Lohuwa Mamudu**, Charlotte J Talham, Francisco A Montiel Ishino, and Martin Whiteside. Appalachia and non-Appalachia comparisons of sociodemographic factors and health insurance coverage of patients diagnosed with invasive breast cancer. *Cancer Epidemiology, Biomarkers & Prevention* EPI 20-1577
2. David A., Saanie S., Ishmael T., Emmanuel O., **Lohuwa M.**, and Faustine W. Association Between COVID-19 Pandemic Declaration and Depression/Anxiety Among U.S. Adults. *PLOS ONE Journal*
3. **Mamudu Lohuwa**, Tsokos Chris P. (2020) Response Surface Optimization of the Returns of Corn Production in the U.S. Using the Desirability Function Approach. (To be Submitted for Review)
4. Mohamed Ali Abu Sheha<sup>1\*</sup>, Chris P. Tsokos<sup>2</sup>, **Lohuwa Mamudu<sup>13</sup>**. Desirability Function Approach to Surface Response Optimization Analysis of Atmospheric Carbon Dioxide (CO<sub>2</sub>) Emission in Africa. (To be submitted for review)

## PAPERS IN PREPARATION

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1. The Odds of Localized Lung Cancer Surgical Treatment: Analysis of Sociodemographic Factors, Type of Health Insurance Coverage, and Time to Treatment Initiation.
2. Time to Lung Cancer Treatment Initiation Analysis: Disparity between Black Race and White Race in the Appalachian and Non-Appalachian Region of Tennessee.
3. Depression association between US-born citizens, Foreign-born US citizens, and non-citizen.
4. Cluster Analysis by the length of stay in the US for Foreign-born US citizens and non-citizen ( $\geq 10$  years and  $< 10$  years)

## METHOD, ALGORITHM, TECHNICAL & COMPUTATIONAL SKILLS

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- **Real Data-Driven Modeling and Analysis:** Data Transformation, Model Selection, and Model validations.
- **Data Science and Analytics:** R/RStudio, SQL, Python, SPSS, Minitab, Microsoft Excel, SAS.
- **Machine learning, deep learning, and data mining:** R/RStudio, Python Scikit-learn, GitHub platform.
- **Data processing and analysis:** R/RStudio, Python, SPSS, Minitab, SAS, MS Excel.
- **Big DATA analysis:** *Hadoop, Apache Spark<sup>TM</sup>.*
- **Simulation and analysis:** Monte-Carlo-Markov-Chain (MCMC)
- **Data Dimensionality Reduction:** Principal Component Analysis (CPA), Factor Analysis.
- **Analytical Methods:** Nonlinear Regression, Bootstrapping, Power Law Process, Decision Tree, Random Forest, Classification, Clustering, Bayesian Estimation, Discrete-Time-Markov Chain.
- **Other programming languages and Software:** *LATEX*, PDF, R Markdown, MS Word, PowerPoint, Excel.

## RESEARCH CONFERENCE/ SERVICE/ OUTREACH ACTIVITY

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- 1) **Presenter:** 2021 JSM Conference – Joint Statistical Meeting, American Statistical Association Aug 2021
- 2) **Chairman,** Rotary International Committee, Rotary Club of Tampa, District 6890 Feb 2020 –
- 3) Mid-Semester Workshop on Introduction to Data Analysis and Machine Learning Using R, SPSS, and Minitab. *Role: Presenter* Fall 2018 – May 2021
- 4) The ASA Biopharmaceutical Section Regulatory – Industry Statistics Workshop. *Role: Oral Presentation* on Data-Driven Statistical Modeling and Analysis of the Survival Times of Multiple Myeloma Cancer. Sept 2020
- 5) Webinar on Health Care – Health Economics & Policy. *Role: Oral Presentation* on Data-Driven Statistical Modeling and Analysis of the Survival Times of Multiple Myeloma Cancer. July 2020
- 6) World Congress on Cancer and Diagnostic 2020. *Role: Oral Presentation* on Data-Driven Statistical Modeling and Analysis of the Survival Times of Multiple Myeloma Cancer. June 2020
- 7) Symposium on Data Science & Statistics, SDSS (Beyond Big Data: Collaboration in Science, Industry, and Society). *Role: E- Poster Presentation* on Data-Driven Statistical Modeling and Analysis of the Survival Times of Multiple Myeloma Cancer. June 2020
- 8) **Skelton/Jones Scholar**, Rotary International, District 7570, Johnson City, TN, USA. 2018 – 2019
- 9) **Volunteer**, Melting Pot, Munsey Methodist Church, Johnson City, TN, USA. 2016 – 2017
- 10) Four Months Community Service, Gumunaayili Community, Northern Region, Ghana. 2012 & 2013

## HONOR & AWARDS

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- **Certificate of Recognition** as Speaker at the Cardiology Webinar 2021 June 2021
- **Tharp Endowed Award: Outstanding Graduate Student Scholarship** (\$763.21), College of Art & Sciences, USF Feb 2021
- **Certificate of Recognition** as Speaker at the LONGDOM Conference on Healthcare – Health Economics & Policy, Japan. July 2020
- **Certificate of Recognition** as Speaker at the World Congress on Cancer and Diagnostic 2020 June 2020
- **Journal Reviewer/Referee** for Open Journal of Applied Sciences (OJAPPS) Aug 2020
- **Journal Reviewer/Referee** for Open Science Journal (OSJI). April 2020
- **Journal Reviewer/Referee** for Cogent Environmental Science. April 2020
- **Tharp Endowed Award: Outstanding Graduate Student Scholarship** (\$538.56), College of Art & Sciences, USF Jan 2020
- Awarded Global grant: **Skelton-Jones Scholarship** by Rotary International (\$35,000), District 7570, Johnson City, TN. Aug 2018
- Appreciation for an **outstanding role as finance committee chairman** of the Mathematical Student Association, UDS, Ghana. 2014

## PROFESSIONAL MEMBERSHIP

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- Member, Rotary Club of Tampa, District 6890, Florida February 2019 – present
- Member, Alumni of East Tennessee State University (ETSU) August 2017 – present
- Member, Interdisciplinary Data Sciences Consortium (IDSC) August 2017 – Aug 2021
- Member, American Statistical Association (ASA) August 2017 – present
- Member, American Mathematical Society (AMS) August 2016 – present