

**BIOGRAPHICAL SKETCH**

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NAME: Gideon KD Zamba

eRA COMMONS USER NAME (credential, e.g., agency login): ZAMBAG

POSITION TITLE: Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Université du Bénin, Lomé-Togo, West Africa	MS-BS	08/1995	Applied Mathematics
School of Statistics, University of Minnesota	MS	09/2003	Statistics
School of Statistics, University of Minnesota	PhD	09/2003	Statistics

Dr. Gideon KD Zamba publishes under the name KD Zamba.

**A. Personal Statement**

Dr. Zamba is a Full Professor of Biostatistics in the College of Public Health (CPH) at the University of Iowa, where he also holds a secondary appointment as a Professor of Radiology and Nuclear Medicine in the Department of Radiology in internal medicine. He has extensive experience in statistical methodological and collaborative research. He made contributions to the fields of sequential analysis, multivariate control theory, recurrent events reliability, disease monitoring, syndromic surveillance; and substantive collaborative contributions in the mathematical modeling of glaucoma, emphysema, influenza and cancer. He was a co-founder and director of the Biostatistics Summer Initiative and the Iowa Summer Institute in Biostatistics. He is currently the PI and the director for the Iowa Summer Institute for Research Education in Biostatistics (ISIREB)—which has been a very successful program funded by the NIH/NHLBI. In 2002, Dr. Zamba received the Excellence in Teaching Award at the School of Statistics, from the University of Minnesota. In 2011, he was awarded the CPH Faculty Teaching Award at the University of Iowa, and in 2018, the CPH Faculty Service Award. In 2014 Dr. Zamba was recognized as a Carver College of Medicine Teaching Scholar. Dr. Zamba values teaching, research and service. He successfully mentored 15 master's students' preceptorship projects and 4 PhD dissertations leading to successful publications. In addition, he mentored 17 different SIBS students on summer research projects and also served on multiple PhD dissertation committees. He is currently an Associate Editor for the statistical journal *Sequential Analysis*. Relevant publications resulting from his PhD advising are:

VanBuren, J. M., Oleson, J. J., **Zamba KD.** (2016). "Integrating Independent Spatio-Temporal Replication to Assess Population Trends in Disease Spread," *Statistics in Medicine*. 35 (28); 5210—5221.

Yang M., Cavanaugh JE., **Zamba KD.** (2015). "State-Space Models for Count Time Series with Excess Zeros," *Statistical Modelling*. 15 (1); 70—90.

Yang M., **Zamba KD.**, Cavanaugh JE (2013). "Markov Regression Models for Count Time Series with Excess Zeros," *Statistical Methodology*. 14; 26—38.

Yang M., **Zamba KD.**, Cavanaugh JE (2013). "Statistical Model for Count Time Series with Excess Zeros," *The R Project for Statistical Computing, Comprehensive R Archive Network (CRAN)*.

Dr. Zamba is currently the principal investigator for the NIH/NHLBI R25 HL131467, Summer Institute for Research Education in Biostatistics (ISIREB). In addition, he is the lead biostatistician and Co-investigator on a number of funded research projects at the University of Iowa, including being a member of the Biostatistics Core of the Holden Comprehensive Cancer Center, a faculty consultant at the Biostatistical Consulting Center,

and the biostatistician for the first-in-the-nation funded Specialized Program Of Research Excellence (SPORE) in neuroendocrine tumor study.

## **B. Positions and Honors**

### **Positions and Academic Appointments**

- 2003-2004 Visiting Assistant Professor, Department of Biostatistics, The University of Iowa College of Public Health
- 2004-2006 Assistant Professor (Clinical), Department of Biostatistics, The University of Iowa College of Public Health
- 2005- Assistant Professor (Joint Appointment), Biostatistics Core, Holden Comprehensive Cancer Center, The University of Iowa College of Public Health
- 2006-2012 Assistant Professor (Tenure-track), Department of Biostatistics, The University of Iowa College of Public Health
- 2008- Director, Iowa Summer Institute in Biostatistics, The University of Iowa College of Public Health
- 2012-2018 Associate Professor, Department of Biostatistics, The University of Iowa College of Public Health
- 2018- Professor, Department of Biostatistics, The University of Iowa College of Public Health

### **Honors and Awards**

- 1997 Distinguished Instructor Award; Kouvahey College, Lomé-Togo, West Africa
- 2000 Winner of a NSF Travel Award to attend the First Midwest Conference in Experimental Design in Columbus, OH
- 2001 Winner of the Society of Industrial and Applied Mathematics travel award to attend the First International Conference in Data Mining in Chicago, IL
- 2002 Excellence in Teaching Award; University of Minnesota, School of Statistics
- 2011 Faculty Teaching Award, University of Iowa College of Public Health
- 2012-14 Teaching Scholar Program, University of Iowa Carver College of Medicine
- 2014 The University of Iowa Carver College of Medicine Teaching Scholar
- 2016 Delta Omega Honor Society
- 2018 Faculty Service Award, University of Iowa College of Public Health

## **C. Contributions to Science**

Dr. Zamba contributions to science have been in methodological statistics and also in application of statistical methodology to address general classes of engineering and biomedical problems. His specific areas of methodological contribution are: change point problems; sequential analysis; recurrent events; and syndromic surveillance. Areas of collaborative contributions are: glaucoma; emphysema; influenza and cancer. A selected listing of his published work can be found at

[http://www.myweb.uiowa.edu/gzamba/index\\_files/GZ\\_CanonicalCV.pdf](http://www.myweb.uiowa.edu/gzamba/index_files/GZ_CanonicalCV.pdf) .

**1- Sequential Analysis and Change Points:** His early work explored sequential multivariate change point detection in dynamic control theory. This work was undertaken using a generalized likelihood ratio test applied between various hypothetical pre-change and post change series for data that accrue serially. The technicality consists of applying the classical fixed-sample change point formulation to sequential processing by defining a repeated testing scheme in which as a new observation accrues, the change point test is reapplied to the accumulated data in a way that the probability of type I error remains constant. The multivariate adaptation of this method has been instrumental in change point detection in medical ambulatory monitoring. The approach has since been widely used in industrial statistics.

**Zamba KD.,** Hawkins DM.(2009) "A Multivariate Change point Model for Change in Mean Vector and/or Covariance Structure," *Journal of Quality Technology* 41(3), 539—549

**Zamba KD.,** Hawkins DM.(2006) "A Multivariate Change point Model for Statistical Process Control," *Technometrics* 48(4), 539—549

Hawkins DM., **Zamba KD.**(2005) " Statistical Process control for Shift in mean or Variance using a Change Point Formulation," *Technometrics* 47(2) 164—173.

**2- Syndromic Surveillance and Disease Monitoring:** A second line of research and contribution to science examined some key issues pertaining to bio-surveillance; as bioterrorism became a focus in the US. As most biological weapons, when released, operate with symptoms similar to some infectious diseases, the focus has been centered on using medical data to assess evidence for biological activity. Dr. Zamba's work in this area defines a shift in medical information processing from the classical retrospective chart review to a prospective and real-time disease surveillance in which clinical data become investigational tools to report early biological activity to sentinels and augment medical diagnoses. The work uses Bayesian thinking to prospectively model and detect unusual activity through sequential Bayes model-switching techniques, in order to monitor disease profiles such as seen in influenza-like illnesses.

**Zamba KD.**, Tsiamyrtzis P., Hawkins DM. (2013) "A Three-State Recursive Sequential Bayesian Algorithm for Biosurveillance," *Computational Statistics and Data Analysis*, 58, 82—97

**Zamba KD.**, Tsiamyrtzis P., Hawkins DM. (2008) "Sequential Bayesian Control Model for Influenza-like-illnesses and Early Detection of Intentional Outbreak," A Multivariate Change point Model for Statistical Process Control," *Health Edition of Quality Engineering* 20(4), 495—507

**3- Recurrent Events Distribution Estimation and Testing:** His most recent methodological work has been in the area of the longitudinal assessment of episodes of recurrent events, including the estimation of their inter-event time distribution and their hazard functions, in the presence of within-subject events correlation, and the testing mechanism of their distribution function against a parametric family for prediction and inferential purposes. This work is having a great impact as it provides a ground-breaking development that has led to new statistical testing mechanisms in the area of recurrent events analyses.

Adekpedjou A., Withanage D-MA., **Zamba KD.** (2015) "Data Dependent Cells Chi-Squared Test With recurrent Events," *Scandinavian Journal of Statistics*, doi: 10.1111/SJOS.12150.

Adekpedjou A., **Zamba KD.** (2012) "A Chi-Squared Goodness-of-fit Test for Recurrent Event Data," *Journal of Statistical Theory and Application*, 11(2), 97-119.

**Zamba KD.**, Adekpedjou A. (2010) "Parameter Estimation for Correlated Recurrent Events under Informative Monitoring," *Statistical Methodology*, 8, 273—290.

**4- Contribution to Science through Cancer, Influenza, Emphysema, and Glaucoma Research:** Dr. Zamba collaborative contributions to science are inextricably linked to his career and research endeavors as a biostatistician. As he holds joint appointments at the Holden Comprehensive Cancer center, he collaborates with investigators on a wide range of biomedical studies, including study designs, preclinical studies and clinical trials to evaluate new cancer treatments, and epidemiologic cancer studies. He also collaborates with investigators in neurology and ophthalmology to develop mathematical models for the spatio-temporal progression of glaucoma. In radiology and human lung assessment, he contributes to the statistical models of emphysema metrics, of lung parenchyma measures and their behaviors within the human lung tree.

Menda, Y., Boles Ponto, LL., Scultz, M.K., **Zamba KD.**, Watkins G.L., Bushnell, D.L., Madsen M.T., Sunderland J.J., Graham M.M., O'Dorisio T.M., O'Dorisio, S.M. (2013), "Repeatability of 68Ga-DOTATOC PET Imaging in Neuroendocrine Tumors" *Pancreas* 42(6) 937—43.

Hrabe, J. E., Byrn, J. C., Kapadia, M. R., Button, A., **Zamba, KD.**, Mezhir, J. J. (2013), "A Matched Case-Control Study of IBD-Associated Colorectal Cancer: IBD Portends Worse Outcome," *Journal of Surgical Oncology* doi 10.1002/jso.23465.

Krishna, I. S., Grout R. W., Wilson, J. M., Cook-Granroth, J. E., **Zamba, KD.**, Hoffman, E. A. (2012). Repeatability and Sample Size Assessment Associated with Computed Tomography-Based Lung Density Metrics. *Academic Radiology* 1(1) 97—104.

Wall M, Woodward KR, Doyle CK, **Zamba, KD.**, (2010) "The Effective Dynamic Ranges of Standard Automated Perimetry Sizes III and V, Motion and Matrix Perimetry". *Archives of Ophthalmology* 128:570-576.

## **D. Research Support**

### **Ongoing Research**

5 P30 CA086862 (PI: George J. Weiner)

7/14/00-3/31/21

National Cancer Institute

Cancer Center Support Grant

Role: Biostatistician

This Cancer Center Support Grant is to support the Research activities of the University of Iowa Cancer Center.

15SFRN23480000 (PI: Curt Sigmund)

4/1/15-3/31/19

American Heart Association

University of Iowa Strategically Focused Hypertension Research Center

Role: Biostatistician

5 P50 CA174521 (PI: Sue O'Dorisio)

9/1/15-8/31/20

National Institutes of Health

Neuroendocrine Tumor Specialized Programs of Research Excellence (SPORE) in Human Cancer

Role: Co-Investigator

A Neuroendocrine tumor SPORE at the University of Iowa will result in advances that have an extraordinarily large clinical impact on the length and quality of life for a rapidly growing population of patients with NETs. The Neuroendocrine Tumor SPORE would 1) support innovative translational research in NETs; 2) provide support to translational investigators through interactive cores; 3) Enlist and encourage new translational researchers in NETs through developmental projects and career development; 4) promote early and accurate diagnosis through outreach to physicians and advocacy groups.

5 R25 HL131467 (PI: Gideon Zamba)

2/15/16-1/31/19

National Institutes of Health

Iowa Summer Institute for Research Education in Biostatistics

Role: PI

This is a proposal to the National Institutes of Health (NIH), National Heart, Lung and Blood Institute (NHLBI), from the University of Iowa, in response to RFA-HL-16-017 for a Summer Institute for Research Education in Biostatistics. The ultimate vision of our proposed research education program is to increase the number of undergraduates who enter graduate programs in Biostatistics and to maintain a solid underrepresented minority pipeline into biostatistics graduate programs. The proposal is for the University of Iowa (UI) Department of Biostatistics to recruit a diverse group of 18 trainees each year, from 2016 to 2018, with focus on small liberal arts colleges, underrepresented, and disadvantaged students who wouldn't have otherwise been exposed to the field of biostatistics.

VA IPA Contract (PI: Gideon Zamba)

4/1/16-3/31/19

US Dept. of Veteran's Affairs, Iowa City VAMC

VA PIA

PI: Zamba, Gideon

Role: PI

### **Completed Research**

5 R01 MH0864821

2/1/11-12/31/15

US Dept. of Veteran's Affairs, Iowa City VAMC

Combined Illness Management and Psychotherapy in Treating Depressed Elders

PI: Turvey, Carolyn

Role: Co-PI (Biostatistician)

5 R01 CA167632 (PI: M. Sue O'Dorisio and Yusuf Menda)

National Cancer Institute

8/1/12-6/30/17

Image Guided Diagnosis and Therapy of Neuroendocrine Tumors

Role: Co-Investigator

The goals are to determine safety and efficacy of Ga-DOTATOC PET imaging and Y-DOTATOC Therapy in children and adults with neuroendocrine tumors.

5 R18 HS018396 (PI: Marcia Ward)

AHRQ

8/1/12-7/31/15

Evaluation of TeamSTEPPS Implementation for Community Hospital Patient Safety

Role: Co-Investigator

This study is designed to prospectively evaluate in community hospitals the elements of the TeamSTEPPS approach including organizational readiness, culture, training effectiveness, implementation strategies and fidelity, staff behaviors, burden/cost, and outcomes to identify the elements that are most important for success.

5 T15 HL097622 (PI: Kathryn Chaloner)

8/20/09-2/28/15

NIH

Iowa Summer Institute in Biostatistics (ISIB)

Role: Co-PI

There is a nationwide shortage of biostatisticians and the shortage is having a negative impact on medical and public health research. The goal of this proposed program is to increase the number of undergraduates who enter graduate programs in Biostatistics or related areas. Instruction will be through case-based instruction of real biomedical research; computer laboratory training; projects; and clinical and translational research enrichment activities.

5 T15 HL097622 (PI: Gideon KD Zamba)

8/20/15-2/28/16

NIH

Iowa Summer Institute in Biostatistics (ISIB)

Role: PI

There is a nationwide shortage of biostatisticians and the shortage is having a negative impact on medical and public health research. The goal of this proposed program is to increase the number of undergraduates who enter graduate programs in Biostatistics or related areas. Instruction will be through case-based instruction of real biomedical research; computer laboratory training; projects; and clinical and translational research enrichment activities.

VA Contract

10/1/10-6/30/15

US Dept. of Veteran's Affairs, Iowa City VAMC

IPA for Applied Research

PI: Zamba, Gideon

Role: PI