TEXAS STATE VITA

I. Academic/Professional Background

A. Name and Title

Name: Dr. Rasim M. Musal Title: Associate Professor

B. Educational Background

Degree	*Year*	*University*	*Major*	*Thesis/Dissertation*
PHD	2007	George Washington University	Management and Technology	Bayesian Modeling of Group Preferences and Population Utility Estimation
MBA	2001	George Washington University	Information Systems Management	
BA	1998	Koc University	Business Administration	

C. University Experience

Position	*University*	*Comments*	*Dates*
Assistant Professor	Texas State University		August 2009 - Present
Visiting Assistant Professor	Texas State University		January 2009 - May 2009
Visiting Research Professor	The George Washington University	Created macros, processed data, and applied statistical methods to detect fraud in health care by investigating large databases. Used SAS to generate simple GIS and conduct clustering and other methods.	January 2007 - December 2008
Research Associate	The George Washington University		October 2007 - December 2007
Adjunct Instructor	The George Washington University	I have taught Introduction to Quantitative	January 2005 - December 2006

Position	*University*	*Comments*	*Dates*
		Methods and Epidemiology to students from Health Services Management and Leadership department.	

D. Relevant Professional Experience

Position	*Entity*	*Comments*	*Dates*
Subcontractor	SGS		October 2007 - December 2008
Subcontractor	IMS Government Solutions		May 2007 - September 2007

E. Other Professional Credentials (licensure, certification, etc.)

Teaching Online at Texas State, Texas State Online and Extended Programs. (December 30, 2025 - Present).

II. TEACHING

A. Teaching Honors and Awards:

Award / Honor Recipient: Dean Nominee for the Presidential Award for Excellence in Teaching, McCoy College of Business Administration.
August 2011

Award / Honor Recipient: Excellence in Teaching, Health Services Management and Leadership, The George Washington University.
May 2007

B. Courses Taught:

Texas State University:

ANLY 2333 - BUSINESS STATISTICS

ANLY 3334 - STATISTICAL MODELING

ANLY 3339 - DM & VISUALIZATION

ANLY 5334 - STAT METHODS FOR BUSINESS

MGT 5333 - PROB IN BUS ADMIN

QMST 2333 - BUS STAT

QMST 3334 - INTERM BUS STAT

QMST 3334 - STATISTICAL MODLNG

QMST 3339 - DM & VISUALIZATION

QMST 5334 - ADV STAT METHODS

QMST 5334 - STAT METHODS

QMST 5342 - PROB & STAT MODEL

QMST 5343 - DATA MINING

C. Directed Student Learning (i.e. theses, dissertations, exit committees, etc.):

Member, Dissertation, "Investigating the scale effect on human mobility patterns", Status: Proposal. (May 15, 2020 - Present). Geography, Texas State University.
Student(s): Khan Murtaza, Doctoral, Geographical Information Systems.

Member, Exit Exam, "The Temporal and Spatial Patterns of Taxi Trips in Chicago Analyzed Using Time Series Analysis", Status: Completed. (July 9, 2020 - October 16, 2020). Geography, Texas State University.
Student(s): Ben Wang, Graduate, Master of Science in Geography.

Additional Comments: Ben was a student of mine in the graduate Analytics course. He asked me to be a member of his master's dissertation committee as well as give his oral comprehensive exam. I am listing these two together.

Member, Master's Thesis Committee Member, "Sustainable Supply Chain: Key Performance Indicators", Status: Completed. (2012). Other (Within Texas State University - San Marcos).
Student(s): Ricardo Videtta.

Comprehensive Examination Committee Member, Status: Completed. (April 20, 2012). Other (Within Texas State University - San Marcos).
Student(s): Zhuo Wang.
Additional Comments: QMST 5334. Prepared the QMST 5334 comprehensive examination question and graded it for Mr. Wang who is a student in the Department of Engineering Technology.

Doctorate Proficiency Examination Committee, Status: Completed. (June 22, 2011). Other (Outside Texas State University - San Marcos).
Student(s): Can Aydin.

Additional Comments: This activity refers to my participation as an outside observer in the 6 month dissertation review committee of two students from Turkey. The institution is Dokuz Eylul Universitesi of Izmir

Doctorate Proficiency Examination Committee, Status: Completed. (June 22, 2011).
Other (Outside Texas State University - San Marcos).
Student(s): Ozlem Yavuz.
Additional Comments: This activity refers to my participation as an outside observer in the 6 month dissertation review committee of two students from Turkey. The institution is 9 Eylul Universitesi of Izmir

D. Courses Prepared and Curriculum Development:

QMST 5334, Texas State University. Taught: June 2018 - September 2018.

Additional Comments: Have prepared and is making use of approximately 6GB of online material for QMST 5334 students.

ANYL 4321, First Time Course Preparation, Texas State University. Approved: August 2024 - Present.

Additional Comments: There are approximtely 6 weeks of lectures in the slides that have been prepared for this course.

https://rpubs.com/mmusal/Intro_4321
https://rpubs.com/mmusal/Likelihood_4321
https://rpubs.com/mmusal/Entropy_4321
https://rpubs.com/mmusal/AIC_BIC_AICc

QMST 5343 Data Mining, New Course. Taught: January 2021 - May 2021.
2020 Spring QMST 5343 Syllabus-1.docx

QMST 5342 Probability and Statistical Models, New Course, Texas State University. Taught: August 2020 - December 2020.
QMST 5342 Spring 2020 Syllabus-1.pdf

QMST 3339, Revise Existing Course. Taught: August 2021 - December 2021.

Additional Comments: Developed more than 100 short videos for the course that I have been using ever since.

F. Other:

Advised Students for a National Competition, MITRE Healthcare Anti-Fraud Academic Competition, The Mitre Corporation. 6. (October 1, 2019 - December 20, 2019).
MITRE December 20 Submission-1.pptx

Guest Lecture, Prepared Online Videos and Took Questions for MGT 5311. (October 15, 2019).

Additional Comments: Prepared multiple videos on Statistics for Project Management Masters' students and reviewed material during a guest lecture.

Guest Lecture, Prepared Online Videos and Took Questions for MGT 5311. (October 17, 2018).

Additional Comments: Prepared multiple videos on Statistics for Project Management Masters' students and reviewed material during a guest lecture.

III. SCHOLARLY/CREATIVE

A. Works in Print (including works accepted, forthcoming, in press):

1. Books:

a. Scholarly Monographs:

Refereed:

Musal, R., & Soyer, R. (2011). *Bayesian Modeling of Health State Preferences*. (N. Balakrishnan, M. S. Nikulin, & V. Rykov, Eds.) (1st ed., Vol. 36, p. 9). Basel, Switzerland: Birkhauser. Retrieved from www.springerlink.com/content/978-0-8176-4970-8 www.springerlink.com/content/978-0-8176-4970-8

Additional Comments: In this paper we present a Bayesian framework for modeling uncertainty about a population's health state preferences. Such a framework is motivated by the need to analyze preference-based measurement data that arise from evaluation of health states by a sample of individuals. The Bayesian framework leads to population utility estimation and health policy evaluation by introducing a probabilistic interpretation of the multiattribute utility theory (MAUT) models used in health economics. In so doing, our approach combines ideas from the MAUT approach of Keeney and Raiffa [10] and Bayesian view point to provide an alternate method of modeling preferences.

2. Articles:

a. Refereed Journal Articles:

McCurdy, K. W., & Musal, R. M. (2026). Prediction of Maximal Vertical Jumps during the Entire Season in NCAA Division 1 Women Basketball Players. *International Journal of Strength and Conditioning*, *6*(1). https://doi.org/https://doi.org/10.47206/ijsc.v6i1.509 https://journal.iusca.org/index.php/Journal/article/view/509

Musal, R. M., Aktekin, T., & Ekin, T. (2025). Bayesian Spatial Analysis of Socioeconomic Determinants on COVID-19 Mortality. *Journal of Applied Statistics*, 1–37. https://doi.org/02664763.2025.2593322 https://doi.org/10.1080/02664763.2025.2593322

Ekin, T., & Musal, R. M. (2022). Integrated statistical and decision models for multi-stage health care audit sampling. *Journal of Applied Statistics*, *49*(9), 2307–2325.

Integrated statistical and decision models for multi stage health care audit sampling-1.pdf

Additional Comments: McCoy Rank: B, Cabell's List Inclusion:YES, Cabell's Acceptance Rate: 17%, JCR 2021 Impact Factor: 1.416, JCR JCI: 0.59, ABDC Rank: B, CABS AJG Field: ECON CABS Rank: 2, SJR Quartile:Q3, SJR Indicator: 0.537, SJR H-Index: 63, Scopus CiteScore: 2.5

Ekin, T., Lakomski, G., & Musal, R. (2019). An Unsupervised Bayesian Hierarchical Method for Medical Fraud Assessment. *Statistical Analysis and Data Mining*, *12*, 116–124.

J2_Ekinetal_SAM2019-1.pdf

Additional Comments: McCoy Rank: B, Cabell's List Inclusion:YES, JCR 2021 Impact Factor: 1.247, JCR JCI: 0.34, CABS AJG Field:ECON, CABS Rank: 1, SJR Quartile:Q3, SJR Indicator: 0.472, SJR H-Index: 34, Scopus CiteScore: 2.1

Musal, R., & Ekin, T. (2018). Information Theoretic Multi-Stage Sampling Framework for Medical Audits. *Applied Stochastic Models in Business and Industry*, *34*, 893–907.

Musal_Ekin-ASMBI-1.pdf

Additional Comments: McCoy Rank: B, Cabell's List Inclusion:YES, JCR 2021 Impact Factor: 1.497, JCR JCI: 0.44, ABDC Rank: B, SJR Quartile:Q2, SJR Indicator:0.455, SJR H-Index: 41, Scopus CiteScore: 2.1

Musal, R., & Ekin, T. (2017). Medical Overpayment Estimation: A Bayesian Approach. *Statistical Modelling*, *17*(3), 196–222.

MusalEkin_SM17-1.pdf

Additional Comments: McCoy Rank: B, Cabell's List Inclusion:YES, Cabell's Acceptance Rate: 15%, JCR 2021 Impact Factor: 0.927, JCR JCI: 0.62, ABDC Rank: B, SJR Quartile:Q2, SJR Indicator:0.796, SJR H-Index: 45, Scopus CiteScore: 3.1

Musal, R. M., & Ekin, T. (2017). Medical overpayment estimation: A Bayesian approach. *Statistical Modelling*, *17*(3), 196–222. https://doi.org/10.1177/1471082x16685020 https://doi.org/10.1177/1471082x16685020

Ekin, T., Musal, R., & Fulton, L. (2015). Overpayment Models for Medical Audits: Multiple Scenarios. *Journal of Applied Statistics*, *42*(11), 2391–2405. https://doi.org/https://doi.org/10.1080/02664763.2015.1034659 JCR IF: .8
Ekinetal_JAS15-1 (1)-1.pdf
Additional Comments: Editable duplicate to add impact factor

Ekin, T., Musal, R., & Fulton, L. (2015). Overpayment Models for Medical Audits: Multiple Scenarios. *Journal of Applied Statistics*, *42*(11), 2391–2405.
Overpayment models for medical audits multiple scenarios-1.pdf
Additional Comments: This is a duplicate entry to add recent journal information:
McCoy Rank: B, Cabell's List Inclusion: YES, Cabell's Acceptance Rate: 17%, JCR 2021 Impact Factor: 1.416, JCR JCI: 0.59, ABDC Rank: B, CABS AJG Field: ECON CABS Rank: 2, SJR Quartile:Q3, SJR Indicator: 0.537, SJR H-Index: 63, Scopus Cite Score: 2.5

Musal, R., & Aktekin, T. (2015). Analysis of Income Inequality Measures on the HIV Mortality: a Bayesian Perspective. *Journal of the Royal Statistical Society A*. Published.

Additional Comments: Social, economic, environmental and behavioral factors impacting health, is well recognized
in the literature. In this paper, we consider the use of dierent income inequality measures
in addition to a poverty measure and investigate their eects on HIV mortality. In doing so,
we make use of models that are capable of capturing zero inflation and spatial dependence
typically observed in HIV mortality data. The research is motivated by the lack of studies from
an inference and modeling perspectives in estimating HIV mortality using measures that take into account socio-economic status as well as location. Such a study can help policy makers to identify cases of environmental injustice and areas of outstanding health risk to assist in resource allocation problems. In our numerical example, we make use of mortality data obtained for the
state of New York, estimate model parameters from a Bayesian inference perspective and discuss the implications/interpretations of dierent income inequality measures.

Musal, R., & Soyer, R. (2014). Estimation of Group Priorities and Value of Information. *Journal of Multi-Criteria Decision Analysis*, (21), 173–181.

Additional Comments: In this paper we provide a methodology to quantify the amount
of information in a set of Analytical Hierarchy Process (AHP) priority vectors involving a group decision making process. These vectors represent the priorities of a group's assigned weights to C objectives. The quantification of the information content could be useful to decide

whether there is convergence of priorities assigned to these objectives to a neighborhood, or the whether there is any value in obtaining additional samples in increasing the amount of information. We illustrate the methods that we expose in this paper with an example from real-life priority setting to an academic department's objectives.

Fulton, L., Bastian, N., Mendez, F., & Musal, R. (2013). Rainwater harvesting system using a non-parametric stochastic rainfall generator. *Simulation*, *89*(6), 693–702.

Additional Comments: With water becoming an even scarcer resource, rainwater harvesting (RWH) systems are becoming increasingly more commonplace as mechanisms to capture and store rainwater for both agricultural and domestic use. Three important engineering considerations associated with the construction of RWH systems are the capture surface area, the tank volume
required for specific demand levels, and the number of expected occupants. The purpose of this work is to evaluate the engineering design of a RWH system in a semi-arid Texas region using a non-parametric stochastic rainfall generator
based on 64 years of data and to provide engineering charts and equations for future use. We model the RWH system using simulation techniques in order to estimate requirements for building a system capable of providing a family with 100% of its water requirements with demand never exceeding available supply

Musal, R., & Aktekin, T. (2013). Bayesian Spatial Modeling of HIV Mortality via Zero-inflated Poisson Models. *Statistics in Medicine*, *32*(2), 267–281. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/sim.5457/abstract http://onlinelibrary.wiley.com/doi/10.1002/sim.5457/abstract

Additional Comments: In this paper, we investigate the effects of poverty and inequality on the number of HIV-related deaths in 62 New York counties via Bayesian zero-inflated Poisson models that exhibit spatial dependence. We quantify inequality via the Theil index and poverty via the ratios of two Census 2000 variables, the number of people under the poverty line and the number of people for whom poverty status is determined, in each Zip Code Tabulation Area. The purpose of this study was to investigate the effects of inequality and poverty in addition to spatial dependence between neighboring regions on HIV mortality rate, which can lead to improved health resource allocation decisions. In modeling county-specific HIV counts, we propose Bayesian zero-inflated Poisson models whose rates are functions of both covariate and spatial/random effects. To show how the proposed models work, we used three different publicly available data sets: TIGER Shapefiles, Census 2000, and mortality index files. In addition, we introduce parameter estimation issues of Bayesian zero-inflated Poisson models and discuss MCMC method implications. Copyright © 2012 John Wiley & Sons, Ltd.

Fulton, L., Mendez, F., Bastian, N. D., & Musal, R. (2012). Confusion Between Odds and Probability, a Pandemic? *Journal of Statistics Education*, *20*(3), 1–15.

Additional Comments: This manuscript discusses the common confusion between the terms probability and odds. To emphasize the importance and responsibility of being meticulous in the dissemination of information and knowledge, this manuscript reveals five cases of sources of inaccurate statistical language imbedded in the dissemination of information to the general public. The five cases presented are: Texas Lottery, Texas PowerBall, the Discovery Education Website, ScienceNews, and the Oregon State website.

Fulton, L., Bastian, N., & Musal, R. (2012). Grade Performance In Statistics: A Bayesian Framework. *Journal of the Academy of Business & Economics*, *12*(5), 55–62.

Musal, R., Soyer, R., McCabe, C., & Kharroubi, S. A. (2012). Estimating the Population Utility Function: A Bayesian Parametric Approach. *European Journal of Operational Research*, *218*(2), 538–547.

Additional Comments: Health Related Quality of Life (HRQoL) is a method used to measure the perceived physical and mental health of a population. This measure can be used for various purposes such as evaluating the severity of the effect of a disease or comparing different treatment methods. There exist alternate HRQoL measurements. In this paper we consider the Health Utility Index Mark II (HUI2) to quantify and describe a population's HRQoL over health states which are composed of multiple attributes. We present a Bayesian framework for population utility estimation and health policy evaluation by introducing a probabilistic interpretation of the multiattribute utility theory (MAUT) used in health economics. In so doing, our approach combines ideas from the MAUT and Bayesian statistics and provides an alternative method of modeling preferences and utility estimation.

Musal, R. (2010). Two Models to Investigate Medicare Fraud within Unsupervised Databases. *Expert Systems with Applications*, *37*(12), 8628–8633. Retrieved from http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V03-50G696B-X&_user=10&_coverDate=12%2F31%2F2010&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=14f1fadbb51ae7fbbb54d2a2677e1b49 http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6V03-50G696B-

X&_user=10&_coverDate=12%2F31%2F2010&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&view=c&_acct=C000050221&_version=1&_urlVersion=0&_userid=10&md5=14f1fadbb51ae7fbbb54d2a2677e1b49

Additional Comments: We propose two models to identify fraud, waste and abuse in Medicare. These models are used to flag health care providers. The motivation for these models is based on observed cases of fraud. The paper details the use of clustering algorithms, regression analysis, and various descriptive statistics that are components of these models. Some of the challenges in the struggle to reduce fraud in Medicare are discussed.

b. Non-refereed Articles:

Fulton, L., Mendez, F., Bastian, N. D., & Musal, R. (2013). Rejoinder to Letter to the Editor: Confusion Between Odds and Probability, a Pandemic? *Journal of Statistics Education*, *21*(1). Retrieved from http://www.amstat.org/publications/jse/v21n1/fulton_rejoinder.pdf http://www.amstat.org/publications/jse/v21n1/fulton_rejoinder.pdf

Additional Comments: Rejoinder to Lesser, L. (2013), Letter to the Editor in response to: Fulton, L. V., Mendez, F. A., Bastian, N. D., & Musal, R. M. (2012), "Confusion Between Odds and Probability, a Pandemic?," Journal of Statistics Education, 20(3) (http://www.amstat.org/publications/jse/v20n3/fulton.pdf)

3. Conference Proceedings:

a. Refereed Conference Proceedings:

Elizondo, M., Musal, R. M., & Tesic, J. (2023). Clinical Tabular Data in the Wild: A Data Science Perspective. Retrieved from https://ieeeichi.github.io/ICHI2023/ https://ieeeichi.github.io/ICHI2023/

Fulton, L., Musal, R., & Mendez, F. (2012). Construction Analysis of Rainwater Harvesting Systems (pp. 1–11). Proceedings of the 2012 Winter Simulation Conference. Retrieved from http://dl.acm.org/citation.cfm?id=2429831 http://dl.acm.org/citation.cfm?id=2429831

Fulton, L., Ivanitskaya, L., Musal, R., & Erofeev, D. (2011). Comparing Traditional Teaching Methods with Variable Certification Requirements in Computer-Assisted Instruction - A Two Instructor Study (pp. 800–808). Proceedings For The Northeast Region Decision Sciences Institute. Retrieved from http://www.nedsi.org/proc/2011/proc/p101201003.pdf http://www.nedsi.org/proc/2011/proc/p101201003.pdf

Fulton, L., Musal, R., & Wierschem, D. (2011). Phishing for Scam: an Experimental Design (pp. 611–614). Proceedings For The Southwest Region Decision Sciences Institute. Retrieved from

http://www.swdsi.org/swdsi2011/2011_SWDSI_Proceedings/papers/papers/PA151.pdf
http://www.swdsi.org/swdsi2011/2011_SWDSI_Proceedings/papers/papers/PA151.pdf

Fulton, L., Musal, R., Ivanitskaya, L., & Haidar, S. (2011). The Effects of Computer Assisted Instruction and Variable Certification Requirements on Student Performance in Undergraduate Statistics Classes (pp. 3470–3475). International Academy of Technology, Education and Development. Retrieved from http://library.iated.org/?search_text=publication%3AINTED2011&adv_title=&rpp=25&adv_authors=&adv_keywords=&orderby=page&refined_text=musal
http://library.iated.org/?search_text=publication%3AINTED2011&adv_title=&rpp=25&adv_authors=&adv_keywords=&orderby=page&refined_text=musal

Additional Comments: The purpose of this research is to evaluate the effect of computer-assisted (CA) certification standards on student performance in undergraduate statistics classes while controlling for locus of control, gender, age, and three measures of pre-existing ability. Fulton, Mangelsdorff, and Bewley (2009) demonstrated that in-class use of technology normally associated with distance learning improved student outcomes and satisfaction in statistics courses. Both of these works illustrated the efficacy of CA without specifically addressing content certification. Fulton, Ivanitskaya, and Erefeev (2010) confirmed that implementation of more frequent deadlines for content certification correlated with improved performance of graduate students in statistics classes after isolating students' locus of control. Their study did not evaluate the efficacy of different certification standards (e.g., 70% versus 80% certification standards). This study addresses these shortcomings.

Fulton, L. V., Musal, R. M., Ivanitskaya, L., & Haidar, S. (2011). The Effects of Computer-Assisted Instruction and Variable Certification Requirements on Student Performance in Undergraduate Statistics Classes. In *INTED2011 Proceedings* (pp. 3470–3475).
inted-2.pdf

b. Non-refereed:

Fulton, L., Musal, R., Ivanitskaya Lana, Salma Haidar, & Carl Lee. (2011). Bayesian Hierarchal Models Of Final Exam Grades In Statistics Classes, A Two-University Study. Retrieved from https://ww2.amstat.org/meetings/jsm/2011/onlineprogram/AbstractDetails.cfm?abstractid=301988
https://ww2.amstat.org/meetings/jsm/2011/onlineprogram/AbstractDetails.cfm?abstractid=301988

Additional Comments: In this two university, IRB-approved study of business statistics courses, we use Bayesian hierarchical modeling to

search for the effects of pre-existing ability, demographics, manipulated homework certification standards, "cramming," and other covariates on the probability that a student achieves a particular grade. The significance of our research is that we are able to determine probabilistically the grade that students should expect given fixed covariate values. This information is valuable to both professors and students in realistically appraising likely performance. Our model is nonlinear in parameters and reflects a zero-inflated distribution, accounting for the population of students who did not have an economically rational reason to take the final examination. We identify the distinct number of student grade groups and employ mixed beta distributions in modeling the examination scores. By using Bayesian hierarchical modeling, we are able to obtain the examination grade probability distribution that any student "i" will obtain given covariate values. As part of our research, we conduct cross-validation and evaluate model fit.

4. Abstracts:

Musal, R. M., & Temponi, C. C. (Published). Text Mining via Hierarchical Bayesian Methods: The case of the small samples, *54*(2).

B. Works Not in Print:

1. Papers Presented at Professional Meetings:

Ekin, T., Musal, R. M., Aktekin, T., 13th Bayesian Inference for Stochastic Processes Conference, "Bayesian Spatial Analysis of Socioeconomic Determinants on COVID-19 Mortality," Madrid, Spain. (May 2023).

Ekin, T., Musal, R. M., INFORMS 2017 Annual Meeting, "Information Theoretic Multi-Stage Sampling Framework for Medical Audits," INFORMS, Houston, TX, United States. (October 2017).

Ekin, T. (Presenter & Author), Musal, R. (Author Only), Lakomski, G. (Author Only), INFORMS Computing Society Conference 2017, "Unsupervised Bayesian Hierarchical Methods For Medical Fraud Assessment," INFORMS, Austin, TX. (January 2017).

Ekin, T. (Presenter & Author), Musal, R. (Author Only), Lakomski, G. (Author Only), Conference of Texas Statisticians 2016, "Unsupervised Bayesian Approaches For Medical Fraud Assessment," Conference of Texas Statisticians, American Statistical Association, San Antonio, TX. (April 9, 2016).

Ekin, T. (Author Only), Musal, R. (Presenter & Author), INFORMS Annual Meeting, "The Use of Lindley’s Entropy in Dynamic Sampling Decisions," INFORMS, Philadelphia, PA. (November 2, 2015).

Ekin, T. (Presenter & Author), Lakomski, G. (Author Only), Musal, R. (Author Only), INFORMS Annual Meeting, "Unsupervised Data Mining for Medical Fraud Detection," INFORMS, Philadelphia, PA. (November 1, 2015).

Musal, R. (Presenter & Author), Ekin, T. (Author Only), INFORMS Annual Meeting, "A Dynamic Sampling Framework for Medical Overpayments," INFORMS, San Francisco. (November 2014).

Musal, R., Joint Statistical Meetings, "Estimating the Population Utility Function: A Parametric Bayesian Approach," American Statistical Association, Washington, DC. (2009).

Musal, R., Institute for Operations Research and Management Sciences, "Finding Fraud Waste and Abuse in Health Care," INFORMS, Washington, DC. (October 2008).

Musal, R., Institute of Operations Research and the Management Sciences Conference, "Population Utility Function; A Bayesian Frame work," INFORMS, San Francisco, CA. (2005).

2. Invited Talks, Lectures, and Presentations:

Musal, R. M., Texas State Statistics Department Seminar, "Hidden Markov Models and their Application in STAN," San Marcos, TX, United States. (October 7, 2022).

Musal, R. M., Texas State Statistics Department Seminar, "Modeling Coefficient Changes in the Counties of California's Covid-19 Mortality Counts," San Marcos, TX, United States. (February 18, 2022).

Musal, R. M., INFORMS Annual Meeting, "Multivariate Spatial Models for Substance Abuse Related Incidences," Houston, TX, United States. (October 23, 2017).

Musal, R., "Current Research Stream: Fraud Investigations," University of New Hampshire, NH. (December 13, 2013).
Additional Comments: Current Research stream within the context of Fraud Investigations.

Musal, R., Temponi, C., INFORMS 2013, "Text Mining via Hierarchical Bayesian Methods: The Case of Small Samples," INFORMS, Minneapolis. (October 9, 2013).
Additional Comments: Bayesian methods has been applied within the context of text mining since middle of the first decade of 21st century. We provide a new perspective for the case of small corpus.

Musal, R. (Presenter & Author), Tevfik, A. (Author Only), INFORMS 2012, "Bayesian Modeling of HIV and Tuberculosis Mortality via Zero Inflated Poisson Models," INFORMS, Phoenix. (October 16, 2012).
Additional Comments: A multivariate spatial structure is demonstrated for the purposes of modeling correlated diseases.

Musal, R., YIRCOBS 2012, "Bayesian Spatial Modeling of HIV Mortality via Zero-Inflated Poisson Models," Yeditepe University Management Application and Research Center, Istanbul. (June 14, 2012).

Musal, R., Fulton, L., INFORMS 2011, "A Hierarchical Bayesian Model with Inflated Beta Mixtures," INFORMS, Charlotte, NC. (2011).

Fulton, L. (Presenter & Author), Musal, R. (Author Only), Ivanitskaya, L. (Author Only), Haidar, S. (Author Only), Joint Statistical Meeting, "Bayesian Hierarchal Models of Final Exam Grades in Statistics Classes: A Two-University Study," American Statistical Association, Miami Beach, FL. (August 2, 2011).

Additional Comments: In this two university, IRB-approved study of business statistics courses, we use Bayesian hierarchical modeling to search for the effects of pre-existing ability...

Musal, R., 5th INFORMS Workshop on Data Mining and Health Informatics, "Data Mining Methods to Investigate Medicare Fraud Within Unsupervised Database," INFORMS, Austin. (2010).

Musal, R. (Presenter & Author), Aktekin, T. (Author Only), INFORMS 2010, "Explaining HIV Mortality, Bayesian Spatial Models Applied with MCMC Methods," INFORMS, Austin. (2010).

Musal, R., Brown Bag Talks, "Effect of Inequality and Poverty on the Mortality rate of HIV," School of Business, Texas State University, San Marcos, TX. (April 23, 2010).

Musal, R., Brown Bag Presentations, "Finding Medicare Fraud in Unsupervised Database," Texas Center for Geographic Information Science, Texas State. (November 6, 2009).

5. Other Works not in Print:

a. Works "submitted" or "under review":

Journal Articles:

Musal, R., & Sullivan, P. (Submitted / Under Review). A Bayesian Exploration; Sustainable Fashion Product Knowledge on Sustainable Product Adoption. *Journal of Royal Statistical Society (C)*. (July 12, 2014)

b. Works "in progress":

Journal Articles:

Musal, R. M., & Ekin, T. (In Preparation; Not Yet Submitted). Regime Change Models using Hidden Markov Models in the context of Covid-19 Pandemic.

Musal, R., & Aktekin, T. (In Preparation; Not Yet Submitted). Multivariate Spatio Temporal Model of Quantifying the Effects of HIV Comorbidities.
Additional Comments: Having obtained the death certificates of individuals in NY for the years 2000-2004 we come up with a Multivariate Spatio Temporal Model which allows the quantification of co-morbidities with HIV

Bhardvaj, V., Ekin, T., & Musal, R. (In Preparation; Not Yet Submitted). Factors in determining Counterfeit Purchase Behavior: A Bayesian Framework.

Additional Comments: Data exists from 500 individuals who answered questions relating to purchases of counterfeit brands as well as other constructs that are hypothesized in literature to be effective in determining purchase behavior. We use a Bayesian algorithm to choose the relatively more important constructs and than build an inferential model.

Temponi, C., & Musal, R. (In Preparation; Not Yet Submitted). An Investigation of the Demand Driven Supply Chain Networks Literature via Data Mining Methods. *Journal of Supply Chain Management*.

c. Other Works Not in Print:

Creative Works Cited in Conference Papers / Presentations:

Musal, R. M., Aktekin, T., Ekin, T., INFORMS Annual Conference, "Modeling Coefficient Changes in the counties of California's Covid-19 Mortality Counts," Indianapolis, IN, United States. (October 16, 2022).

Other:

Musal, R., "Phone Interview on Fraud," IEEE Spectrum. (November 17, 2010).

Posters:

Musal, R. M., Ekin, T., Aktekin, T., Health Scholar Showcase, "Social Determinants of Health and Spatio-Temporal Effects on Covid-19 Mortality," Texas State University, San Marcos, TX, United States. (March 22, 2022).

Musal, R. (Presenter & Author), Ekin, T. (Author Only), Healthcare Scholar Showcase, "Quantifying Sample Information for Better Decisions: Stratification and Sampling decisions in Medicare," Texas State University, San Marcos. (February 2017).

C. Scholarly / Creative Grants and Contracts:

1. Funded External Grants and Contracts:

Ekin, Tahir (Principal), Musal, Rasim M (Co-Principal), Shah, Jaymeen (Co-Principal). Data Analytics Maturity Plan, Texas Health & Human Services Office of the Inspector General's Office, State, $51,333.00. (Submitted: March 2021, Funded: June 2021 - August 2021). Contract.

Feng, Li (Supporting), Chen, Xiao (Principal), Ekin, Tahir (Supporting), Musal, Rasim (Supporting). Enabling and Improving Data-Driven Research at Texas State University, National Science Foundation, Federal, $499,896.00. (Funded: October 1, 2014 - September 30, 2017). Grant.

Additional Comments: Data are now woven into every sector and function in our society. Texas State researchers are pioneering in solving some of the most pressing challenges using big data in the fields of Biochemistry, Biology, Geography, Computer Science, Finance and Economics, Mathematics, and Information Systems. Nonetheless, the current Texas State cyberinfrastructure and connectivity capacity present obstacles to the research projects involving big data and the collaborations among multiple institutions sharing massive amounts of data.

This project develops a high-speed campus network infrastructure to enable and improve data-driven research at Texas State. It enables immediate 10Gb capability and 100Gb in the future, and creates a Science DMZ on the campus network dedicated to research data to allow researchers to exchange large datasets with their peers over the network at a much faster speed. The infrastructure enhances and better facilitates big data research across a wide range of disciplines at Texas State with notable societal benefits, enables all other Texas State University System member institutions to establish similar environments to accommodate their research and education needs, advances the integration of research and education, promotes cross-institutional collaborations, and will significantly enhance the current big data research and teaching capabilities at Texas State and beyond.

2. Submitted, but not Funded, External Grants and Contracts:

Konur, Dincer (Principal), Percent Contribution: 40%, Musal, Rasim M (Co-Principal), Percent Contribution: 40%, Ikehata, Keisuke (Co-Principal), Percent Contribution: 20%. Data Analysis for Enerflex, Exterran Energy Solutions, L.P., Private / Foundation / Corporate, $65,973.00. (Submitted: June 2024). Sponsored Research.

Additional Comments: The company approved the proposal; however, the terms related to payments were not approved by TXST and the company decided not to proceed.

McCurdy, Kevin W (Principal), Farrell, John Wayland (Co-Principal), Kim, Joosung (Co-Principal), Musal, Rasim M (Co-Principal). Prediction of recovery and risk of injury and illness in Division 1 women basketball players across the entire season, NSCA, Private / Foundation / Corporate, $20,721.00. (Submitted: February 2024). Grant.

Musal, Rasim M. Predicting Long Covid, N3C, Federal, $200,000.00. (Submitted: December 15, 2022). Contract.

Additional Comments: This work was led by Dr. Tesic of computer science department of Texas State University. I will remove this once she adds the whole team. I am adding it right now for the current year report.

Musal, Rasim M. SARS-CoV-2 Reinfection Severity, National COVID Cohort Collaborative (N3C) PHASTR, Federal, $50,000.00. (Submitted: December 15, 2022). Contract.

3. Funded Internal Grants and Contracts:

Ekin, Tahir, Musal, Rasim (Co-Principal). Overpayment Models for Medical Audits: Multiple Scenarios, McCoy College of Business, Texas State University, $2,500.00. (Submitted: February 2014, Funded: September 2014 - May 2015). Grant.

4. Submitted, but not Funded, Internal Grants and Contracts:

Ekin, Tahir (Supporting), Fulton, Lawrence V (Principal), Hewitt, Barbara A (Supporting), Dolezel, Diane M (Supporting), McLeod, Alexander John (Supporting), Musal, Rasim M (Supporting), Lieneck, Cristian H (Supporting). Modeling Alzheimer's Disease Progression via Novel Deep Learning Strategies, Texas State University Multi-disciplinary Internal Research Grant (MIRG), Texas State University, $30,000.00. (Submitted: January 2021). Grant.

Ekin, Tahir (Co-Principal), Musal, Rasim M (Co-Principal), Shanmugan, Ram. Estimating and Sampling Overpayments in Medicare/Medicaid, Texas State University Multidisciplinary Internal Research Grant, $25,000.00. (Submitted: March 2014). Grant.

F. Media Recognition:

Internet, http://www.analyticbridge.com/group/HealthCareFraudAbuse/forum/topics/computers-key-to-fighting. (November 2010).

Additional Comments: This is a website that describes itself as "Data Science Central Channel for Business Analytics, Data Intelligence, Predictive Modeling, Operations Research, Data Mining." Erica West briefly interviewed me for my work in fraud detection and this was one of the outlets which included Texas State University label with my name.

Internet, http://spectrum.ieee.org/biomedical/ethics/computers-key-to-fighting-medicare-fraud. (November 17, 2010).

Additional Comments: This is the other outlet involving my name with Texas State University where my work in fraud detection was mentioned. IEEE stands for Institute of Electrical and Electronics Engineers. This is the same interview as the other media outlet.

IV. SERVICE

A. Institutional

2. College:

Committee Member, Research Enhancement Program.

Additional Comments: Rank grant applications in order to award original research ideas. Awarded funds to two projects.

Course Coordinator for QMST 5334, Course Coordinator for QMST 5334. (August 16, 2018 - Present).

3. Department/School:

Chair, Faculty Search. (November 2024 - Present).

Workstation Manager. (August 15, 2021 - Present).

Additional Comments: Established accounts, acted as point person for ITAC to get remote access for students, kept the system updated and upgraded. Helped GRA troubleshoot his access issues.

Coordinator, Course Coordinator 3334. (August 2011 - January 2020).

Additional Comments: Keep track of students abilities in two key measures "Utilize appropriate analytical techniques to support business decision-making. and
"Utilize appropriate analytical tools to support business decision-making.". Prepared the report for Fall 2011 and Spring 2012.

Chair, Faculty Selection. (August 15, 2018 - December 30, 2018).

Additional Comments: Committee led to Dr. Zhu's hiring.

Chair, Faculty Selection. (August 18, 2017 - December 23, 2018).

Additional Comments: Committee led to Dr. Konur's hire.

Committee Member, Chair Search. (August 2014 - December 2017).

Additional Comments: Committee led to Dr. Long accepting the position

Committee Chair, Faculty Search. (September 2015 - May 2016).

Committee Member, Faculty Hiring - Fall 2013. (September 18, 2013 - May 1, 2014).
Additional Comments: Leading to hire of Dr. Peiqin Zhang.

Committee Member, Research and Enhancement Program. (August 2012 - May 2013).

Committee Member, Faculty Hiring - Fall 2013. (February 18, 2013).
Additional Comments: Leading to hire of Dr. Lucian Visinescu.

Committee Member, Course Coordinator 5334. (August 2010 - May 2012).

Committee Member, Faculty Hiring - Fall 2012. (May 15, 2012).
Additional Comments: Leading to hiring of Dr. Tahir Ekin.

Committee Member, Faculty Hiring - Spring 2011. (February 2011 - December 2011).

B. Professional:

Reviewer / Referee, Journal of Applied Statistics. (October 10, 2024 - January 1, 2025).

Reviewer / Referee, Health Economics Review. (October 31, 2024 - December 24, 2024).

Reviewer / Referee, Health Services and Outcomes Research. (August 5, 2020 - December 26, 2020).

Additional Comments: I was the reviewer for two rounds of an article labeled Distinguishing anomalies from outliers. A method to reduce dimensionality and detect anomalies in assessment data via neural network.

Reviewer / Referee, Arab Journal of Basic and Applied Sciences. (September 26, 2019 - December 11, 2019).

Additional Comments: 3 cycles of reviews

Reviewer / Referee, International Statistical Review. (November 17, 2017).

Reviewer, Journal Article, Health Services and Outcomes Research Methodology. (December 15, 2016).
Additional Comments: Reviewed the paper "Probabilistic Programming for Multivariate Outlier Detection in Medicare Claims Payments".

Reviewer, Journal Article, Resources, Conservation & Recycling. (December 10, 2016).

Additional Comments: Reviewed the paper "Complexity-balanced method for urban scale rainwater harvesting simulation".

SAGE Book. (September 11, 2016 - September 16, 2016).
Additional Comments: Reviewed the book "Applied Ordinal Logistic Regression and Multilevel Modeling Using R".

Reviewer, Journal Article, Health Care Management Science. (2014).
Additional Comments: Review the paper "Breast cancer therapy planning - a sequential decision making problem".

Reviewer, Journal Article, International Journal of Technology and Decision Making. (2014).

Reviewer, Conference Paper, Transportation Research Board. (2012).

Reviewer, Conference Paper, Transportation Research Board. (2012).

Reviewer, Journal Article, European Journal of Operational Research. (2012).

Reviewer, Journal Article, International Journal of Technology and Decision Making. (2012).

Reviewer, Journal Article, European Journal of Operational Research. (December 21, 2011).
Additional Comments: Reviewed a paper for EJOR.

Reviewer, Journal Article, European Journal of Operational Research. (July 2, 2011).
Additional Comments: Reviewed a paper for EJOR.

Reviewer, Journal Article, Health Care Management Science. (2010).
Additional Comments: Reviewed the paper "A probabilistic model for predicting the probability of no-show in hospital appointments".

Reviewer, Journal Article, Health Care Management Science. (2010).
Additional Comments: Reviewed the paper "A probabilistic model for predicting the probability of no-show in hospital appointments" for the second time.

Reviewer, Journal Article, Health Care Management Science, New York, NY, United States. (July 30, 2010 - August 3, 2010).

Additional Comments: I reviewed the paper entitled
A probabilistic model for predicting the rate of no-show in hospital appointments.

Reviewer, Journal Article, Applied Stochastic Models in Business and Industry, Hoboken, NJ, United States. (April 6, 2010 - April 20, 2010).
Additional Comments: I reviewed the paper titled
Information Properties of Dirichlet Distribution with Applications.

C. Community:

Volunteer, Rodriguez Elementary, Austin, TX. (September 1, 2017 - December 1, 2017).

Additional Comments: Met with two students on Fridays for about an hour at Rodriguez Elementary.

Volunteer, Austin Montessori, Austin, TX. (August 10, 2017).

Additional Comments: Helped prepare room for the Montessori Class of Jamie Stone.

D. Organization Memberships:

Institute for Operations Research and Management Science Institute for Operations Research and Management Science Institute for Operations Research and Management Science ((INFORMS)).

Marine Environment TRB Committee, National Academy of Sciences (TRB,NAS). (June 5, 2008 - Present).
Additional Comments: Transportation practitioners, researchers, public officials, and other professionals need credible, high-quality information and research results to address the transportation challenges of the 21st century.

The Transportation Research Board engages professionals worldwide in a broad range of interdisciplinary, multimodal activities to lay the foundation for innovative transportation solutions.