

Assoc. Prof. Zeynep Kalaylioglu

Present Address

Department of Statistics, METU
Ankara, Turkey 06800

Education

Ph.D. in Statistics, North Carolina State University, Raleigh, USA, 2002
Thesis: Bayesian and Frequentist Unit Root Tests in Stochastic Volatility Models

M.Sc. in Statistics, North Carolina State University, Raleigh, USA, 1997
Minor in Computational Engineering and Sciences

B.S. in Statistics, Middle East Technical University, Ankara, Turkey, July 1995
Concentrations in Computer Sciences

Professional Experience

Associate Professor of Statistics, Middle East Technical University, Ankara, Turkey
November 2014 -

Assistant Professor of Statistics, Middle East Technical University, Ankara, Turkey
2009 - 2014

Instructor, Middle East Technical University, Ankara, Turkey 2007 - 2009

Biostatistical Researcher, Information Management Services, Inc. (for Division of Cancer Epidemiology and Genetics - National Cancer Institute), N Bethesda, USA
2002 - 2007

Research Assistant, Middle East Technical University, Ankara, Turkey 1995 - 1997

Research Interest Bayesian inference, Model selection, Biostatistical applications

Teaching Experience

Mathematical Statistics, Probability, Theory of Statistical Inference, Statistical Computing, Computational Statistics, Categorical Data Analysis, Nonparametric Statistics

Publications

Karagulle, S. and **Kalaylioglu, Z.**, (2016), "Score test for etiologic heterogeneity in two stage polytomous logistic regression," *Journal of Applied Statistics*, 43(3), 538-549

Kalaylioglu, Z. and Demirhan, H., (2015), "A joint Bayesian approach for the analysis of response measured at a primary endpoint and longitudinal continuous covariates," *Statistical Methods in Medical Research*, DOI: 10.1177/0962280215615003

Demirhan, H. and **Kalaylioglu, Z.**, (2015), "On the generalized multivariate Gumbel distribution," *Statistics and Probability Letters*, 103, 93-99

Demirhan, H. and **Kalaylioglu, Z.**, (2015), "Joint prior distributions for variance parameters in normal hierarchical models," *J. of Multivariate Analysis*, 135,163-174.

Yildirak, K., **Kalaylioglu, Z.**, Mermer, A., (2015), "Bayesian estimation of crop yield function : Drought based wheat prediction model," *J. of Environmental and Ecological Statistics*, 22, 693-704

Ozgu-Erdinc S, Iskender C, Uygur D, Oksuzoglu A, Seckin KD, Yeral MI, **Kalaylioglu, Z.**, Yucel A, Danisman AN, (2015), "One-hour versus two-hour postprandial

blood glucose measurement in women with gestational diabetes mellitus: which is more predictive?," *Endocrine*, DOI 10.1007/s12020-015-0813-5

Kalafat, E., Yuce, T., Konuralp, B., Katlan, D. C., **Kalaylioglu, Z.**, Beksac, M., Koc, A., Soylemez, F., (2015), Effects of in-utero cord blood collection on post-cesarean hemoglobin levels, *European Journal of Obstetrics, Gynecology and Reproductive Biology*, 193, 123–126

Kalaylioglu, Z., (2014), "Performances of Bayesian model selection criteria for generalised linear models with nonignorably missing covariates," *J. of Statistical Computation and Simulation*, 84(8),1670-1691.

Karatayli, S.C., Bozdayi, A.M., Karatayli, E., Ozturk, T., Husseini, A.A., Albayrak, R., Ozkan, M., **Kalaylioglu, Z.**, Yalcin, K., Cinar, K., Idilman, R., Yurdaydin, C., (2014), "Interleukin-28 gene polymorphisms may contribute to hbsag persistence and the development of hbeag-negative chronic hepatitis b," *Liver International*, DOI: 10.1111/liv.12595.

Kalaylioglu, Z., Bozdemir, B., Ghosh S. K., (2013), "Bayesian unit root test in stochastic volatility models with correlated errors," *Hacettepe J. of Mathematics and Statistics* 42(6),659-669.

Kalaylioglu, Z., Öztürk, O., (2013), "Bayesian semiparametric models for nonignorable missing mechanisms in generalized linear models," *J. of Applied Statistics*, 40(8),1746-1763.

Senses, K.M., Gonen, M., Barutcu, A.R., **Kalaylioglu, Z.**, Isbilen, M., Konu, O., Chen, Y.T., Altorki, N.K., and Gure, A.O., (2013), "Cancer-testis gene expression is associated with the methylenetetrahydrofolate reductase 677 CT polymorphism in non-small cell lung carcinoma," *BMC Medical Genetics* (<http://www.biomedcentral.com/1471-2350/14/97>).

Beklioglu, M., Bezirci, G., Akkas, S.B., Rinke, K., Yildirim, F., **Kalaylioglu, Z.**, Severcan, F., (2012), "Impacts of Salinity and Fish-Exuded Kairomone on the Survival and Macromolecular Profile of *Daphnia Pulex*," *Ecotoxicology*, 21(2), 601-614.

Dogan, L., **Kalaylioglu, Z.**, Karaman, N., Ozaslan, C., Atalay, C., Altinok, M., (2011) "Relationships Between Epidemiological Features and Tumor Characteristics of Breast Cancer," *Asian Pacific Journal of Cancer Prevention*, 12(12), 3375-3380.

Kalaylioglu, Z., Ghosh S. K., (2009), "Bayesian unit root tests for stochastic volatility models," *Statistical Methodology*, 6(2), 189-201

Vural, B., Demirkan, A., Ugurel, E., **Kalaylioglu, Z.**, Esen, B.A., Gure, A.O., Gl, A., Ozbek, U., (2009), "Seroreactivity against PTEN-induced putative kinase 1 (PINK1) in Turkish patients with Behçets disease," *Clinical and Experimental Rheumatology*, 27(2 Suppl 53):S67-72.

Chatterjee, N., **Kalaylioglu, Z.**, Shih J., Gail M., (2007), "Letter to the editor," *Biometrics*, 63, 964-966.

Sherman, M.E., Rimm, D.L., Yang, X., Chatterjee, N., Brinton, C., Lissowska, J., Pelpolska, B. Szeszenia D., Mikolajczak, A.B., Zatonski, W., Cartun, R., Mandich, D., Rymkiewicz, G., Sikor, D.M, Lukaszek, S., Kordek, R., **Kalaylioglu, Z.**, Harigopal,

M., Charrette, L., Falk, R.T., Richesson, D., Anderson, W.F. , Hewitt, S.M., Closas, M.G., (2007), "Variation in breast cancer hormone receptor and HER2 levels by etiologic factors: A population-based analysis," International Journal of Cancer, September 1; 121(5): 1079-85

Saatci, E.,Kocak, Y., Akpinar, E., **Kalaylioglu-Wheeler, Z.**, (2007), "Effect of chemotherapy on quality of life in patients with lymphoma," Marmara Medical Journal, 20(2), 98-103

Chatterjee, N., **Kalaylioglu, Z.**, Moslehi, R., Peters, U., Wacholder, S., (2006), "Powerful multi-locus tests for genetic association in the presence of gene-gene and gene-environment interactions," American Journal of Human Genetics, Vol. 79(6),1002-1016

Chatterjee, N., **Kalaylioglu, Z.**, Shih J., Gail M., (2006), "Case-control and case-only designs with genotype and family history data: Estimating relative-risk, familial aggregation and absolute risk," Biometrics, 62(1), 36-48.

Garcia-Closas, M., Brinton, L. A., Chatterjee, N., Peplonska B., Szeszenia-Dabrowska, N., Bardin-Mikolajczak, A., Zatonski, W., Blair, A., Anderson, W. F., Rymkiewicz, G., Mazepa-Sikora, D., Kordek, R., Lukaszek, S., **Kalaylioglu, Z.**, Sherman, M., (2006), "Established breast cancer risk factors by clinically important tumor characteristics," British Journal of Cancer, 95(1),123-129

Chatterjee, N., **Kalaylioglu, Z.**, Carroll, R. J., (2005), "Exploiting gene-environment independence in family-based case-control studies: Increased power for detecting associations, interactions, and joint effects," Genetic Epidemiology, 28, 138-156

Hisada, M., Chatterjee, N., **Kalaylioglu, Z.**, Battjes, R. J., Goedert, J. J., (2005), "Hepatitis C virus load and survival among injection drug users in the United States," Hepatology, 42(6), 1446-1452

Kalaylioglu, Z., Pantula, S. G. and Ghosh, S. K., (2002), "Frequentist and Bayesian unit root tests in stochastic volatility models," *unpublished Ph.D. thesis*

Working Papers "Bayesian semiparametric models for multi-modal circular data," (*joint work with M. Burak Kılıç*)

"Information and classification based model selection criteria for categorical regression," (*joint work with Ozge Tanju*)

"Model selection for longitudinal circular data," (*joint work with Onur Camli*)

Conferences and Seminars Oral Presentations

Bayesian analysis of directional data, Department of Statistics, Isfahan, Iran, September 2015

A joint Bayesian analysis for cross sectional response and longitudinal covariate, 9th Annual International Conference on Mathematics and Statistics, Athens, Greece, July 2015

A joint Bayesian analysis for cross sectional response and longitudinal covariate, International Biometric Society, 8th. EMR Meeting, Cappadocia, May 2015

Joint prior distributions for variance parameters in normal hierarchical models, Seventh International Workshop on Simulation, Rimini, Italy, May 2013.

Joint prior distributions for variance parameters in normal hierarchical models, Institut für Mathematische Stokastik, Otto von Guericke Universität, Magdeburg, Germany, October 2012.

Bayesian model selection criteria in generalized linear models with nonignorably missing covariates, Applied Statistics, Ribno, Slovenia, September 2012.

Bayesian model selection criteria in generalized linear models with nonignorably missing covariates, Uluslararası Katılımlı 14. Ulusal Biyoistatistik Kongresi, Kayseri, September 2012.

Bayesian semiparametric models for nonignorable missing mechanisms in generalized linear models, International Research Conference on Bayesian Learning, Yeditepe University, Istanbul, June 2011.

Bayesian semiparametric models for nonignorable missing mechanisms in generalized linear models, International Biometric Society, 6th. EMR Meeting, Hersonissos, Crete, May 2011.

Bayesian semiparametric models for nonignorable missing mechanisms in generalized linear models, Informatic Institute, Department of Health Informatics, METU, April 2011.

Bayesian semiparametric models for nonignorable missing mechanisms in generalized linear models, Department of Statistics, Ankara University, March 2011.

The role of statistics in genetic association studies: an overview and update, Workshop in Recent Developments in Applied Probability and Statistics, Institute of Applied Mathematics, METU, Ankara, March 2009.

Exploiting gene-environment independence in family-based case-control studies, Department of Statistics, METU, Ankara, February 2006.

Bayesian unit root tests in stochastic volatility models, American Statistical Association Meetings, New York City, NY, August 2002.

Poster Presentations

A joint prior for variance components in random effects models, 8th International Biometric Society-Eastern Mediterranean Region, Florence, Italy, July 2014.

A joint prior for variance components in random effects models, Bayesian Biostatistics, Zurich, Switzerland, July 2014.

A Bayesian model for forecast in correlated directional data: A wind direction example, EAWE 9th. Ph.D. seminars in Wind Energy, Visby, Sweden, September 2013 (participated with the Ph.D. student Burak Kilic).

Frequentist unit root tests in stochastic volatility models, American Statistical Association Meetings, San Francisco, CA, August 2003.

Bayesian unit root tests in stochastic volatility models, NBER/NSF Time Series Workshop, Raleigh, NC, 2001.

Lectures

Statistical characterization of cultural heritage objects, International Atomic Energy Agency meetings, Saraykoy Nuclear Research and Training Center, Ankara, 2011

Markov chain Monte Carlo Methods - Gibbs Sampling, Department of Electrical and Electronical Engineering, METU, Ankara, 2010

Markov chain Monte Carlo methods for analysis of logistic regression via WinBUGS, Technische Universitat Dortmund, Germany, July 2009

Example of collaboration of health scientists and biostatisticians for a successful biomedical research: Hepatitis C virus infection and liver disease, Department of Statistics, METU, Ankara, 2008

Collaboration of health scientists and biostatisticians for a successful biomedical research: Two examples from NIH, Department of Biological Sciences, METU, Ankara, 2007

A two-stage logistic regression application: predictors of breast cancer risk by tumor size, grade, and nodal status, Graduate Summer School on New Advances in Statistics, Department of Statistics, METU, Ankara, 2007

Graduate Students Supervised

Sezgin Çiftçi (ongoing), Ph.D. in Statistics, Bayesian model averaging for the analysis of generalized linear models with nonignorably missing covariates

Melek Er (ongoing), Ph.D. in Archaeometry, Statistical erosion deposition modelling in active tectonic areas on archaeological sites

Onur Çamlı (ongoing), M.Sc. in Statistics, Model selection for circular data analysis

M. Tugba Erdem (ongoing), Ph.D. in Statistics, A Bayesian joint model for recurrent event times and longitudinal covariates

Ozge Tanju (2016), M.Sc. in Statistics, Cluster based model diagnostics for logistic regression

M. Burak Kılıç (2015), Ph.D. in Statistics, Bayesian circular data modelling

Gulsum Cinar Dolgun (2013), Turkish Central Bank Master Thesis, Missing data in surveys

Saygın Karabulut (2013), M.Sc. in Statistics, Score test for etiologic heterogeneity in two stage polytomous logistic regression

Icten Tansel (2013) M.Sc. in Archaeometry, Statistical cluster analysis in forgery analysis

Tugba Erdem (2011), M.Sc. in Statistics, Modeling diseases with multiple disease characteristics: Comparison of models and estimation methods

Olca Öztürk (2011), M.Sc. in Statistics, Bayesian semiparametric modeling for non-ignorably missing covariates

Reviews

CRC Taylor And Francis book review; Computational Statistics and Data Analysis; Journal of Statistical Computation and Simulation; Journal of Applied Statistics; Statistica Neerlandica; Studies in Nonlinear Dynamics and Econometrics; Statistical Papers; Journal of Computational and Applied Mathematics; Journal of Ecological and Environmental Statistics; Journal of Statistical Software; International Symposium on Health Informatics and Bioinformatics; Section on Bayesian Statistical Science - American Statistical Association, Graduate student paper competition.

Project Experience

January, 2016 - December 2016 , METU Scientific Research Project: Model selection in binary regression (principle investigator)

January, 2015 - December 2015 , METU Scientific Research Project: Bayesian model averaging for the analysis of generalized linear models with covariates subject to non-ignorable missingness (principle investigator)

July 2009 - December 2011 , EU FB-7, Short and long term effects of genetically modified organisms on animal health (researcher)

July 2009 - 2011, TUBITAK 1002, Cancer testis gene expression as biomarker for methylenetetrahydrofolate reductase polymorphism in nonsmall cell lung cancer (statistical researcher)

May 2009 - June 2010, Institute of Applied Mathematics METU, Construction of Turkish morbidity tables-incidence and prevalence estimation (researcher)

February 20, 2009 February 2010- , METU Scientific Research Project (BAP-07.05.2009.02): Bayesian unit root test for stochastic volatility models with leverage effect (principle investigator)

Intramural Research Program of the National Cancer Institute USA (completed in 2007): Variation in breast cancer hormone receptor and HER2 levels by etiologic factors: A population-based analysis (data analyst)

Intramural Research Program of the National Cancer Institute, Division of Cancer Epidemiology and Genetics, USA and FIS/Spain (00/0745, G03/174, G03/160, C03/09, C03/10) (completed in 2007): Large scale evaluation of candidate genes identifies associations between VEGF polymorphisms and bladder cancer risk (data analyst)

Intramural Research Program of the National Cancer Institute, USA (completed in 2007): Transforming growth factor beta 1 (TGFB1) gene polymorphisms and risk of advanced colorectal adenoma (data analyst)

Intramural Program of the National Institutes of Health, USA (completed in 2006): Powerful multi-locus tests for genetic association in the presence of gene-gene and gene-environment interactions (researcher)

Intramural Research Program of the National Cancer Institute USA (completed in 2006): Established breast cancer risk factors by clinically important tumor characteristics (data analyst)

Intramural Research Program of the National Cancer Institute, Division of Cancer Epidemiology and Genetics, USA and FIS/Spain (00/0745, G03/174, G03/160, C03/09, C03/10) (completed in 2006): Genetic Variation in the Nucleotide Excision Repair Pathway and Bladder Cancer Risk (data analyst)

National Cancer Institute (CA-57030) and National Institute of Environmental Health Sciences (P30-ES09106), USA (completed in 2005): Exploiting gene-environment independence in family-based case-control studies- Increased power for detecting associations, interactions, and joint effects (researcher)

Intramural Research Program of the National Cancer Institute USA (completed in 2005): Hepatitis C virus load and survival among injection drug users in the United States (data analyst)

National Cancer Institute (CA-90302, CA-57030) and National Institute of Environmental Health Sciences (P30-ES09306), USA (completed in 2005): Analysis of case-control studies of genetic and environmental factors with missing genetic information and haplotype-phase ambiguity (data analyst)

National Cancer Institute and Texas A&M Center for Environmental and Rural Health, USA (completed in 2005): Semiparametric maximum likelihood estimation exploiting gene-environment independence in case-control studies (programmer)

Other Professional Activities

Statistical Consulting
Wheat genotype analysis, Biochemistry, METU.

Effects of KML29 on fever induced by lipopolysaccharide, Biochemistry, METU: A Bayesian mixed effects spline model

Association between certain gene polymorphisms and risk of Hepatitis B infection, Institute of Hepatology-Ankara University Hospital.

Evaluating the role of CYP2C9 variants on the relationship between Warfarin treatment and the ratio of a patient's prothrombin time to a normal patient (INR), Department of Nephrology-Numune Hastanesi

Identifying the risk factors for a landslide, Department of Geodetic and Geographic Information Technologies, METU

Affiliated Faculty

Department of Archaeometry, METU

Institute of Applied Mathematics, METU

Administrative Duty

Assistant to the Manager, Center for Wind Energy Research

Assistant to the Department Head, Department of Statistics

Erasmus coordinator, Department of Statistics

Advisor to the Statistics Student Society, Department of Statistics

Languages

Turkish (native), English (fluent), German (basic), Persian (basic)

Personal Interests

Yoga, gardening and garden design, hobby farming (olive and grape vine)