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RESEARCH INTEREST

Statistical Methodology

- Finite Mixture Models
- Design of Clinical Studies
- Variable Selection for Zero-Inflated Models
- Non-parametric Regression

Applied Statistics

- Meta Analysis
- Analysis of Observational Studies
- Intensive Longitudinal Data Analysis
- Latent Class Analysis
- Behavioral Science

EDUCATION

- 2005 Ph.D. in Statistics** Nankai University, Tianjin, China
1998 M.S. in Economics Huazhong University of Science & Technology, Wuhan, China
1995 B.S. in Mathematics Beijing Normal University, Beijing, China

PROFESSIONAL EXPERIENCE

- Research Associate Professor** September 2015 –
*Department of Biostatistics and Lineberger Comprehensive Cancer Center,
University of North Carolina at Chapel Hill*
- Biostatistician** August 2011 – April 2015
Research Institute of the McGill University Health Centre, Canada
- Research Associate** August 2008 – July 2011
The Methodology Center of Penn State University
- Biostatistics Post Doctoral Fellowship** January 2007 - August 2008
Clinical Trials Group, NCIC, Kingston, ON, Canada
- Conducted methodology research in optimal design of two-stage clinical trials, and in the estimation of crossing-point of two hazard functions
 - Wrote statistical analysis plan for a (prostate) cancer clinical trial, and conducted the data analysis
- Visiting Assistant Professor** Sep 2006 – Dec 2006
Department of Statistics and Actuarial Science, University of Waterloo, ON, Canada
- Assistant Professor** Jul 2003 – Sep 2006
School of Mathematical Sciences, Nankai University, Tianjin, China

PUBLICATIONS

Books and Chapters

- 1) Luo, Y., **Tan, X.** and Tu, D. (2011). Assessing Similarity of Two Survival Functions Based on Censored Data and the Trimmed Mallows Distance, In *Theoretical Advances and Applications in Operations Research-/Modeling Non-normal Phenomena* (Ed. K. Tan and J. Gani), 33-46, Kyushu University Press, Fukuoka, Japan.

Peer-reviewed publications

(A): Methodology

- 1) Chen, J., Li, S. & Tan, X. (2016) Consistency of the penalized MLE for two-parameter gamma mixture models. *Sci. China Math.* 59(12): 2301-2318.
- 2) Yi, G.Y., **Tan, X.**, Li, R. (2015). Variable selection and inference procedures for marginal analysis of longitudinal data with missing observations and covariate measurement error *The Canadian Journal of Statistics.*43: 498-518.
- 3) Dziak, J., Li, R., **Tan, X.**, Shiffman, S., and Shiyko, M. P. (2015). Modeling Intensive Longitudinal Data on Smoking Cessation with Mixtures of Nonparametric Trajectories and Time-Varying Effects. *Psychological methods.*20: 444-469.
- 4) Bray, B., Lanza, S., and **Tan, X.** (2015) Eliminating Bias in Classify-Analyze Approaches for Latent Class Analysis. *Structural Equation Modelling.* 22: 1-11.
- 5) Dziak, J., Lanza, S., and **Tan, X.** (2014). Effect Size, Statistical Power and Sample Size Requirements for the Bootstrap Likelihood Ratio Test in Latent Class Analysis. *Structural Equation Modeling.* 21:534-552.
- 6) Su, X., Fan, J., Levine, R.A., **Tan, X.**, and Tripathi. A. (2013) Multiple-Inflation Poisson Model with L_1 Regularization. *Statistica Sinica.* 23:1071-1090.
- 7) Lanza, S., **Tan, X.**, and Bray, B. (2013). Latent Class Analysis With Distal Outcomes: A Flexible Model-Based Approach. *Structural Equation Modeling.* 20:1-26.
- 8) Buu, A., Li, R., **Tan, X.**, and Zucker, B. (2012). Statistical models for longitudinal zero-inflated count data with applications to the substance abuse field. *Statistics in Medicine.* 31:4074-4086.
- 9) **Tan, X.**, Shiyko, M., Li, R., Li, Y., and Dierker, L. (2012). A Time-Varying Effect Model for Intensive Longitudinal Data. *Psychological methods.* 17(1):61-77.
- 10) Buu, A., Johnson, N., Li, R., and **Tan, X.** (2011). New variable selection methods for zero-inflated count data with applications to the substance abuse field. *Statistics in Medicine.* 30(18):2326-2340.
- 11) **Tan, X.**, Dierker, L., Rose, J., and Li, R. (2011). How Spacing of Data Collection May Impact Estimates of Substance Use Trajectories. *Substance Use and Misuse.* 46(6):758-768.
- 12) Dierker, L., Rose, J., **Tan, X.**, and Li, R. (2010). Uncovering multiple pathways to substance use: A comparison of methods for identifying population subgroups. *The Journal of Primary Prevention,* 31(5-6):333-348.
- 13) Zhu, L., **Tan, X.**, and Tu, D. (2010). Testing the Homogeneity of Two Survival Functions against a Mixture Alternative Based on Censored Data. *Communications in Statistics - Simulation and Computation,* 39, 767-776.
- 14) Xu, J., **Tan, X.**, and Zhang, R. (2010). Note on Phillips (1991) "Constrained maximum likelihood approach to estimating switching regressions". *Journal of Econometrics.* 154, 35-41.
- 15) **Tan, X.**, Takahara, G., and Tu, D. (2009). Optimal Two-Stage Design for Phase II Cancer Clinical Trials with Responses and Early Progression as Co-primary Endpoints. *Statistics in Biopharmaceutical Research,* 2(3): 348-354.
- 16) Cheng, M., Qiu, P., **Tan, X.**, and Tu, D. (2009). Nonparametric Confidence Intervals for the Crossing Point

of Two Hazard Functions. *Lifetime Data Analysis*, 15(4): 441-454.

- 17) Chen, J., **Tan, X.** (2009). Inference for Multivariate Normal Mixtures. *Journal of Multivariate Analysis*, 100, 1367-1383.
- 18) Chen, J., **Tan, X.**, and Zhang, R. (2008). Inference for Normal Mixture in Mean and Variance. *Statistica Sinica*, 18, 443-465.
- 19) Chen, J., Li, P., and **Tan, X.** (2007). Inference for Von Mises Mixture in Mean Direction and Concentration Parameters (in Chinese). *Journal of Systems Science and Mathematical Sciences*, 27, 59-67.

(B): Collaborative

- 1) Pinheiro LC, **Tan X**, Olshan AF, Wheeler SB, Reeder-Hayes KE, Samuel CA, Reeve BB. Examining health-related quality of life patterns in women with breast cancer. *Qual Life Res.* 2017 Feb 28. doi: 10.1007/s11136-017-1533-5. [Epub ahead of print] PubMed PMID: 28247314.
- 2) Santos, H., **Tan, X.**, & Salomon, R. (2016). Heterogeneity in perinatal depression: how far have we come? A systematic review. *Archives of Women's Mental Health*, 1-13.
- 3) B.S. Chera, A. Yechoor, L. Stravers, J. Camporeale, M.E. Fleming, L. Terzo, M. Troxler, E. Roth, **X. Tan**, L. Mazur, L. Brown, M. Pignone, L.B. Marks (2016). Reducing Emergency Room Visits and Unplanned Hospital Admissions During Radiation Therapy in Patients With Head and Neck Cancer. *International Journal of Radiation Oncology, Biology, physics.* 96 (2), E334–E335.
- 4) Cohen, S. L., Rosen, A. I., **Tan, X.**, & Kingdom, F. A. (2016). Improvement of the visual field index in clinical glaucoma care. *Canadian Journal of Ophthalmology/Journal Canadien d'Ophthalmologie*, 51(6), 445-451.
- 5) Frentzas, S., Simoneau, E., Bridgeman, V., Vermeulen, P., ... , **Tan, X.**, ..., Cunningham, D., Metrakos, P., Reynolds, A. (2016). Vessel co-option mediates resistance to anti-angiogenic therapy in liver metastases. *Nature Medicine.* 22(11): 1294-1302.
- 6) Forghani, R., Roskies, M., Liu, X., **Tan, X.**, Mlynarek, A., Payne, R., Nair, J., Hier, M., Levental, M.. (2016) Dual-Energy CT Characteristics of Parathyroid Adenomas on 25- and 55-Second 4D-CT Acquisitions. *Journal of Computer Assisted Tomography.* 40(5): 806-814.
- 7) Al Yazidi G, Boudes E, **Tan X**, Saint-Martin C, Shevell M, Wintermark P. (2015) Intraventricular hemorrhage in asphyxiated newborns treated with hypothermia: a look into incidence, timing and risk factors. *BMC Pediatr.* 15(1):106
- 8) Mark, J. P., **Tan, X.**, Vinh, D.C., Popradi, G. (2015). Risk Factors for Progression of CMV Viremia to CMV Disease after Allogeneic Hematopoietic Stem Cell Transplantation. *Journal of Biology of Blood and Marrow Transplantation.* 21(2), S296–S297.
- 9) Giladi, H., Choiniere, M., Fitzcharles, M., Ware, M., **Tan, X.**, Shir, Y. (2015) Pregabalin for chronic pain: does one medication fit all? *Current Medical Research & Opinion.* 31(7):1403-11.
- 10) Boudes, E., **Tan, X.**, Saint-Martin, C., Shevell, M., Wintermark, P. (2015). Magnetic Resonance Imaging Obtained During Versus After Hypothermia in Asphyxiated Newborns. *Archives of Disease in Childhood.* 100(3):F238-42
- 11) Peng, S., Boudes, E., **Tan, X.**, Saint-Martin, C., Shevell, M., Wintermark, P. (2015) Does near-Infrared spectroscopy identify asphyxiated newborns at risk of developing brain injury during hypothermia treatment? *American Journal of Perinatology.* 32(6):555-64
- 12) Tallon, B., Julie Bruneau, J., Tsoukas, C.M., Routy, J.P., **Tan, X.**, and Bernard N.F. (2014) KIR3DS1 homozygous HIV-exposed individuals have a longer time to HIV seroconversion than those with other generic KIR3DL1/S1 genotypes. *PLoS ONE.* 9(10):e110480
- 13) Tulandi, T., Alghanaim, N., Hakeem, G., **Tan, X.** (2014) Pre and post-conceptual abdominal cerclage

- by laparoscopy or laparotomy. *Journal of Minimally Invasive Gynecology*. 21:987-993.
- 14) Wintermark, P., Boudes, E., Gilbert, G., Leppert, I., **Tan, X.**, Pike, G., Saint-Martin, C.. (2014). Measurement of Brain Perfusion in Newborns: Pulsed Arterial Spin Labeling (PASL) versus Pseudo-Continuous Arterial Spin Labeling (pCASL). *NeuroImage: Clinical*. 6:126-133.
 - 15) Hopfer, S., **Tan, X.**, and Wylie, J. (2014). A social network informed latent class analysis of patterns of substance use, sexual behavior, and mental health, Winnipeg, Canada. *American Journal of Public Health*. 104:834-839.
 - 16) Valentino, S.W., Moore, J.E., Cleveland, M. J., Greenberg, M.T., **Tan, X.** (2014). Profiles of Financial Stress over Time Using Subgroup Analysis. *Journal of Family and Economic Issues*. 35:51-64.
 - 17) Alayed, N., Alghanaim, N., **Tan, X.**, Tulandi, T.(2014). Preemptive use of gabapentin in abdominal hysterectomy: An underutilized treatment? *The American College of Obstetricians and Gynecologists*. 123:1221-1229.
 - 18) Hopfer, S., Hecht, M.L., Lanza, S.L., **Tan, X.**, Xu, S. (2013). Preadolescent Drug Use Resistance Skill Profiles, Substance Use, and Substance Use Prevention. *The Journal of Primary Prevention*. 34:395-404.
 - 19) Selya, A. S., Dierker, L. C., Rose, J. S., Hedeker, D., **Tan, X.**, Li, R., Mermelstein, R. J. (2013). Time-varying effects of smoking quantity and nicotine dependence on adolescent smoking regularity. *Drug and Alcohol Dependence*. 128(3):230-237.
 - 20) Bhat, M., Deschenes, M., **Tan, X.**, Martel, M., Bhat, V., Wong, P., Metrakos, P., and, Ghali, P. (2012). Smoking Increases Recurrent Viral Hepatitis After Liver Transplantation. *Liver Transplantation*. 18:828-833
 - 21) Smail, N., Paraskevas, S., **Tan, X.**, Metrakos, P., and Cantarovich, M.. (2012) Renal function in recipients of pancreas transplant alone. *Current Opinion Organ Transplant*. 17:73-79.
 - 22) Shiyko, M. P., Lanza, S. T., **Tan, X.**, Li, R., and Shiffman, S. (2012). Using the time-varying effect model (TVEM) to examine dynamic associations between negative affect and self-confidence on smoking urges: Differences between successful quitters and relapsers. *Prevention Science*. 13(3):288-299.

Non-refereed Papers

- 1) **Tan, X.**, Chen, J., and Zhang, R. (2007). Consistency of the Constrained Maximum Likelihood Estimator in Finite Normal Mixture Models. *2007 Proceedings of the American Statistical Association, Section on Statistical Education [CD-ROM], Alexandria, VA: American Statistical Association, 2113-2119.*

CONTRACTS & GRANTS

- Tan, X.M. (PI)** (2006-2009). Chinese NSF 10601026. "Inference and application of mixture models." Amount \$30,000 (170,000 Yuan).

AWARD

UNC Junior Faculty Development Award. 2017. Amount \$7, 500.

The year 2015 The Canadian Journal of Statistics Award

The Canadian Journal of Statistics Award is awarded annually by the SSC to the author(s) of an article published in the previous year in the journal, in recognition of the outstanding quality of the paper's methodological innovation and presentation. This year's winners are **Grace Y. Yi** (University of Waterloo), **Xianming Tan** (Pennsylvania State University), and **Runze Li** (Pennsylvania State University) for their paper "Variable selection and inference procedures for marginal analysis of longitudinal data with missing observations and covariate measurement error", which appeared in volume 43, number 4, 2015, pages 498-518.

SERVICE

Referee

- 1) Journal of American Statistical Association
- 2) Statistica Sinica
- 3) Journal of Statistical Planning and Inference
- 4) Statistics in Medicine
- 5) Computational Statistics and Data Analysis
- 6) Journal of Probability and Statistics
- 7) Statistical Papers
- 8) Communications in Statistics: Theory and Methods
- 9) Psychological Methods
- 10) Addictive Behaviors
- 11) Journal of Biopharmaceutical Statistics

Invited Presentations

1. A Review of Mixture Varying Coefficient Models for Longitudinal Data. HongKong 2013.
2. Mixture of Generalized Varying Effect Models. Miami Beach 2011.
3. Variable selection for marginal analysis of longitudinal data with missing observations, April 18, 2016, University of California at Riverside http://publichealth.uci.edu/ph/news_events/seminar_event/10759

PhD Dissertation Committee

1. Xiaoqiang Xue, Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

Ivanova, Anastasia (chair)
Fedorov, Valerii
Fine, Jason P
Foster, Matthew C
TAN, Xianming

2. Theresa M. Coles, Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

Reeve, Bryce (Chair)
Basch, Ethan Martin
Bennett, Antonia V
TAN, Xianming
Sanoff, Hanna