

PEI-FEN KUO

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PROFESSIONAL EXPERIENCE

- 2014/8 – Present Assistant Professor, Crime Prevention and Corrections, Central Police University
- MOST Projects:
 1. Define the Characteristics of Traffic Accident Victims (應用受害者學與資料探勘技術分析車禍被害人特性與後續服務需求), PI
 2. Building Macro-Level Crime Prediction Models Using Data Mining Techniques (以資料探勘技術建立巨觀犯罪預測模型), PI
 3. Implementation in Taiwan of the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) Model (評估犯罪與肇事資料導向執法 (DDACTS)在台推行之成效研究), PI
 4. Crime Prevention by Analyzing Offending, Habitual Offenders, and Cross-border Crime Trend with Big Data in Taiwan (臺灣地區犯罪、常習犯、及跨境化趨勢與防制之巨量資料研究), Co-PI
- 2013/7 – 2014/7 Post-Doctoral Research Associate, Civil Engineering, University of Central Florida
- NCHRP 17-62: Improved Prediction Models for Crash Types and Crash Severities
 - FDOT Project: Two Level Approach to Safety Planning Incorporating the Highway Safety Manual Network Screening
- 2012/5 – 2013/6 Post-Doctoral Research Associate, Texas A&M Transportation Institute (TTI)
- Investigated the relationship between on-premise digital signs and crash counts for the SFI project “Statistical Analysis of the Relationship between On-Premise Digital Signage and Traffic Safety”
- 2007 – 2012/5 Graduate Research Assistant, TTI
- 2004 – 2007 Engineer, Civil Aeronautics Administration, MOTC (TAIWAN)
- 2003 – 2004 Assistant Engineer, Department of Transportation, Taipei City Government

EDUCATION

- 2007 – 2012 PhD, Civil Engineering, Texas A&M University (Advisor: Dominique Lord)
- 2001 – 2003 Master of Science, Transportation Engineering Division, National Taiwan University
- 1997 – 2001 Bachelor of Science, Civil Engineering, National Taiwan University

SPECIAL SKILLS

Computer skills: R, Rattle, WinBUGS, SAS, SPSS, ArcGIS, Python, GeoDa

Strong subjects: Data Mining, Spatial Statistics, Time Series Analysis, Bayesian Statistics

RESEARCH INTERESTS

Data Mining and Modeling, Spatial Statistics and GIS Applications, Police Patrol Management, Public Safety and Risk Analysis, Bayesian Statistics, Time Series Analysis

MEMBERSHIP IN PROFESSIONAL SOCIETIES

The Chinese Society of Criminology, Committee Member

The World Conference on Transport Research Society (WCTRS), Member

Transportation Research Board (TRB), Member

PUBLICATIONS

1. Journal Papers and Research Reports

- 1) **郭佩棻** (2016)。巨量資料處理與分析。載於許春金等編著，刑事司法與犯罪學研究方法。五南出版社。
- 2) 賴擁連；**郭佩棻**；林健陽；吳永杉；陳超凡；溫敏男；張雲傑；黃家慶 (2016)。受戒治人再犯毒品罪風險因子之分析與對策。警學叢刊，46, 頁 1-28。
- 3) Wang, J. H., Abdel-Aty, M. A., Park, J., Lee, C., & **Kuo, P. F.** (2015). "Estimating safety performance trends over time for treatments at intersections in Florida." *Accident Analysis & Prevention*, 80, 37-47. (SSCI).
- 4) **Kuo, P.-F.**, Shen, C.-W., Quadrifoglio, L. (2014). "Modeling the Spatial Effects on Demand Estimation of ADA Paratransit Services." *Transportation Research Record* 2352, pp. 146–154. (SCI)
- 5) Fitzpatrick, Kay, Park, E.S., **Kuo, P.-F.**, Robertson, J., Brewer, M. (2014). "Double Left-Turn Lanes Operational Field Study". *Transportation Research Record*. (SCI).
- 6) **Kuo, P.-F.**, Lord, D., Walden, T.D. (2013). "Using Geographical Information Systems to Organize Police Patrol Routes Effectively by Grouping Hot Spots of Crash and Crime Data." *Journal of Transport Geography* Vol. 30, pp. 138-148. (SCI)
- 7) **Kuo, P.-F.**, D. Lord (2013) "Accounting for Site-Selection Bias in Before-After Studies for Continuous Distributions: Characteristics and Application Using Speed Data." *Transportation Research Part A: Policy and Practice* Vol. 49, pp. 256-269. (SCI)
- 8) Lord, D., **Kuo, P.-F.**, (2012). "Examining the Effects of Site-Selection Criteria for Evaluating

- the Effectiveness of Traffic Safety Improvement Countermeasures.” *Accident Analysis and Prevention* Vol. 47, pp. 52-63. (SSCI)
- 9) Lord, D., **Kuo, P.-F.**, Geedipally, S.R., (2009). “Comparing the Application of the Product of Baseline Models and Accident Modification Factors and Models with Covariates: Predicted Mean Values and Variance.” *Transportation Research Record* 2147, pp. 113-122.(SCI)
 - 10) Hawkins, H. G., **Kuo, P.-F.**, Lord, D, (2012). “Statistical Analysis of the Relationship between On-Premise Digital Signage and Traffic Safety” Technical Report. TTI, College Station, TX.
 - 11) Eisele, W., Yager, C., Brewer, M., Frawley, W. E., Park, E. S., Lord, D., Robertson, J. A., **Kuo, P.-F.**, (2010). “Safety and Economic Impacts of Converting Two-Way Frontage Roads to One-Way: Methodology and Findings” Technical Report 0-5856-1. TTI, College Station, TX.

2. Papers Submitted for Publication

- 1) **Kuo, P.-F.** (2016) “Applying Data Mining Techniques to Develop a Driving-While-intoxicated Crash Prediction Model at the Macro Level”, Paper submitted to “*Transportation Research Record*” for publication.
- 2) **Kuo, P.-F.** (2016) “A Comparison of the Effectiveness of the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) Model Implementation in College Station, Texas and Taipei, Taiwan”, Paper submitted to “*Journal of Criminal Justice*” for publication.
- 3) **Kuo, P.-F.**, D. Lord (2016) “Estimating Safety Impact in Before-After Studies by the Adjusted Method.” Paper submitted to “*Safety Research*” for publication.
- 4) **Kuo, P.-F.**, Lee, J, Abdel-Aty, M. A. (2016) “Comparing Hotspot Identification Methods at the Macroscopic Level” Paper submitted to “*Analytic Methods in Accident Research*” for publication.
- 5) **郭佩棻**、陳聲華、賴擁連、許春金(2016)，”應用錄影監視系統提升犯罪偵查效能”，投稿審查中。
- 6) **郭佩棻**、周文生、闕迺璇、徐晨剛，“酒駕肇事與環境因子相關分析-以飲酒店為例”，投稿審查中。
- 7) **郭佩棻**、徐晨剛、彭福康(2016)，”應用資料探勘技術建構竊盜犯罪預測模型”，投稿審查中。
- 8) 林健陽、**郭佩棻**、賴擁連、陳玉書、張權、吳爭軒、張育銓，”受戒治人再犯與再犯期程相關因素”，投稿審查中。

3. Conference Papers (Peer-Reviewed)

International Conference

- 1) **Kuo, P.-F.**, (2016). “A Comparison of the Effectiveness of the Data-Driven Approaches to Crime and Traffic Safety (DDACTS) Model Implementation in the United States and Taiwan”, 14th World Conference on Transport Research
- 2) Lee, J, Abdel-Aty, M., **Kuo, P.-F.**, (2016). “Analyzing Hit-and-Run in Pedestrian-Vehicle Collisions”, 14th World Conference on Transport Research
- 3) Hsu, T.P., **Kuo, P. F.**, and Hsiao W.L. (2016). Accident Type–Based Analysis of Risk and Collision Factors Using Data Mining Techniques, Paper presented at the Transportation Research Board 2016 Annual Meeting, DC, USA.
- 4) Shen, C. W., **Kuo, P. F.** (2015). “Variable Selection of Travel Demand Models for Paratransit Service: A Data Mining Approach”. In 15th COTA International Conference of Transportation Professionals Proceeding. (EI)
- 5) Hawkins, H. G., **Kuo, P.-F.**, Lord, D. (2014). “Statistical Analysis of the Traffic Safety Impacts of On-Premise Digital Signs.” Paper accepted for presentation at the TRB 93rd Annual Meeting.
- 6) **Kuo, P.-F.**, Shen, C.-W., Quadrifoglio, L., (2013). “Modeling the Spatial Effects on Demand Estimation of ADA Paratransit Services.” Paper accepted for presentation at the 92nd Annual Meeting of the Transportation Research Board (TRB).
- 7) **Kuo, P.-F.**, Lord, D., (2012). “Accounting for Site-Selection Bias in Before-After Studies for Continuous Distributions: Characteristics and Application Using Speed Data.” Paper accepted for presentation at the TRB 91st Annual Meeting.
- 8) **Kuo, P.-F.**, Zeng, X., Lord D., (2012). “Guidelines for Choosing Hot-Spot Analysis Tools on Data Characteristics, Network Restrictions, and Time Distributions.” Paper accepted for presentation at the TRB 91st Annual Meeting.
- 9) **Kuo, P.-F.**, Lord, D., Walden, T.D., (2011). “Using Geographical Information Systems to Organize Police Patrol Routes Effectively by Grouping Hot Spots of Crash and Crime Data.” Presented at the 3rd International Conference on Road Safety and Simulation, September 14-16, 2011, Indianapolis, USA.
- 10) Lord, D., **Kuo, P.-F.**, (2010). “Examining the Effects of Site-Selection Criteria for Evaluating the Effectiveness of Traffic Safety Improvement Countermeasures.” Paper accepted for presentation at the TRB 90th Annual Meeting.

- 11) Tien-Pen Hsu, **Kuo, P.-F.**, (2005). “Priority Evaluation of Traffic Safety Subsystems of ITS in Taiwan.” 7th Asia-Pacific ITS Forum & Exhibition, India.

Domestic Conference

- 1) **郭佩棻**, (2016).” 應用資料探勘技術於犯罪分析” ，2016 犯罪防治學術研討會：犯罪與刑罰。
- 2) 洪文玲、陳憶君、**郭佩棻**, (2015) “應用資料探勘技術分析車禍被害人特性與後續服務需求” ，2015 犯罪防治學術研討會。
- 3) 彭福康、關迺璇、**郭佩棻** (2015 年)。評估犯罪與肇事資料導向執法(DDACTS)在台推行之成效研究。104 年道路交通安全與執法研討會。
- 4) 彭福康、**郭佩棻** (2015 年)。監視錄影系統與竊盜犯罪率變化之研究。2015 犯罪防治學術研討會。
- 5) 陳憶君、**郭佩棻**、洪文玲 (2015 年)。車禍被害人特性研究-應用受害者學與巨量分析。104 年運輸年會學術論文研討會。

4. Selected Presentations

- 1) **Kuo, P.-F.**, (2016). “Taiwan traffic safety problems and countermeasures – DWI crashes”, The 4th International Symposium on Transportation Safety, Tongji University, Shanghai, China
- 2) **郭佩棻**, (2016).” 巨量資料處理與分析” ，刑事司法與犯罪學研究方法工作坊，國立中正大學。
- 3) **郭佩棻**, (2016).” “臺灣資料分析與產業應用趨勢論壇:圓桌論壇” ，臺灣資料科學與商業應用協會。
- 4) **郭佩棻**, (2014)” 應用地理資訊系統與巨量資料分析預測運輸需求” ，國立海洋大學運輸科學系。
- 5) **Kuo, P.-F.**, Shen, C.-W., Quadrifoglio, L (2012). “Spatial-Temporal Characteristics of ADA Paratransit Service.” International Conference on Aging, Mobility and Quality of Life, June 24-26, 2012, Ann Arbor, Michigan.
- 6) **Kuo, P.-F.**, Iragavarapu, I. (2012). “Spatial Analysis of Speeding Crashes in Texas.” 2012 ITE Midwestern District Conference & TRB 4th Urban Street Symposium.

TEACHING EXPERIENCE

2009	Teaching Assistant, Transportation Engineering: Characteristics, Texas A&M University
2011-2013	Speaker, Streets and Highway Design, Transportation Engineering, Texas A&M University
2014	Instructor, Time Series, University of Central Florida
2015	Instructor, Statistics/Research Methodology/Time Series/GIS, Central Police University
2016	Instructor, Data Mining/Environmental Criminology, Central Police University