Andrew P. Wheeler, PhD

Twitter @CrimAndyW

Contact Information
apwheele@gmail.com
Personal Website
http://andrewpwheeler.wordpress.com/

Latest Education & Employment History

2019-Current	**Health Management Systems**	Data Scientist
2016-2019	**Ass. Professor, Uni. of Texas at Dallas**	EPPS, Program in Criminology
2012-2014	**Crime Analyst**	Troy, New York
2009-2016	**Research Analyst**	Finn Institute for Public Safety
2008-2015	**University at Albany, SUNY**	PhD in Criminal Justice

Analytical Skills

- Forecasting and machine learning
- Experimental and quasi-experimental research design
- Various regression modelling experience (panel data, time series, multi-level, limited dependent variables, survival analysis, etc.)
- Data visualization & geographic data analysis
- Linear and integer programming
- Writing and presenting results to both technical and non-technical audiences

See my google scholar profile for a list of over 20 peer reviewed publications illustrating these skills. My personal blog also illustrates my proficiency in data analysis and writing.

Software Expertise with Example Projects Listed

- **R** (10+ years, focus on machine learning and spatial statistics)
  - Identifying outliers and forecasting homicide trends
  - Spatial smoothing of demographic data and survey data
- **Python** (6+ years, focus on network statistics and linear programming)
  - redrawing Carrollton's Police Beats to be more efficient and balanced
  - Creating a social network algorithm to target gang members for intervention
- **SPSS** (10+ years, focus on data management and data visualization)
  - Geospatial data analytics chapter (forecasting and geospatial association rules)
  - ROC and Precision-Recall curves (also see plotting predictive crime curves)
- **Stata** (6+ years, focus on regression modelling)
  - group based trajectory models
  - difference-in-difference models and post estimation commands

- **ArcMap** (10+ years, focus on cartography)
  - Viz. techniques for journey-to-crime flow data
  - making value-by-alpha maps

Example Classes Taught

- **Crime Mapping** (Graduate Level), online course materials here
  - Using ArcGIS, GeoDa, and R, I teach principles of geographic analysis, geographic data visualization, and spatial econometrics using examples from crime analysis
- **Seminar in Research and Design** (PhD Level), online course materials here
  - common quasi-experimental research designs (propensity score matching, fixed/random effects, differences-in-differences, synthetic-control)
  - missing data imputation, group-based trajectory models (e.g. mixture models for longitudinal data), social network analysis, and machine learning for prediction
  - Provide code examples in R, Stata, SPSS, and python to replicate the weeks results
- **Crime Analysis** (Undergraduate), online course materials here
  - Time series monitoring and forecasting, and geographic mapping techniques in Excel
  - Advanced Pivot Tables, Interactive Graphics, and Dashboard creation in Excel
  - SQL queries and relational databases (Access)

Recent Data Science Relevant Publications

Wheeler, AP (2019) Allocating police resources with limiting racial inequality. *Justice Quarterly* Online First.

- I tackle the problem of how hots spots policing exacerbates disproportionate minority contact, and construct a linear program intended to balance police targeting of hot spots, while constraining the number of minorities likely to be stopped by the police.

Wheeler, AP, SJ McLean, KJ Becker, & RE Worden (2019) Choosing representatives to deliver the message in a group violence intervention. *Justice Evaluation Journal* 2(2): 93-117.

- I create a greedy social network algorithm to identify individuals who should be targeted for a gang intervention, which the motivation is to spread the deterrence message to the remaining gang members.

Wheeler, AP, RE Worden, & JR Silver (2019) The predictive accuracy of the violent offender identification directive (VOID) tool. *Criminal Justice and Behavior* 46(5): 770-788.

- I evaluate the predictive accuracy of a scoring system created to forecast violent gun offenders. I compare the accuracy of the ad-hoc tool developed by the police department, relative to logistic regression models and machine learning models.

Wheeler, AP (2019) Creating optimal patrol areas using the P-median model. *Policing: An International Journal* 42(3): 318-333.

- I formulate an integer linear program, with constraints on workload equality, to re-draw patrol beats for the Carrollton, TX police department. My results find my beats are likely to be over 20% more efficient in reducing drive time to calls for service compared to the current beat layout.