

Institution: University College London		
Unit of Assessment: 20 Social Work and Social Policy		
Title of case study: Reducing crime through the development and advancement of evidence-based policing and crime reduction		
Period when the underpinning research was undertaken: 2013-2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Kate Bowers, Spencer Chainey, Toby Davies, Shane Johnson, Gloria Laycock, Aiden Sidebottom, Nick Tilley, Lisa Tompson	Professor, Associate Professor, Research Assistant/Lecturer, Professor, Professor, Associate Professor, Principle Research Associate, Research Fellow/Lecturer	2004-present 2003-present 2013-present 2004-present 2001-present 2006-present 2008-present 2006-2020
Period when the claimed impact occurred: 2015-present		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact (indicative maximum 100 words)		
<p>In policing and crime reduction, there is a gap between what is known from research and what is done in practice. Closing this gap can lead to improvements in efficiency and effectiveness whilst also minimising harm and wastage of resources. Research by the UCL Jill Dando Institute of Security and Crime Science (JDI) has played a major role in the implementation and development of evidence-based policing and crime reduction. Working closely with policymakers, police services and crime reduction practitioners within the UK and internationally, this research has generated significant global impact through shaping policy and practice and initiating a culture shift towards a more evidence-based way of working. Changes brought about by JDI research have led directly to demonstrable reductions in crime, including a 24% reduction in crime in West Yorkshire (UK), and a 23% reduction in robberies in Montevideo (Uruguay).</p>		
2. Underpinning research (indicative maximum 500 words)		
<p>The Jill Dando Institute (JDI) is a UCL world-leading department conducting applied research in policing and crime reduction. JDI research takes two forms: (1) generating evidence, both on the patterns of crime and on the impact of crime reduction interventions, and (2) synthesising and translating evidence, to inform and improve the decisions of police and crime reduction practitioners and policymakers. Funded by the <i>Economic and Social Research Council</i>, <i>Inter-American Development Bank</i> and <i>UK College of Policing</i> to a sum of over GBP3,500,000, research has been conducted by Professors Kate Bowers (UCL 2004-present), Shane Johnson (UCL 2004-present), Gloria Laycock (UCL 2001-present) Nick Tilley (UCL 2008-present), and Drs Spencer Chainey (UCL 2003-present), Toby Davies (UCL 2009-present), Aiden Sidebottom (UCL 2006-present) and Lisa Tompson (UCL 2006-2020).</p>		
Generating evidence		
<p>Over the past twenty years, Bowers, Chainey and Johnson have pioneered predictive crime mapping methods, which demonstrate that crime risk spreads in space and time with sufficient regularity to enable prediction, and by extension, more focused and targeted prevention activities. Recent JDI research in this area has advanced methodologically to employ sophisticated mathematics to produce street-level (rather than small-area level) predictions of space-time crime</p>		

concentrations. These predictions are both more accurate (small-area level predictions often include low risk street segments; street-level ones do not) [R1] and better aligned with police practice [R2]. More specifically, while other crime mapping approaches identify hundreds of high-risk locations dispersed across a given area (and therefore are impractical to police), an optimisation algorithm developed through collaborative research between the JDI and **West Yorkshire Police** generates a practical number of micro-locations better suited for targeted police intervention (such as police patrols). Further research has been undertaken internationally, most notably in South America including a five-year collaboration between the JDI and the **National Police Service of Uruguay** designed to build capacity within Uruguay to undertake detailed crime analysis and improve police effectiveness. This research led to the identification of persistent robbery hot spots in the city of Montevideo, which provided the basis for the development and implementation of the first targeted police patrol programme in Uruguay, which was subsequently evaluated for its impact on crime [R3].

Synthesising and translating evidence

Evidence-based policy and practice is widely advocated both in the UK and internationally. It is generally considered to improve efficiency and effectiveness and reduce harm and wastage of resources. In policing and crime reduction, there is a large volume of research of varying quality that is seldom accessed by practitioners and policy makers. In 2013, the JDI led a 3 year multi-university project, co-funded by the Economic and Social Research Council and UK College of Policing in support of the **What Works Centre for Crime Reduction**, itself part of the wider UK What Works Network which together sought to improve the way government and other organisations create, share and use high quality evidence for decision-making. As part of this research project, Johnson, Tilley and Bowers developed **EMMIE** [R4], a framework denoting five categories of evidence that are important to inform policy and practice decision-making: **Effects** (What is known so far about the net effects of the intervention?); **Mechanisms** (What is known so far about how the intervention's positive and negative effects are brought about?); **Moderators** (What is known so far about the contextual conditions necessary for the activation of mechanisms producing positive and negative effects?); **Implementation** (What is known so far about the practicality of introducing and operating the intervention?); and **Economics** (What is known so far about the costs, cost effectiveness and cost-benefit outcomes of the intervention?). EMMIE provided the framework for a series of significant and wide-reaching research activities which included the systematic identification, appraisal and translation of systematic review evidence in crime reduction (n = 70) [R5], as well as the production of 12 original systematic reviews of crime reduction interventions [R6]. Taken together, these two research exercises led to the development in 2015 of the **Crime Reduction Toolkit**, a free online resource hosted by the College of Policing, which summarises both the quality and coverage of the best available research evidence in crime reduction. Chainey has taken this research forward in Latin America with the creation of similar online tools in the Spanish and Portuguese languages.

3. References to the research (indicative maximum of six references)

- R1.** Rosser, G., Davies, T., Bowers, K. J., Johnson, S. D., & Cheng, T. (2017). Predictive crime mapping: Arbitrary grids or street networks? *Journal of Quantitative Criminology*, 33(3), 569-594. <https://doi.org/10.1007/s10940-016-9321-x>.
- R2.** Davies, T. P., & Bishop, S. R. (2013). Modelling patterns of burglary on street networks. *Crime Science*, 2(1), 10. <https://doi.org/10.1186/2193-7680-2-10>.
- R3.** Chainey, S.P., Serrano, R. and Vaneri, F. (2020). The impact of a hot spot policing program in Montevideo, Uruguay: An evaluation using a quasi-experimental difference-in-difference negative binomial approach. *Police Practice and Research*, 1-16. <https://doi.org/10.1080/15614263.2020.1749619>.
- R4.** Johnson, S.D., Tilley, N. & Bowers, K. J. (2015) Introducing EMMIE: An evidence rating scale to encourage mixed-method crime prevention synthesis reviews. *Journal of Experimental Criminology*, 11(3), 459-473. <https://doi.org/10.1007/s11292-015-9238-7>.
- R5.** Tompson, L., Belur, J., Thornton, A., Bowers, K. J., Johnson, S. D., Sidebottom, A., Tilley, N. & Laycock, G. (2020). How Strong is the Evidence-Base for Crime Reduction

Professionals? *Justice Evaluation Journal*, 1-30.

<https://doi.org/10.1080/24751979.2020.1818275>.

- R6.** Sidebottom, A., Tompson, L., Thornton, A., Bullock, K., Tilley, N., Bowers, K., & Johnson, S. D. (2018). Gating alleys to reduce crime: A meta-analysis and realist synthesis. *Justice Quarterly*, 35(1), 55-86. <https://doi.org/10.1080/07418825.2017.1293135>.

Funding for Evidenced Based Policing projects includes: 'Predictive analytics and Policing' (ESRC project ES/K000721/1; 2013-2014; GBP23,792); Programa Integral de Seguridad (Ciudadana, ptmo 3785/ OC-UR Contrato No. 1/2018; GBP150,000); 'University Consortium for Evidence- Based Crime Reduction' (ESRC project ES/L007223/1; 2013-2018; GBP2,588,315).

4. Details of the impact (indicative maximum 750 words)

Working directly with governments, industry and police services both in the UK and internationally, the research of the JDI has delivered significant impact and lasting change in policing and crime reduction. The nature of the impact is organised below into two broad themes: (1) initiating a shift towards evidence-based policy and practice, and (2) facilitating reductions in crime.

Initiating a shift towards evidence-based policy and practice

The Crime Reduction Toolkit, developed as a product of JDI research, was established by the College of Policing in 2015 to address the evidence-needs of decision-makers with policing and crime reduction responsibilities. It is an interactive and universally accessible online resource which covers a wide range of crime reduction interventions, including victim offender mediation, mental health courts and criminal sanctions to prevent domestic violence and drink driving (with over 60 interventions listed in 2020). The Toolkit summarises in practical terms the best available evidence on what works to reduce crime, how, in what circumstances and at what cost. It is organised around the **EMMIE** framework [R4] and is populated with information derived from the JDI's appraisal of 70 systematic reviews in crime reduction [R5]. In an example of its use in practice, the Toolkit was applied by **West Midlands Police in 2015**, who used evidence on the effective use of sobriety checkpoints (from within the Toolkit) to design and target the placement of checkpoints in their area in an effort to reduce drink driving during the Christmas period (S1).

Between its launch in April 2015 and June 2020, the Crime Reduction Toolkit received over 420,000 hits from policing and crime reduction practitioners, policymakers and researchers in more than 75 countries (including those in the Global South) spanning 6 continents (S2). The Crime Reduction Toolkit has been the recipient of, or shortlisted, for several important awards. This includes a prestigious Best Practice certificate in the **New solutions to complex challenges – European or national level** category at the **European Public Sector Awards 2017**, being described as "*a truly innovative project ... providing easy access to the best available research evidence on ... interventions to reduce crime. The project is highly relevant and gives answers to problematic questions in many countries*" (S3). The Crime Reduction Toolkit was shortlisted in 2020 in the **Best Use of Digital in the Public Sector** category in the **Digital Impact Awards** (receiving the silver prize in 2021) (S4).

Beyond the Crime Reduction Toolkit, the EMMIE model developed by Johnson, Tilley and Bowers has effected significant change in the practices of a wide range of organisations both within the UK and internationally. In the UK, the **Office of the Lancashire Police and Crime Commissioner** now uses EMMIE as the framework through which funding bids (in the region of GBP600,000 annually) are assessed for rigour and completeness. As a senior partnership analyst for Lancashire Constabulary indicated, "*By using your research [on EMMIE] we have adapted the [grant agreement] forms to provide the right information.... This is a first step towards an improved evidence-based policing approach and hopefully will help us better understand 'what works' across numerous projects that are encouraged by OPCC [Office of the Police and Crime Commissioner] funding*" (S5). EMMIE is also used by the **Department of Justice in Ireland** as the framework for the collection, appraisal and presentation of evidence concerning youth justice in Ireland, who note that "*we are using the EMMIE protocol to inform evidence informed change in the youth justice practice domain The Garda Youth Diversion Project Programme, the focus*

of our reform efforts involves €18 million taxpayer investment each year in over one hundred local targeted projects for young people across Ireland” (S6).

The influence and use of EMMIE extends beyond the criminal justice sector. For example, the **UK What Works Centre for Children's Social Care**, established in 2017 with the intention of fostering and facilitating evidence-based practice across the children's social care sector, selected EMMIE as their chosen evidence appraisal framework over those used by other more established What Works Centres. EMMIE aligns with the vision of the **What Works Centre for Children's Social Care**, and provides a framework with which to “*produce evidence that children's social care professionals find useful, and that includes exploring why services make a difference and how to implement them in practice*” (S7).

Facilitating reductions in crime

JDI research on crime analysis and predictive policing has had a direct and measurable effect on police practice and crime both in the UK and internationally. For example, building on prior research [R1/R2], and in collaboration with the JDI, West Yorkshire Police has introduced a new approach to the deployment of police patrols based on innovative research by Bowers, Davies and Johnson using the ideas and techniques from the mathematical field of graph theory. This approach has been rolled out across the West Yorkshire Police Force area – the fourth largest police force in England and Wales in terms of officer numbers, covering an area just over 2,000 km² and a population of around 2,000,000 – via an app (Patrolwise), and has been credited by Jayne Sykes, Interim Chief Executive of the **Office of the Police and Crime Commissioner for West Yorkshire**, with producing a culture change within the force regarding their adoption of and attitudes towards technology in the service of policing. She writes that “*adoption of Patrolwise has significantly impacted cultural change within West Yorkshire Police to one that is more likely to draw on the value of evidence based predictive analytics and the role of technology in order to realise both efficiencies and more effective outcomes for our communities*” (S8). Importantly, West Yorkshire Police reports that the use of the new approach has led to a **24% reduction in crime** across the police force area – in relation to burglary specifically, this equates to over 800 fewer victims annually.

The impact of JDI research extends globally. Researchers at Radford University (S9) have conducted the only independent randomized controlled trial evaluating the adoption of an approach based on JDI work in Port St. Lucie, Florida. This was shown to produce even larger reductions in crime (**up to 79%**) in treatment areas during intervention, with no evidence of crime displacement. In Uruguay, an extended research collaboration between Chainey and the **National Police Service of Uruguay** gave rise in 2016 to **PADO**, the first hot spot policing programme implemented in Latin America. Using a quasi-experimental evaluation design, it has been shown that **robberies reduced by 23%** in the treatment areas where PADO was implemented (equating to a reduction of over 1,000 robberies), with no evidence of crime displacement to control areas. Reflecting on these impacts, the Principal Citizen Security Specialist at the **Inter-American Development Bank** (IDB) who funded this work, describes “*the transformational impact [the] research has made to the field of evidence-based policing in Uruguay*” citing Chainey's work as “*a prime example of what all academic studies should aspire for, helping to move forward both the fields of research and practice at the same time. Not only has it made PADO more sustainable and effective, but it also proved that hot spot policing is a relevant strategy in Latin America. At the IDB we have been using this finding... to expand hot spot policing across the Latin America region*” (S10).

PADO has subsequently inspired the development and implementation of hot spot policing projects in over 30 cities in Argentina, six cities in Mexico and six cities in Brazil. Research by Chainey [R3] indicates that the initial hot spot pilot programme implemented across four cities in Argentina (La Plata, Morón, Tres de Febrero, and Santa Fe with a combined population of over 2,000,000) produced a statistically significant **14% reduction in robberies and thefts** in treatment areas compared to control areas, with no evidence of crime displacement. Moreover, the impact of this research goes beyond only reductions in crime. As indicated by a representative of the **Ministry of Security in Buenos Aires**, the successes of the hot spot policing trial “*were instrumental in the changes implemented on May 2020 by the Ministry of Security's Resolution*

341/201 which put forward the creation of a criminal analysis department and a fundamental change in Police operations revamping of the prevention structure...[and] Hot Spot Policing is now being taught at the Leadership and Strategic Command Course" (S11).

5. Sources to corroborate the impact (indicative maximum of 10 references)

- S1.** Frontline staff use Crime Reduction Toolkit to update their drink driving campaign. Accessed online 20th October 2020 at:
https://whatworks.college.police.uk/About/News/Pages/West_Midlands.aspx
- S2.** Statistics supplied by the College of Policing.
- S3.** Crime Reduction Toolkit - *European Public Sector Award*. Accessed online 20th October 2020 at: https://www.epsa-projects.eu/index.php/Crime_Reduction_Toolkit
- S4.** Submission details supplied by the College of Policing.
- S5.** *Putting research into practice*. Letter from Senior Partnership Intelligence Analyst, Lancashire Constabulary.
- S6.** Letter from Adjunct Professor of Youth Justice, School of Law, University of Limerick.
- S7.** What works for children's social care? Accessed online 20th October 2020 at:
<https://whatworks-csc.org.uk/evidence-store/evidence-standards/>
- S8.** Letter from Interim Chief Executive in the Office of the Police & Crime Commissioner.
- S9.** Santos, R. B., & Santos, R. G. (2020). Proactive Police Response in Property Crime Micro-time Hot Spots: Results from a Partially-Blocked Blind Random Controlled Trial. *Journal of Quantitative Criminology*, 1-19. <https://doi.org/10.1007/s10940-020-09456-8>.
- S10.** Letter from Principal Citizen Security Specialist, Inter-American Development Bank.
- S11.** Letter from Superintendente de Analisis Criminal, Ministerio de Seguridad de la Provincia de Buenos Aires.