REF2021

Institution: University of Surrey

Unit of Assessment: 18 Law

Title of case study: Shaping Policy and Best Practices on Algorithmic Risk Assessment

Period when the underpinning research was undertaken: 2017 – 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:**
Melissa Hamilton	Reader of Law & Criminal Justice	July 2017 to present

Period when the claimed impact occurred: July 2017 – December 2020

Is this case study continued from a case study submitted in 2014? N

1. Summary of the impact (indicative maximum 100 words)

Algorithmic risk assessment purports to accurately distinguish high from low risk criminal offenders and to predict the risk of future misconduct. Depending on the assessment outcome, an offender may be denied pretrial release, exposed to a longer sentence, or refused parole. Hamilton's research has identified race, ethnicity, and gender bias as features of some such risk assessments. Exposing the ensuing potential for injustice has had tangible impacts on law, policy, criminal justice, and public discourse. Specifically, her work has:

> (a) informed the sentencing update to the Model Penal Code;
> (b) been used by governmental and professional bodies to gain an evidence-based understanding of risk;
> (c) shaped influential stakeholders' policies and practices for evaluating algorithmic risk tools;
> (d) led to material changes in a government-authored risk tool, and directly informed a U.S. Congressional hearing on risk-assessment; and
> (e) stimulated public debate.

2. Underpinning research (indicative maximum 500 words)

Background
An algorithm is an equation that takes inputs to produce an output. Algorithms are presumed to be objective, reliable, and equitable. Algorithmic risk assessment presents therefore as a progressive response to criminal justice reformers seeking to reduce over-reliance upon incarceration while protecting the public. Yet, little is known about these black-box tools that tend to be shrouded in secrecy. Hamilton's research questions the presumptions of objectivity. Her research employs interdisciplinary approaches, applying criminological and data science methodologies to legal and ethical frameworks.

Underpinning Research
Three of the underpinning research studies (*Debating Algorithmic Fairness, The Biased Algorithm, The Sexist Algorithm*) **[R1-3]** are mixed-methods studies (qualitative and quantitative) of large datasets of defendants. All defendants had been assessed using COMPAS, one of the most popular algorithmic tools worldwide, with over 1.5 million defendants scored. The three studies analysed post-arrest application of COMPAS to a sizable and racially diverse county in southern Florida. The analysis focused on predictive validity and measures of group fairness by race, ethnicity, and gender. *Threat Assessment* **[R4]** evaluates the state of four risk assessment tools designed for terrorists. *Judicial Gatekeeping* **[R5]** suggests best practice for judges (and legal

arguments for legal practitioners) on the admissibility of a risk tool for sentencing, balancing legal and policy issues with scientific realities.

Insights from Underpinning Research

- Many definitions of algorithmic fairness now exist, some inconsistent. Hamilton's research shows how an algorithm in practice can comply with one group fairness definition yet violate another. Stakeholders need to be aware therefore that a proponent or critic of any specific tool may select the group fairness definition that suits their narrative **[R1-3]**. Hamilton further shows that in a real-world scenario when base rates of offending between groups differ, group fairness by several definitions will suffer.
- Hamilton's research found that the COMPAS algorithm for general reoffending is not calibrated well and systematically over-predicts recidivism for black offenders compared to white offenders **[R1]**, Hispanics compared to non-Hispanics **[R2]**, and women compared to men **[R3]**. The degree of over-prediction differs across the three categories.
- The papers contend, after a detailed review of the literature on 'correlates to reoffending', that two reasons for the poorer performance of tools are (a) a lack of culturally-sensitive predictors (e.g., the roles of religiosity and gender expectations are stronger for Hispanics) **[R2]** and (b) a lack of gender-sensitive predictors (e.g., the roles of prior sexual victimisation, trauma, and parenting stress are stronger for women) **[R3]**.
- Popular risk assessment tools produce significant error rates, typically preferring a higher degree of false positives (inaccurately predicting high risk) over false negatives (inaccurately predicting low risk), yet these rates vary by race, ethnicity, and gender **[R1-3]**.
- Despite claims of certain developers of risk assessment tools designed to predict terrorist events, such instruments (a) actually are not recidivism prediction tools, (b) fail to follow best practice in algorithm risk tool development, and (c) suffer other significant flaws.
- Output **[R5]** is one of the first publications to provide detailed legal and practical advice to judges and practitioners on how to judge the acceptability of risk assessment data as evidence in civil and criminal cases.

Summary

The research is a leading effort to identify the need for legal practitioners, stakeholders, and lawmakers to critically evaluate risk practices in lieu of the current state whereby the guise of empiricism has unfortunately implied that the science of risk is objective, unbiased, and fair. The outputs provide clear guidance on both basic and advanced critical methods, interpretable to those without a strong science background.

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

[R1] Hamilton, *Debating Algorithmic Fairness*, 52 University of California-Davis Law Review Online 261-296 (2019) (peer-reviewed with the Qualitative Data Repository challenge with the University of Syracuse). DOI: 10.5064/F6JOQXNF

[R2] Hamilton, *The Biased Algorithm: Disparate Impact for Hispanics*, 56 American Criminal Law Review 1553-1577 (2019) (a premiere criminal law journal in the U.S.). This is the first placement in a law journal introducing and critiquing the various definitions of algorithmic fairness. http://epubs.surrey.ac.uk/852008/1/Biased%20Algorithm%20re%20Hispanics.pdf

[R3] Hamilton, *The Sexist Algorithm*, 37 Behavioral Sciences & the Law 145-157 (2019) (peer-reviewed). DOI: 10.1002/bsl.2406

[R4] Hamilton, *A Threat Assessment Framework for Lone-Actor Terrorists*, 70 Florida Law Review 1319-1356 (2018). http://www.floridalawreview.com/wp-content/uploads/Hamilton.pdf

[R5] Hamilton, *Judicial Gatekeeping on Scientific Validity with Risk Assessment Tools*, 38 Behavioral Sciences & the Law 226-245 (2020) (invited). DOI: 10.1002/bsl.2456

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

The impact of Hamilton's research has been felt by people and institutions concerned with protecting justice and fairness within the criminal justice system.

1. Law: Informing the Sentencing Update to the Model Penal Code (MPC)
The MPC is highly influential in codifying US penal statutes and interpreting criminal laws. A decision to revise the section on Sentencing with a provision for risk assessment was agreed in 2017. After requesting copies of her work on risk assessment, the Reporter responsible for comments and notes had a lengthy consultation with Hamilton **[R1-3]**. Output **[R2]** is cited in the final Reporter Notes, outputs **[R1-3]** are used to inform other parts of the Notes, and the consultation with Hamilton is formally referred to **[S1]**. Unsolicited qualitative feedback from the Sentencing Reporter was that Hamilton's research and assistance "had been very helpful. It will influence how the Comment and Reporter's Notes come out" **[S1]**. Beneficiaries of this impact are drafters and users of the MPC, including legislators, criminal justice officials, and legal practitioners.

2. Informing Policy:
(a) Congressional Testimony
In 2019, Hamilton testified before the nationally televised Oversight Hearing of the Federal Bureau of Prisons and Implementation of the First Step Act (invited by U.S. House Representative, Jerrold Nadler) **[S2].** Communications with Counsel for the hearing confirmed that Hamilton's research expertise was crucial to understanding potential issues concerning PATTERN (a Department of Justice (DOJ)) risk assessment tool released pursuant to the Act). Beyond this, impact was felt by lawmakers, their staff, and the general public. Immediately following the testimony, a Congressional staffer wrote specifically to thank Hamilton for her contributions, confirming that viewers were "*very positive about what we accomplished*," and that "*Congress will keep you engaged*" **[S3]**.

(b) Expert Panel, Administrative Office of the United States Courts
The Administrative Office of the United States Courts appointed Hamilton to its expert panel to the U.S. Courts' Sentencing Resource Counsel (one of two external members). Her membership was for the purposes of "*consulting on the use of risk assessments in federal criminal proceedings*". In this role, Hamilton assists leading policy analysts to educate individual counsel, lawmakers, prosecutors, and prison officials on the use of risk assessments, and the attending potential for bias. (Hamilton's appointment followed a plenary by her before the Administrative Office in 2020, based on **[R1-R3, and R5]**.)

3. Criminal Justice
a) Impact on the National Association of Criminal Defense Lawyers (NACDL)
A primary beneficiary of Hamilton's research is the NACDL, a professional Bar Association with almost 40,000 member attorneys in 28 countries. In 2018, based on her work, Hamilton was appointed to the Task Force, as its subject matter expert. As a member, Hamilton has contributed documents to the Task Force's library **[R1-R4],** used to inform improved professional responses to risk assessment. In 2019, the NACDL commissioned Hamilton to serve as Reporter to the Task Force, authoring a White Paper to: (i) "*educate criminal defense practitioners about Risk Assessment tools, as they are being used in the criminal justice system*"; (ii) "*provide strategies that may be employed in opposing or utilising RA tools*"; and (iii) "*provide the groundwork for NACDL to develop a policy statement regarding the use of Risk Assessment tools*" **[S4].** The White Paper titled "Risk Assessment Tools in the Criminal Legal System – Theory and Practice: A Resource Guide" (120 pages) was publicly released with press notices **[S8]** and accepted as NACDL's formal guidance in 2020. It includes significant references to **[R1-R4]**.

b) Federal Public and Community Defenders (FD)
The FD comprise publicly appointed defence counsel for criminal defendants in the United States' federal justice system. Based on **[R1-R3],** the Sentencing Resource Counsel Project of the FD

consulted Hamilton on the DOJ risk assessment tool, PATTERN. With particular focus on how tools can exploit socio-demographic characteristics, Hamilton's contributions informed the FD's written and oral submissions to the DOJ. Several of Hamilton's suggestions elicited improvements to PATTERN as indicated in the updated DOJ Report (including, adding a decay function for infractions, employing independent evaluators, bolstering review committee involvement, eliciting user buy-in).

c) International Corrections and Prisons Association (ICPA)

The ICPA is an NGO in Special Consultative Status with the Economic and Social Council of the United Nations. Hamilton was appointed to the ICPA Task Force on Women and Community Corrections in 2019. Upon request, Hamilton spearheaded a survey gathering evidence about the efficacy of women-sensitive risk and needs assessment. Beneficiaries of survey results are prison officials, probation, forensic mental health practitioners, and prisoners.

d) Impact Resulting from a Roundtable on Risk Assessment in Sentencing

The Koch Foundation, (a non-profit advocate for criminal justice reforms to reduce the U.S. prison population) invited Hamilton as an expert to its 2020 roundtable on legal, ethical, and empirical issues surrounding risk assessment in sentencing **[S5].** Output **[R5]** is among the experts' papers to the Roundtable that form a special, policy-centric issue of *Behavioral Sciences and the Law*. The leading editor's introduction to the issue, expressly refers to Hamilton's work **[R1-3]** as receiving strong attention from the Courts.

The foregoing impacts establish Hamilton as a leading national and international resource for evaluating risk assessment practices, and the challenges they pose to fairness and justice.

e) Informing Professional and Public Debate

Hamilton's work has had extensive further impacts on professional and public debate about risk assessment, including in the UK. **Notably Hamilton was commissioned to write a White Paper on the Effectiveness of Sentencing Options (incorporating risk assessment) published on the (UK) Sentencing Academy website [S9].** Moreover, Hamilton's research has led to invited presentations by diverse interested professional bodies: in summer 2020 a policy analyst with the U.K. College of Policing engaged Hamilton in discussions about how her research informs the country's initiatives in emerging risk assessment practices, particularly those regarding predicting domestic abuse perpetration and victimisation.

Hamilton's work has sparked media interest, bringing these important controversies about fairness and justice to public audiences: based on **[R1-3],** Hamilton appeared on radio news broadcasts (NPR, Thinkwingradio). She has also corresponded on issues of risk with reporters for the *New York Times, Washington Post, Austin American-Statesman*, and *Dallas Morning News*. Output **[R2]** was the subject of blog posts **[S7].**

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

[S1] Correspondence to Hamilton from Kevin Reitz, Reporter on the Model Penal Code-Sentencing (July 11 and 19, 2019). (PDF)

[S2] Correspondence to Hamilton from Jerrold Nadler, Chairman, Committee on the Judiciary, U.S. House of Representatives (October 11, 2019). (PDF)

[S3] Correspondence to Hamilton from Milagros Cisneros, Counsel, Committee on the Judiciary, U.S. House of Representatives (October 18, 2019). (PDF)

[S4] Correspondence from Vicki Young, Co-Chair, NACDL Task Force on Risk Assessment (Mar. 19, 2019). (PDF)

[S5] Correspondence from Christopher Slobogin, Professor of Law, Vanderbilt (July 16, 2019). (PDF)

[S6] Christopher Slobogin, A Primer on Risk Assessment Instruments for Legal Decision-Makers (2020) https://law.vanderbilt.edu/academics/academic-programs/criminal-justice-program/Primer_on_Risk_Assessment.pdf (PDF)

[S7] The Crime Report (https://thecrimereport.org/2018/11/01/risk-assessment-tools-biased-against-hispanics-study/) and Ethics Unwrapped (https://ethicsunwrapped.utexas.edu/the-perfect-mismatch-algorithms-and-intentions)

[S8] Risk Assessment Tools in the Criminal Legal System – Theory and Practice: A Resource Guide https://www.nacdl.org/Document/RiskAssessmentReport

[S9] The Effectiveness of Sentencing Options: A review of key research findings https://sentencingacademy.org.uk/research-publications-2/research-publications/