

**RISK ASSESSMENT ALGORITHMS: THE ANSWER TO AN
INEQUITABLE BAIL SYSTEM?**

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Debate over pretrial detention began long before ratification of the Eighth Amendment, tracing its roots to the early English bail system. Despite this, approaches to the system have largely remained stagnant since passage of the Bail Reform Act of 1984, which contains a series of procedural directives that model bail-setting practices for the majority of jurisdictions today. However, many courts have begun to insinuate that the current methods represent a flawed, archaic, and biased system—burdening both defendants and the community. A rise in the use of algorithms in other areas of the criminal justice system has led some jurisdictions, including Mecklenburg County, North Carolina, to abandon traditional procedures in favor of data-driven risk assessment tools, yielding promising results for the future of bail reform.

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I. INTRODUCTION

“Excessive bail shall not be required.”¹ While the opening words to the Eighth Amendment may—at face value—appear quite clear, their meaning has sparked a wide variety of interpretations from both scholars and courts for decades. Despite the language of the Eighth Amendment, developed case law affirms the principle that an individual does not possess a constitutional right to be released on bail.² But for whom is this provision intended? In the federal system, certain defendants found guilty of crimes enumerated in the Bail Reform Act of 1984 may be statutorily barred from release.³ On the opposite end of the spectrum are defendants who remain detained pretrial, not because of the severity of their crime or the risk they present to the community, but due to a systemic flaw in the

¹ U.S. CONST. amend. VIII.

² *See* United States v. Salerno, 481 U.S. 739, 754–55 (1987).

³ 18 U.S.C. § 3142(e)(3) (2012). The Bail Reform Act of 1984 enhanced protections for defendants held in custody solely for failure to satisfy monetary conditions for release. However, the Act stipulates that it is presumed no conditions are appropriate to ensure a defendant’s appearance or the safety of the community if an individual has been charged with any of the enumerated offenses listed in the subsection. The most notable exceptions include offenses with a maximum term of imprisonment of ten years or more, specific crimes involving minor victims, and drug trafficking activities. *Id.*

traditional bail system as it stands today—they simply cannot afford release.⁴ In searching for an equitable solution to bail reform that maintains public safety, risk assessment algorithms⁵ have risen to the forefront of the discussion. These algorithms seek to reform existing methods of pretrial release by lowering crime rates and reducing jail populations while enhancing judicial efficiency in the process.

This Recent Development argues in favor of an algorithmic approach to bail reform and introduces the steps that may be taken to correct inequities in the pretrial release system utilized by the majority of jurisdictions today. Part II provides a brief history of the bail system and the emergence of algorithms as part of the criminal process. Part III assesses the real-world effectiveness and impact of bail algorithms through Mecklenburg County’s implementation of the Arnold Foundation’s Public Safety Assessment. Part IV outlines the benefits of employing bail algorithms, while also recognizing the possibility of bias and systemic limitations in the methods themselves. Finally, Part V concludes by identifying future policy measures to effectively utilize algorithms in bail reform efforts.

II. THE EMERGENCE OF ALGORITHMS IN THE CRIMINAL JUSTICE SYSTEM

Modern practices of setting bail reached a plateau with the enactment of the Bail Reform Act of 1984.⁶ “Bail schedules,” which standardize monetary amounts of bail “based on the offense charged, regardless of the characteristics of an individual

⁴ See ARNOLD FOUND., *Judge Regan Miller* (June 2015), <http://www.arnoldfoundation.org/videos/judge-regan-miller/>; Jennifer Brookland & Frank Stasio, *Mecklenburg County Takes a New Look at Bail Reform*, WUNC (Dec. 5, 2017), <http://wunc.org/post/mecklenburg-county-takes-new-look-bail-reform#stream/0>.

⁵ Risk assessment algorithms are tools used to predict future behavior among incarcerated defendants. In the criminal justice system, these algorithms are chiefly used to narrowly estimate an individual’s likelihood of committing new criminal activity and assess risk of flight. See Vignesh Ramachandran, *Exploring the Use of Algorithms in the Criminal Justice System*, STANFORD ENGINEERING (May 3, 2017), <https://engineering.stanford.edu/magazine/article/exploring-use-algorithms-criminal-justice-system>.

⁶ 18 U.S.C. §§ 3141–3148 (2012).

defendant,”⁷ have been utilized as the predominant mechanism governing pretrial detention procedures and have remained unchallenged for nearly half a century.⁸ Although these schedules seem to promote equal treatment of defendants, they have nonetheless come under attack for failing to effectively satisfy the aims of pretrial detention outlined in the Bail Reform Act.⁹ The use of algorithms as a tool to assess the risk of individual defendants pending trial has gained support in numerous “pilot” jurisdictions throughout the country¹⁰ and now begs the question of whether nation-wide adoption is the next logical step in bail reform efforts. The answer to this question requires reviewing the history of bail and the shortcomings of the existing system.

A. Brief History and Criticism of Modern Practices for Setting Bail

Historically, determining an appropriate amount for bail pending trial has neither been restricted nor monitored.¹¹ Although the Eighth Amendment’s “prohibition against excessive bail applies to the states via the Fourteenth Amendment,”¹² in its early years, the clause was applied broadly and afforded little judicial oversight as to what amount was considered “excessive.”¹³ It was not until the 1950s, in

⁷ James A. Allen, “Making Bail”: Limiting the Use of Bail Schedules and Defining the Elusive Meaning of “Excessive” Bail, 25 J.L. & POL’Y 637, 641 (2017).

⁸ *Id.*

⁹ *See id.*

¹⁰ Initial pilot sites testing the effectiveness of the Arnold Foundation’s risk assessment tool included: several counties in Arizona; multiple courts in Colorado; the state of Kentucky; Santa Cruz County, California; and Mecklenburg County, North Carolina. Press Release, Arnold Found., Laura and John Arnold Foundation Announces New Pilot Sites for Court Risk Assessment Tool (Feb. 20, 2014), <http://www.arnoldfoundation.org/home-foundation-areas-focus-resources-grants-team-jobs-contact-us-laura-john-arnold-foundation-announces-new-pilot-sites-court-risk-assessme/>.

¹¹ *See generally* United States v. Edwards, 430 A.2d 1321, 1326–27 (D.C. 1981) (providing a brief synopsis of the English bail system).

¹² NEIL P. COHEN ET AL., CRIMINAL PROCEDURE: THE POST-INVESTIGATIVE PROCESS 104 (LexisNexis, 4th ed. 2014) (citing *Baze v. Rees*, 553 U.S. 35, 47 (2008)).

¹³ *See Edwards*, 430 A.2d at 1326–27.

the landmark case *Stack v. Boyle*,¹⁴ that the Supreme Court held that defendants have a right to challenge the amount of bail set if the allocation is significantly higher than the usual amount in comparable cases.¹⁵ This decision promoted the standardization of bail through the formation of the bail schedule, a judicially created listing of presumptive bail amounts for certain offenses used in the majority of jurisdictions, both state and federal, today.¹⁶ These schedules may “formally be promulgated through state law, or informally employed by local officials.”¹⁷ The exact terms of bail schedules vary in providing maximum and minimum allocations for each offense.¹⁸ In varying jurisdictions, the legislature either mandates that the stipulated amount be utilized or the amount is provided as a suggestion to the judicial official while they exercise their discretion in deciding the actual amount.¹⁹ Ultimately, these bail schedules helped address the concerns of the *Stack* Court by reigning in the wide disparity in bail amounts between defendants with comparable charges, while simultaneously affording judges some degree of variance within the maximum-minimum band when setting bail, given the individual circumstances of each case and defendant.²⁰

The Bail Reform Act of 1966 (“1966 Act”) was the first in a series of congressional acts aimed at reforming pretrial bail procedure, which resulted in the release of more defendants pretrial while creating a “rationale that allowed for increased detention.”²¹ The 1966 Act sought to continue the trend of individualized discretion set forth in *Stack*, requiring judicial officers to review defendants’ conditions of release after defendants are held in custody for a twenty-four hour period.²² While in some respects

¹⁴ 342 U.S. 1 (1951).

¹⁵ *Id.* at 4.

¹⁶ See Allen, *supra* note 7.

¹⁷ *Id.* at 641 (quoting Lindsey Carlson, *Bail Schedules: A Violation of Judicial Discretion?*, 26 CRIM. JUST. 12, 13 (2011)).

¹⁸ See *id.*

¹⁹ See *id.* at 642.

²⁰ See *Stack*, 342 U.S. at 4; Allen, *supra* note 7, at 642.

²¹ Shima Baradaran, *Restoring the Presumption of Innocence*, 72 OHIO ST. L.J. 723, 740–41 (2011).

²² See Wayne C. Holcombe, *Bail*, 73 GEO. L.J. 466, 473 (1984).

promoting individual review, the 1966 Act also allowed for the continued pretrial detention of defendants who were unable to satisfy the imposed conditions, so long as that detention did “not amount to punishment or otherwise violate the Constitution.”²³ However, the looming question of what constituted “punishment” in the context of pretrial detention remained unanswered in the decades following the reform legislation.²⁴

The most recent major federal reform effort for procedure-driven pretrial detention came with the passage of the Bail Reform Act of 1984 (“1984 Act”).²⁵ The 1984 Act made several key changes to the practice of setting bail post-*Stack* and the 1966 Act, including: prohibitions on the practice of imposing absurdly high bail amounts in an effort to detain defendants,²⁶ formally authorizing courts to consider the danger a defendant may pose to the community or to specific individuals,²⁷ and providing hearings to defendants as a requirement of pretrial detention.²⁸ The 1984 Act is designed to reasonably ensure a defendant will appear in court and will not “endanger the safety of any other person or the community” pending trial.²⁹ Opponents of the 1984 Act viewed its provisions of statutorily authorizing the detention of an individual presumed innocent as a violation of a defendant’s due process rights under the Fourteenth Amendment.³⁰ This element of the 1984 Act was quickly challenged in *United States v. Salerno*³¹ as being facially unconstitutional.³² Writing for a 6-3 majority, Chief Justice Rehnquist held that pretrial detention may serve as “a potential solution to a pressing societal

²³ *Id.* at 473–74.

²⁴ *See, e.g.,* Schall v. Martin, 467 U.S. 253, 281 (1984) (holding a New York statute authorizing the detention of juveniles who posed a “serious risk” to the community was compatible with due process under the “fundamental fairness” test and was not in fact punitive).

²⁵ *See* 18 U.S.C. §§ 3141–3148 (2012).

²⁶ *See id.* § 3142(c)(1)(B).

²⁷ *See id.* § 3142(c)(1).

²⁸ *See id.* § 3142(e)(1).

²⁹ *Id.* § 3142(b).

³⁰ *See* *United States v. Salerno*, 481 U.S. 739, 744–45 (1987).

³¹ *Id.* at 739.

³² *Id.* at 741.

problem,”³³ permitting the Government to detain an arrestee pending trial if it is demonstrated by clear and convincing evidence that no release conditions would reasonably assure public safety.³⁴

Since *Salerno*, the “potential solution” endorsed by the Court has resulted in numerous forms of release, pending trial.³⁵ A defendant may be released from pretrial custody by posting a full cash bond, by being granted an unsecured bond or conditional release, or by the most “traditional” form of bail—through a surety bond backed by a professional bond company.³⁶ In cases involving release through a surety bond, the bail bonding company “signs a promissory note to the court for the full bail amount and then charges the defendant a percentage of that full amount as a fee.”³⁷ A professional bond company charges defendants a non-refundable fee (ordinarily ten percent of the total bond set by the court) to secure their release pending trial.³⁸ If a defendant fails to appear for their court date, the bond is revoked, and the “bounty hunters” are used to recapture the absconding offender.³⁹ This aspect of the modern bail system is the subject of a high degree of criticism from both scholars and judicial officials.⁴⁰ The privatization of pretrial release and financial incentives for recapture create a “system [which] discriminates as bail bondsmen remain part of the political process, with interests antithetical to those of the accused.”⁴¹ The system is further compromised as often defendants’ only option for release pending trial is to turn to a bail bonding company. Defendants who

³³ *Id.* at 747.

³⁴ *Id.* at 752.

³⁵ See COHEN ET AL., *supra* note 12, at 105–09.

³⁶ A full cash or surety bond requires the defendant to pay the Court the full amount in cash before being released from custody. An unsecured bond allows for immediate release upon the defendant’s promise to pay the set amount in full in the event they fail to appear for their next court date. Conditional release occurs when a judicial official stipulates restrictions on the defendant’s release (such as no contact orders or restrictions on travel), on which violation of these conditions results in revocation of bail and re-arrest. *Id.*

³⁷ *Id.* at 106.

³⁸ See *id.*

³⁹ See *id.* at 107.

⁴⁰ See Lydia D. Johnson, *The Politics of the Bail System: What’s the Price for Freedom?*, 17 SCHOLAR: ST. MARY’S L. REV. & SOC. JUST. 171, 186 (2015).

⁴¹ *Id.*

are unable to satisfy their bond conditions remain in custody with significant costs to the court system and community alike. These resulting consequences include a rise in recidivism, correlating to the length of a defendant's incarceration (with as high as a 51% greater likelihood of reoffending),⁴² higher jail populations increasing costs to taxpayers in the community,⁴³ and a flooded court system hampering efforts to maintain an efficient judiciary.⁴⁴ These criticisms of the current system have led many jurisdictions⁴⁵ to seek more beneficial alternatives to the traditional offense-driven bail schedule for the benefit of all actors involved, except for bail bonding companies. Algorithms have emerged as one of these alternatives, providing a reliable tool for thoroughly analyzing a defendant's risk of flight and danger to the community, and supporting a more efficient, equitable bail determination procedure in the process.

B. Rethinking Risk Assessment Factors Through the Use of Algorithms

“One of the most striking innovations in the criminal justice system during the past thirty years has been the introduction of

⁴² Low-risk defendants remaining in custody for two to three days are “almost 40 percent more likely to commit new crimes before trial than equivalent defendants held no more than 24 hours.” This recidivism rate climbs to 51 percent when a defendant is held for eight to fourteen days. DR. CHRISTOPHER T. LOWENKAMP ET AL., *THE HIDDEN COSTS OF PRETRIAL DETENTION* 3 (2013), <https://www.pretrial.org/download/research/The%20Hidden%20Costs%20of%20Pretrial%20Detention%20-%20LJAF%202013.pdf>.

⁴³ See Brookland & Stasio, *supra* note 4 (noting Mecklenburg County's cost of \$166 to hold defendants in custody, resulting in \$113 million spent on inmate housing in 2014).

⁴⁴ See Jerold H. Israel, *Excessive Criminal Justice Caseloads: Challenging the Conventional Wisdom*, 48 FLA. L. REV. 761, 761 (1996).

⁴⁵ The most prominent of these jurisdictions include the entire states of Arizona, Kentucky, and New Jersey—in addition to some of the country's largest metropolitan areas including Chicago, Illinois, and Charlotte, North Carolina. Press Release, Arnold Found., *More Than 20 Cities and States Adopt Risk Assessment Tool to Help Judges Decide Which Defendants to Detain Prior to Trial* (Jun. 26, 2015), <http://www.arnoldfoundation.org/more-than-20-cities-and-states-adopt-risk-assessment-tool-to-help-judges-decide-which-defendants-to-detain-prior-to-trial/>.

actuarial methods—statistical models and software programs—designed to help judges and prosecutors assess the risk of criminal offenders.”⁴⁶ These algorithms rely on a set order of operations similar to a mathematical equation.⁴⁷ These computer-generated formula-based methods have been employed to a limited degree in four main areas of the criminal justice system, including: “pretrial and bail, sentencing, probation and parole, and juvenile justice.”⁴⁸

A policy paper adopted by the Conference of State Court Administrators likened risk assessment algorithms to the statistical analysis utilized by Oakland A’s general manager Billy Beane, as depicted in Michael Lewis’s book, *Moneyball*.⁴⁹ Beane’s algorithmic approach was discounted by the greater baseball community for failing to abide by “long-held practices based on intuition and gut-feelings, tradition, and ideology.”⁵⁰ Similarly, opponents of risk assessment algorithms remain skeptical of its long-term effectiveness, instead clinging to traditional methods of determining pretrial release.⁵¹ However, just as Beane’s new method turned out to be a more accurate predictor of baseball talent, algorithms allow for a more accurate assessment of a defendant’s flight risk and danger to the community to be ascertained in the bail determination process, despite their departure from the traditional practice of following a bail schedule.

Further, the similar application of algorithms used for what some jurisdictions have deemed “predictive policing” has recently been subject to a high degree of scrutiny due to its implications on Fourth

⁴⁶ DATA & CIVIL RIGHTS, COURTS AND PREDICTIVE ALGORITHMS 1 (2015), http://www.datacivilrights.org/pubs/2015-1027/Summary_Courts_and_Data.pdf.

⁴⁷ See Jason Tashea, *Risk-Assessment Algorithms Challenged in Bail, Sentencing and Parole Decisions*, ABA J. (Mar. 2017), http://www.abajournal.com/magazine/article/algorithm_bail_sentencing_parole.

⁴⁸ DATA & CIVIL RIGHTS, *supra* note 46.

⁴⁹ ARTHUR W. PEPIN, 2012-2013 POLICY PAPER: EVIDENCE-BASED PRETRIAL RELEASE 5 (2012), <https://www.pretrial.org/download/policy-statements/Evidence%20Based%20Pre-Trial%20Release%20-%20COSCA%202012.pdf>.

⁵⁰ *Id.*

⁵¹ See J. Mark W. Klingensmith, *Computers Laying Down the Law: Will Judges Become Obsolete?*, 90 FLA. B.J. 80, 81–82 (Jan. 2016), <https://www.floridabar.org/news/tfb-journal/?durl=/DIVCOM/JN/jnjournal01.nsf/Articles/B31E0BE4DA96963485257F29005A0048>.

Amendment issues related to reasonable suspicion.⁵² “Promoted as the next smart policing weapon in the war on crime,” proponents claim these algorithms will “predict crime before it happens.”⁵³ Evaluated in this context, “[p]redictive algorithms are not magic boxes that divine future crime, but instead probability models of future events based on current environmental vulnerabilities.”⁵⁴ Critics believe the new technology⁵⁵ could lead to a society analogous to the police state illustrated in the movie *Minority Report*.⁵⁶ More legalistic concerns arise when examining the algorithm’s effect on an individual’s protections and liberties granted by the Fourth Amendment.⁵⁷ Despite concerns arising from the use of algorithms in the policing process, their value as a supplemental tool to analyze a defendant’s risk of flight and danger to the community should not be underestimated.

In the last few years, numerous jurisdictions have begun implementing some form of risk assessment algorithm into their bail determination procedures on a trial basis, including the entire states of Kentucky, New Jersey, and Arizona, as well as the District of

⁵² See Andrew Guthrie Ferguson, *Predictive Policing and Reasonable Suspicion*, 62 EMORY L.J. 259, 285–86 (2012) (noting the impact of predictive algorithms on constitutional protections relating to searches, seizures, and arrests).

⁵³ “[P]redictive policing uses the power of ‘big data’ to isolate patterns in otherwise random acts.” By using information gathered from specific occurrences such as arrests and incident reports, cross-referenced with other variables such as the addresses of known gang members, past calls for service to law enforcement, and areas of frequent violent activity. *Id.* at 261, 265–66.

⁵⁴ *Id.* at 314.

⁵⁵ See Shibani Mahtani, *Chicago Police Take a Page from “Minority Report”*, WALL ST. J. (May 12, 2017, 5:30 AM), <https://www.wsj.com/articles/chicago-police-take-a-page-from-minority-report-1494581400>.

⁵⁶ *Minority Report* is a neo-noir science-fiction movie directed by Steven Spielberg and starring Tom Cruise, in which crime is eradicated due to the “Precrime” police unit’s ability to predict crimes before they occur. MINORITY REPORT (Twentieth Century Fox 2002).

⁵⁷ See Katherine Freeman, Recent Development, *Algorithmic Injustice: How the Wisconsin Supreme Court Failed to Protect Due Process Rights in State v. Loomis*, 18 N.C. J.L. & TECH. ON. 75, 92 (2016) (citing due process concerns stemming from a defendant’s inability to “refute, supplement, and explain” the algorithm’s formula at sentencing and the lack of individualized sentencing in the process).

Columbia; Cook County, Illinois; Santa Cruz County, California; Allegheny County, Pennsylvania; Harris County, Texas; and Mecklenburg County, North Carolina.⁵⁸ Kentucky, in particular, has been viewed as a national model in pretrial procedure,⁵⁹ remaining at the forefront with its adoption of algorithmic approaches to bail. Many other jurisdictions, such as Mecklenburg County, have sought reform measures in an effort to address unresolved issues in their respective systems, such as jail overcrowding and the prospective costs of new housing facilities.⁶⁰ Additionally, New York City has adopted the use of algorithms in multiple areas of its criminal justice system.⁶¹ City officials recently passed a bill to test its formulaic system for bias and to develop a process for citizens to request explanations of algorithmic decisions when they are dissatisfied with particular outcomes.⁶² This “open source” bill is believed to be

⁵⁸ As of 2017, Kentucky, Arizona, and New Jersey were the only states to have implemented the Arnold Foundation’s Public Safety Assessment statewide. PRETRIAL JUST. INST., WHERE PRETRIAL IMPROVEMENTS ARE HAPPENING 4 (July 2017), <https://higherlogicdownload.s3.amazonaws.com/NCJA/c3320104-776e-4e0e-b687-4ffa1fd54e8c/UploadedImages/National%20Forum/2017%20Forum/fanno-burdeen-where-pretrial-improvements-2017.pdf>.

⁵⁹ See ARNOLD FOUND., RESULTS FROM THE FIRST SIX MONTHS OF THE PUBLIC SAFETY ASSESSMENT – COURT IN KENTUCKY 2 (July 2014), <http://www.arnoldfoundation.org/wp-content/uploads/2014/02/PSA-Court-Kentucky-6-Month-Report.pdf> (noting Kentucky’s past as an early adopter and innovative leader in pretrial reform efforts).

⁶⁰ See *Safety and Justice Challenge*, MECKNC.GOV., <https://www.mecknc.gov/CriminalJusticeServices/Pages/SJC.aspx> (last visited Mar. 26, 2018); see also Keith Humphreys, *Why America’s Jails Are So Overcrowded*, N.Y. POST (Apr. 26, 2017, 5:02 AM), <https://nypost.com/2017/04/26/why-americas-jails-are-so-overcrowded/>. Due to its high population, jail overcrowding has been a continuing problem in Mecklenburg County for well over a decade. See Chris Fitzsimon, *Jail Overcrowding Critical, Sheriff Says*, N.C. POL’Y WATCH (Sept. 5, 2006), <http://www.ncpolicywatch.com/2006/09/05/jail-overcrowding-critical-sheriff-says/>.

⁶¹ See Roshan Abraham, *New York City Passes Bill to Study Biases in Algorithms Used by the City*, MOTHERBOARD (Dec. 19, 2017, 9:52 AM), https://motherboard.vice.com/en_us/article/xw4xdw/new-york-city-algorithmic-bias-bill-law.

⁶² An earlier version of the bill required “all agencies that perform algorithmic decision-making—from policing to public school assignments—make their code publicly available.” *Id.* at 61. Its final version requires a task force to develop a procedure which detects algorithmic bias to “determine whether an agency

one of the first of its kind and has been commended for its accessible ingenuity.⁶³

However, not everyone is convinced that algorithmic procedure is the way of the future. As of 2015, fewer than ten percent of all jurisdictions had used a method of formal risk assessment when setting bail.⁶⁴ Anne Milgram, former attorney general of New Jersey, explains that “[s]uch assessments are costly to conduct and are sometimes discounted by judges because they depend on information reported by defendants.”⁶⁵ Other critics believe algorithms threaten the idea that people want judges who use their “life experience, common sense, and ethics” to guide their decision making rather than relying on a formula.⁶⁶ Concerns over bias and discrimination have erupted with the implementation of algorithmic decision-making in other parts of the criminal justice process, namely at the sentencing stage.⁶⁷ In light of these apprehensions toward the adoption of formulaic methodology to aid decision-making in the criminal justice system, the duty of proving the effectiveness of reform efforts falls to those jurisdictions that have already implemented algorithmic risk assessment into their bail determination process.

automated decision system disproportionately impacts persons [on an impermissible basis]” *Id.*

⁶³ *See id.*

⁶⁴ *See* Shaila Dewan, *Judges Replacing Conjecture with Formula for Bail*, N.Y. TIMES (June 26, 2015), <https://www.nytimes.com/2015/06/27/us/turning-the-granting-of-bail-into-a-science.html>.

⁶⁵ *Id.* While the research and testing required to formulate such algorithms is extensive, tools such as the PSA can be implemented with minimal expense and even reduce costs in the long run by not requiring additional staff to conduct individual defendant interviews and enhancing judicial efficiency. ARNOLD FOUND., DEVELOPING A NATIONAL MODEL FOR PRETRIAL RISK ASSESSMENT 4 (2013), http://www.arnoldfoundation.org/wp-content/uploads/2014/02/LJAF-research-summary_PSA-Court_4_1.pdf.

⁶⁶ *See* Klingensmith, *supra* note 51 (believing these algorithms to be compulsory, rather than a tool to supplement the common sense and experience of judicial officials).

⁶⁷ *See* State v. Loomis, 881 N.W.2d 749 (Wis. 2016); *Criminal Law – Sentencing Guidelines – Wisconsin Supreme Court Requires Warning Before Use of Algorithmic Risk Assessments in Sentencing – State v. Loomis*, 881 N.W.2d 749 (Wis. 2016), 130 HARV. L. REV. 1530 (2017); Freeman, *supra* note 57.

III. THE PSA AND MECKLENBURG COUNTY

There has been a noticeable shift in approaches to bail procedure over the last decade, with many courts moving away from systems driven by rigid, offense-focused bail schedules in favor of “rigorous, scientific, data-driven risk assessments.”⁶⁸ Among the jurisdictions at the forefront of utilizing risk assessment factors in its bail determination procedures is Mecklenburg County, the most populous county in North Carolina and home to the city of Charlotte. Due to its large population, Mecklenburg County demands a high degree of efficiency from its court system to ease the burden of overcrowded dockets and to ensure the fair and reasonable administration of justice.⁶⁹ To achieve this goal, Mecklenburg County became one of the first jurisdictions in the country—and to date, the only jurisdiction in North Carolina—to adopt the Laura and John Arnold Foundation’s Public Safety Assessment tool (hereinafter referred to as the PSA).⁷⁰ Since implementing the PSA, both defendants and the community of Mecklenburg County have experienced immensely positive results, demonstrating the benefits of algorithmic risk assessment in comparison to heavy reliance on traditional bail schedules corresponding to monetary constraints.⁷¹

A. *The PSA’s Approach to Bail Reform*

The Laura and John Arnold Foundation is a philanthropic organization with a mission to “improve the lives of individuals by strengthening our social, governmental, and economic systems.”⁷² Arnold Foundation researchers compiled 1.5 million criminal cases

⁶⁸ Lauryn P. Gouldin, *Disentangling Flight Risk from Dangerousness*, 2016 BYU L. REV. 837, 867 (2016) (citation omitted).

⁶⁹ See ARNOLD FOUND., *supra* note 4.

⁷⁰ ARNOLD FOUND., *supra* note 10.

⁷¹ See ARNOLD FOUND., *supra* note 4; Brookland & Stasio, *supra* note 4 (discussing the decrease in jail population, increased efficiency of the court system, and extrinsic benefits to the community resulting from the PSA-Court’s utilization in Mecklenburg County).

⁷² *About LJAF*, ARNOLD FOUND., <http://www.arnoldfoundation.org/about/> (last visited Mar. 26, 2018).

gathered from approximately 300 different U.S. jurisdictions.⁷³ From these cases, the Foundation's research team studied 746,525 cases of defendants who had been released pretrial before their disposition.⁷⁴ The initial analysis examined hundreds of factors including prior instances of failure to appear for court, drug and alcohol use, mental health, family relations, residency status, and employment history, among others.⁷⁵ Researchers found that a small number of factors obtained at the administrative level could accurately predict a defendant's risk level.⁷⁶ Additionally, inclusion of factors relating to a defendant's personal background gathered at an in-person interview with pretrial services resulted in no positive effect on the algorithm's performance.⁷⁷ Removing these factors from consideration created a methodical tool, derived from readily accessible administrative factors, that eliminated the need for costly, time-consuming pretrial interviews whose variables often inadvertently contribute to formulaic bias.⁷⁸ The resulting algorithm produced two scores in line with those produced by the traditional factors courts use to evaluate pretrial detention, one predicting the defendant's risk of flight and the other assessing the danger they pose to the community if released pending trial.⁷⁹

The PSA quantitates values for flight risk and safety of the community through the use of three separate risk assessment scales ranging from a low of one to a high of six.⁸⁰ The first two scales represent "dangerousness predictions," broken down into "new criminal activity" and "new violent criminal activity," respectively.⁸¹ The third scale predicts the risk of a defendant's

⁷³ *Public Safety Assessment*, ARNOLD FOUND., <http://www.arnoldfoundation.org/initiative/criminal-justice/crime-prevention/public-safety-assessment/> (last visited Mar. 26, 2018).

⁷⁴ ARNOLD FOUND., *supra* note 65, at 3.

⁷⁵ *Id.* at 3–4.

⁷⁶ These administrative factors determined when the defendant is processed, mainly relating to information available from their criminal background history. *Id.*

⁷⁷ *See id.* at 4.

⁷⁸ *See id.*

⁷⁹ *See* Gouldin, *supra* note 68, at 869.

⁸⁰ *See id.* at 870.

⁸¹ *Id.* (internal quotation marks omitted).

“failure to appear.”⁸² The values assigned to each of these three scales are derived from a series of nine factors: whether the charged offense is violent, other pending charges, prior misdemeanor convictions, prior felony convictions, prior violent convictions, prior failure to appear pretrial within the last two years, prior failure to appear pretrial outside the last two years, prior convictions resulting in incarceration, and age at the time of arrest.⁸³ None of these nine factors require individual defendant interviews as all are determined through administrative information capable of being automatically compiled prior to an initial bail hearing.⁸⁴ The PSA’s creators claim the algorithm is “more objective, far less expensive, and requires fewer resources to administer than previous techniques.”⁸⁵ Professor Lauryn Gouldin, former Assistant Director of the Center for Research in Crime and Justice at New York University School of Law, has praised the algorithm, stating “[t]oo many of the federal and state risk assessment tools merge the analysis of flight risk and dangerousness into a single risk assessment calculation, the PSA-Court risk assessment tool being a notable exception.”⁸⁶

The Arnold Foundation also took steps to minimize algorithmic bias in the PSA risk assessment tool.⁸⁷ Unlike many of the factors at issue with predictive policing algorithms,⁸⁸ the PSA tool excludes variables involving race, gender, income, education, home address, history of drug use, family status, marital status, national origin, employment, or religion.⁸⁹ Additionally, the Arnold Foundation stresses that the PSA analysis is not the only information a judge should consider when determining bail.⁹⁰ The PSA is merely one of

⁸² *Id.* (internal quotation marks omitted).

⁸³ ARNOLD FOUND., THE PUBLIC SAFETY ASSESSMENT (PSA) 1 (2016), <http://www.arnoldfoundation.org/wp-content/uploads/PSA-Infographic.pdf>.

⁸⁴ *See* Gouldin, *supra* note 68, at 870.

⁸⁵ *Id.* (quoting ARNOLD FOUND., *supra* note 83).

⁸⁶ *Id.* at 870–71.

⁸⁷ *See* ARNOLD FOUND., *supra* note 83 (“The PSA provides information that is race- and gender- neutral. It helps . . . enhance fairness and efficiency in the system.”).

⁸⁸ *See* Ferguson, *supra* note 52, at 265.

⁸⁹ *See* ARNOLD FOUND., *supra* note 83.

⁹⁰ *See id.*

several tools at a judge's disposal to guide their decision-making process, with the goal of "increas[ing] safety, reduc[ing] taxpayer costs, and enhanc[ing] fairness and efficiency in the system."⁹¹

The PSA's effectiveness as a risk assessment tool is best illustrated by comparing its outcomes to those produced by a traditional bail schedule. In North Carolina, it is statutorily required that the Senior Resident Superior Court Judge for each judicial district publish established bail policies to guide pretrial release.⁹² During the transition in which the PSA was first implemented in Mecklenburg County, the Bail Policy for the Twenty-Sixth Judicial District⁹³ was revised to reflect the new methodology. The PSA matrix is specifically included in the policy,⁹⁴ noting recommended action by taking both the flight risk of the defendant and the danger they pose to the community into consideration.⁹⁵ The policy's recommended bail schedule most acutely represents these changes when compared to other jurisdictions' schedules within the state.

For example, suppose a young man with limited prior convictions is caught with a needle and heroin. The young man is then charged with possession of a Schedule I controlled substance,⁹⁶ a Class I felony in North Carolina.⁹⁷ Under Mecklenburg's policy, the schedule recommends bail ranging from \$0 to \$25,000,⁹⁸ more narrowly tailored after performing a PSA risk analysis. Because the defendant presents no danger to the community and limited risk of flight, he would likely be released on an unsecured bond or its equivalent pending trial, while also being afforded the opportunity

⁹¹ *Id.*

⁹² N.C. GEN. STAT. § 15A-535(a) (2016).

⁹³ Order Establishing Bail Policy for the Twenty-Sixth Judicial District, 14-R 1615, 1 (2014), <https://www.mecknc.gov/CriminalJusticeServices/Documents/Mecklenburg%20County%20Bail%20Policy.pdf> (outlining Mecklenburg County's recommended monetary amounts and factors to be considered when determining conditions of release).

⁹⁴ *See id.* at 22, Exhibit C.

⁹⁵ *Id.* at 1.

⁹⁶ N.C. GEN. STAT. § 90-89(a)(j) (2016).

⁹⁷ *Id.* § 90-95(d)(1).

⁹⁸ Order Establishing Bail Policy for the Twenty-Sixth Judicial District, *supra* note 93, at 16.

to enroll in a drug rehabilitation program.⁹⁹ This outcome changes dramatically when an individual under the same circumstances is charged with possession in a jurisdiction that has not adopted algorithmic risk assessment, such as Wake County, North Carolina. Under Wake County's bail policy,¹⁰⁰ it is recommended that the same defendant charged with a Class I felony be allocated a \$2,000 to \$10,000 secured bond as a condition of release.¹⁰¹ While the policy stipulates that these amounts are general guidelines for release,¹⁰² based upon the limited facts available at the initial bail determination hearing and a quick glance of the file only revealing "Possession of a Schedule I Controlled Substance," this could easily lead a judicial official to impose the \$2,000 recommended minimum. If this defendant cannot afford to pay a bail bonding company \$200 for release,¹⁰³ they will remain in custody pending trial, keeping them from receiving the drug treatment they need out of custody, all while the community pays to house them in an already overcrowded jail system.¹⁰⁴ The above example demonstrates the equitable impact an algorithm-based risk assessment tool may have over jurisdictions relying on traditional bail schedules and determination methods.

However, despite the new implementations, conventional factors for determining release have not been completely eradicated from consideration under the Mecklenburg bail policy. In contrast to the risk assessment values used by the PSA, the bail policy maintains traditional variables for analyzing flight risk and community safety, which a judicial official must evaluate when

⁹⁹ Depending on the extent of the defendant's prior convictions, he would likely be considered for conditional discharge under North Carolina's drug education program if he qualifies. *The North Carolina Drug Education School Program*, N.C. DRUG EDUC. SCH., <https://ncdes.org> (last visited Mar. 26, 2018).

¹⁰⁰ Administrative Order Setting Tenth Judicial District Pretrial Release Policies 1 (2013), <http://www.ncids.org/racebank/Pretrial/Administrative%20Order%20Setting%2010th%20Judicial%20District%20Pretrial%20Release%20Policies.pdf>.

¹⁰¹ *Id.* at 6.

¹⁰² *Id.* at 5.

¹⁰³ The cost of a bondsman charging an ordinary fee of ten percent for bail of \$2000 would be \$200. See COHEN ET AL., *supra* note 12, at 106.

¹⁰⁴ See Fitzsimon, *supra* note 60.

setting the terms for pretrial release.¹⁰⁵ Many of the considered factors, such as subsection (C) of the Bail Policy for the Twenty-Sixth Judicial District, which regards “[t]he defendant’s family ties, employment, financial resources, character, and mental condition,”¹⁰⁶ appear to undermine the solely administrative variables utilized by the PSA tool, functioning as proxies for the very race and gender bias the algorithmic approach seeks to eliminate.¹⁰⁷ Nonetheless, while maintaining these factors may not appear ideal, their inclusion preserves the independent discretion of the judiciary while reinforcing the fact that the PSA is not a binding instrument but rather a resource to be used to form an appropriate and equitable assessment for conditions of release pending trial. The positive results Mecklenburg County has experienced from implementing the PSA speak to the powerful role algorithmic risk assessment tools may serve in bail reform efforts moving forward.

B. Implementation in Mecklenburg County and Positive Outcomes

Government officials in Mecklenburg County were faced with the prospect of reforming its bail system well over a decade before the PSA came into existence.¹⁰⁸ From 1990 to 2008, Charlotte’s population grew at a rate of 70%, while the county’s jail population increased by 179%.¹⁰⁹ The number of detained individuals led to a problem of jail overcrowding that existing housing facilities could not maintain long-term.¹¹⁰ This left the county with two options—construct new jail housing facilities to account for the increased detention rate, at an immense cost to the community,¹¹¹ or implement

¹⁰⁵ See Order Establishing Bail Policy for the Twenty-Sixth Judicial District, *supra* note 93, at 2.

¹⁰⁶ *Id.*

¹⁰⁷ See ARNOLD FOUND., *supra* note 83.

¹⁰⁸ See KIMME & ASSOCS., INC. ET AL., MECKLENBURG COUNTY, NC DETENTION-CORRECTIONS MASTER PLAN EXECUTIVE SUMMARY 9 (2008), <https://www.charmeck.org/mecklenburg/county/countymanagersoffice/omb/capitalprojects/documents/shf-exec%20sum%20meck%202008.pdf>.

¹⁰⁹ *Id.* at 1.

¹¹⁰ *Id.* at 1–2.

¹¹¹ The estimated construction and additional operating costs to meet baseline needs were broken down into three projections, totaling annual cost increases of

a series of policy measures to reduce the detention rate to a manageable level, including a revision of bail setting and pretrial release methodology.¹¹² While attempts at reform were implemented, jail overcrowding remained a continuing problem in Mecklenburg County until the PSA was adopted in 2014.¹¹³

Perhaps the most insightful source for assessing the effectiveness of the PSA and application of algorithmic bail procedures in Mecklenburg County is the group of judicial officials responsible for determining pretrial release. In June 2015, the Arnold Foundation interviewed Chief District Court Judge Regan Miller on his opinion of the PSA and its usefulness.¹¹⁴ Judge Miller began by questioning the fairness of the idea that “everybody charged with a certain crime was going to be initially started at a monetary bond at a certain amount” and the inequities experienced by defendants of limited means.¹¹⁵ Judge Miller continued by noting the negative effects experienced by defendants detained for more than two days, namely losing their jobs and members of their family and the community believing they are already guilty of the charges against them.¹¹⁶ Judge Miller commended the PSA for the information it provides, its objective fairness, and its function as a safeguard from judges being governed by their own implicit bias.¹¹⁷

More recently, in a radio interview from December 2017, District Court Judge Elizabeth Trosch further emphasized the PSA’s benefits to both the defendants and the greater community.¹¹⁸ Judge Trosch articulated that in many local jails, while half of the defendants in custody have a low flight risk and are not a danger to the community, they remain detained “because they are unable to pay a money bond in order to secure their release.”¹¹⁹ This prevents

\$38.6 million, \$72.8 million, and \$141.7 million through the years 2012, 2020, and 2030 respectively. *Id.* at 4.

¹¹² *See id.* at 5–8.

¹¹³ *See* Brookland & Stasio, *supra* note 4; ARNOLD FOUND., *supra* note 10.

¹¹⁴ ARNOLD FOUND., *supra* note 4.

¹¹⁵ *Id.*

¹¹⁶ *Id.*

¹¹⁷ *Id.*

¹¹⁸ Brookland & Stasio, *supra* note 4.

¹¹⁹ *Id.*

these defendants from “go[ing] back to work and their families while their case is being processed in the court system.”¹²⁰ A risk assessment tool such as the PSA provides a more targeted assessment of these factors tailored to the individual, rather than a more rigid, offense-driven system such as a traditional bail schedule, allowing judicial officials to reach a more efficient and equitable bail determination. In 2014, Mecklenburg County spent \$113 million on inmate housing, roughly \$166 per day per defendant—an amount Judge Trosch criticizes as “a lot of money to jail people who do not pose a serious threat to public safety.”¹²¹ According to Judge Trosch, by using the PSA for the past five years, Mecklenburg County has been able to safely reduce its jail population by approximately forty percent.¹²² The far-reaching benefits of the PSA are not just acknowledged by the judiciary but by other actors in the criminal justice system as well.¹²³

Prosecutors and defense attorneys alike support the effectiveness of the PSA.¹²⁴ Former Mecklenburg County District Attorney Andrew Murray¹²⁵ noted, “the risk assessment has allowed us to lower the number of the jail population [while] continu[ing] to lower the crime rate here in Mecklenburg County.”¹²⁶ Like his colleagues on the bench, Mr. Murray observed the PSA offers value by promoting consistency amongst judges and by providing “something that is data-driven, that is not subjective.”¹²⁷ Mr. Murray emphasized many of the same beneficial effects the tool has had on the system referenced by the county’s judicial officials such as tax savings to the community and the lack of the adverse consequences

¹²⁰ *Id.*

¹²¹ *Id.*

¹²² *Id.*; see also ARNOLD FOUND., *District Attorney Andrew Murray* (June 2015), <http://www.arnoldfoundation.org/videos/district-attorney-andrew-murray/> (supporting the specific claim that the reduction has maintained safety).

¹²³ See Dewan, *supra* note 64.

¹²⁴ See *id.*; ARNOLD FOUND., *supra* note 122.

¹²⁵ Andrew Murray is currently the United States Attorney for the Western District of North Carolina. *Meet the U.S. Attorney*, U.S. DEP’T OF JUST., <https://www.justice.gov/usao-wdnc/meet-us-attorney> (last visited Mar. 26, 2018).

¹²⁶ ARNOLD FOUND., *supra* note 122.

¹²⁷ *Id.*

pretrial confinement imposes on defendants.¹²⁸ Similarly, Mecklenburg County Public Defender Kevin Tully supports the PSA's function in furthering bail reform efforts, believing the tool is not only useful for judicial officials but also benefits his attorneys on staff, allowing them to more effectively advocate on behalf of their indigent clients.¹²⁹ Overall, the PSA has had a meaningful, lasting impact on Mecklenburg County's bail procedure and has led to beneficial outcomes in every corner of the criminal justice system.

IV. THE ARGUMENT FOR AN ALGORITHMIC APPROACH TO BAIL REFORM

As of August 2017, the use of the PSA had expanded from its initial pilot sites and had been adopted in over two dozen jurisdictions throughout the United States.¹³⁰ The Arnold Foundation expressed a goal in 2013 "that every judge in America will use a data-driven, objective risk assessment within the next five years."¹³¹ Now, five years later, one must wonder why the majority of jurisdictions, including North Carolina's other ninety-nine counties, have resisted change and remain entrenched in an archaic system of bail schedules rooted in monetary constraints.

A. Benefits to Defendants, the Criminal Justice System, and the Community

The benefits of an algorithmic bail system become apparent when examining the effects the PSA has had in Mecklenburg County.¹³² Traditional bail schedules impose financial limitations that often prevent an individual from obtaining release before trial.¹³³

¹²⁸ See Dewan, *supra* note 64.

¹²⁹ See ARNOLD FOUND., *Public Defender Kevin Tully* (June 2015), <http://www.arnoldfoundation.org/videos/public-defender-kevin-tully/>.

¹³⁰ Additionally, some form of risk assessment algorithm is used in the bail determination procedures in more than twenty states. Jon Schuppe, *Post Bail*, NBC NEWS (Aug. 22, 2017), <https://www.nbcnews.com/specials/bail-reform>.

¹³¹ ARNOLD FOUND., *supra* note 65, at 5.

¹³² Brookland & Stasio, *supra* note 4 (emphasizing the positive effects experienced by both defendants and the community with the increased release of low risk individuals pending trial).

¹³³ See Allen, *supra* note 7.

Many indigent defendants who pose neither a danger to public safety nor risk of flight nonetheless remain in custody, unable to turn to even a private bail bonding company for release.¹³⁴ Algorithmic techniques benefit these individuals, who would otherwise be ineligible for release under a uniform, offense-focused bail schedule. Less time in custody translates to lower recidivism rates,¹³⁵ likely because individual defendants spend less time behind bars exposed to more severe offenders.¹³⁶ Additionally, defendants that spend less time behind bars can retain their jobs on release.¹³⁷ Unemployment resulting from failure to report for work, or in response to notifying management of incarceration, makes individuals prone to reoffending as a result of financial necessity.¹³⁸ Using algorithmic tools to emphasize the low risk a defendant poses to the community allows individuals who would otherwise remain detained under a traditional bail schedule to keep their jobs and care for their children while they await trial.

In addition to tangible benefits for defendants released pretrial, an algorithmic system promotes non-discriminatory procedural tools, ensuring constitutional guarantees of equal protection and due process remain intact. In *ODonnell v. Harris County*,¹³⁹ a federal district court granted a preliminary injunction barring the detention of indigent defendants charged with misdemeanors who remained in custody solely because of their inability to pay.¹⁴⁰ In evaluating the county's risk assessment tool, the court emphasized the issue by requiring an intermediate standard of "careful review,"¹⁴¹ as opposed

¹³⁴ See Brookland & Stasio, *supra* note 4.

¹³⁵ See LOWENKAMP ET AL., *supra* note 42.

¹³⁶ See *id.*

¹³⁷ See ARNOLD FOUND., *supra* note 4.

¹³⁸ See *id.*

¹³⁹ *ODonnell v. Harris Cty.*, 251 F. Supp. 3d 1052 (S.D. Tex. 2017).

¹⁴⁰ See *id.* at 1059. On the facts of the case, the federal district court concluded more than 100 individuals were detained in the Harris County Jail, who although were judicially found eligible for release, were prevented from doing so solely on the basis of their indigency. *Id.* at 1116.

¹⁴¹ The opinion cites to the Supreme Court's definition of "careful review" for wealth-based classifications, "requir[ing] a careful inquiry into such factors as 'the nature of the individual interest affected, the extent to which it is affected, the rationality of the connection between legislative means and purpose, [and] the

to a rational basis standard, which is typically required for wealth-based classifications because of the individual liberty threatened by detention.¹⁴² The Fifth Circuit recently upheld the district court's application of intermediate scrutiny, holding that, while "neither prisoners nor indigents constitute a suspect class . . . heightened scrutiny is required when criminal laws detain poor defendants *because of their indigence*."¹⁴³ The court's heightened review of the county's risk assessment practices demonstrates the importance of algorithmic bail procedures functioning as a tool to protect the accused's right to due process under the Fourteenth Amendment.

Judicial efficiency is more important than ever given the continually stifled resources of the criminal justice system.¹⁴⁴ The scope of efficiency created by algorithmic bail procedures is not limited to that experienced by judicial officials as a result of lower docket sizes¹⁴⁵ but also allows prosecutors to more effectively manage caseloads,¹⁴⁶ attorneys to more fervently advocate on behalf of their clients,¹⁴⁷ and jail personnel to more easily monitor defendants while the case is pending.¹⁴⁸ Having fewer defendants in custody significantly reduces safety concerns due to overcrowded jail populations,¹⁴⁹ and also allows less severe cases to be resolved more productively. This eliminates the need to confine and transport defendants who have been detained for minor offenses, such as failure to pay a fine. All of these effects demonstrate the increased efficiency algorithmic techniques lend to bail procedure and the management of judicial resources.

existence of alternative means for effectuating the purpose." *Id.* at 1137 (citing *Bearden v. Georgia*, 461 U.S. 660, 666–67 (1983)).

¹⁴² *See id.* at 1134.

¹⁴³ *O'Donnell v. Harris Cty.*, 882 F.3d 528, 544 (5th Cir. 2018).

¹⁴⁴ *See Israel*, *supra* note 44, at 761.

¹⁴⁵ *See id.* at 765.

¹⁴⁶ *See id.* at 763.

¹⁴⁷ *See id.* at 778.

¹⁴⁸ *See Fitzsimon*, *supra* note 60.

¹⁴⁹ *See id.*

Moreover, the use of algorithms promotes public confidence in the justice system.¹⁵⁰ Embracing more equitable methods of pretrial risk assessment backed by proven algorithmic procedure decreases the largely unchecked power the bail bonding industry has over defendants,¹⁵¹ reversing the privatization of individuals' freedom and liberty and bringing these back into the scope of the public justice system. The increased fairness created through the use of these non-discriminatory factors promotes greater public confidence in the justice system as a result.¹⁵² Simultaneously, the safety of the community benefits by having a system focused on prosecuting more severe offenders in conjunction with the cost-savings of a reduced jail population.¹⁵³ Jurisdictions must ask themselves if it makes sense to detain an individual for failure to pay a \$150 fine when it costs the public \$166 a day to house them.¹⁵⁴

B. Cautionary Measures: Accounting for Algorithmic Bias and Systemic Limitations

Notwithstanding the wide-ranging benefits of an algorithmic risk assessment system in determining bail, there are also pitfalls that must be avoided in utilizing the methodology. Removing personal bias from a mechanical algorithm does not necessarily make it “color-blind.”¹⁵⁵ In 2016, an algorithm used in the Broward County, Florida, criminal justice system was found to have “wrongly labelled black people as future criminals nearly twice as

¹⁵⁰ For a discussion of how the perception of fairness functions as a central cornerstone of the criminal process, see Jerold H. Israel, *Cornerstones of the Judicial Process*, 2 KAN. J.L. & PUB. POL'Y 5, 20–21 (1993).

¹⁵¹ See COHEN ET AL., *supra* note 12, at 106.

¹⁵² See Israel, *supra* note 150.

¹⁵³ See Israel, *supra* note 44, at 761 (describing the negative effects of an “overcrowded, overworked, [and] undermanned” justice system).

¹⁵⁴ See Brookland & Stasio, *supra* note 4. This problem is bolstered by recent legislation making it more difficult for judges to waive court costs and fines for indigent defendants, resulting in their re-arrest for failure to comply. See Jennifer Brookland & Frank Stasio, *The Unjust Legal System That Penalizes the Poor*, WUNC (Feb. 15, 2018), <http://wunc.org/post/unjust-legal-system-penalizes-poor#stream/0>.

¹⁵⁵ Ric Simmons, *Quantifying Criminal Procedure: How to Unlock the Potential of Big Data in Our Criminal Justice System*, 2016 MICH. ST. L. REV. 947, 970 (2016).

often as whites.”¹⁵⁶ Race need not be explicitly written into an algorithm’s code to produce discriminatory and disproportionate results. Bias may result from pretrial release factors serving as proxies for other criteria such as poverty, as seen in examples including “whether a defendant has a working telephone, whether they live with a parent or spouse, and whether they’re employed in a training program.”¹⁵⁷

The threat of proxy variables has spurred concerns of algorithmic bias in other areas of the law as well.¹⁵⁸ One such example is found between using discriminatory proxy variables in bail algorithms and the unlawful housing practice of redlining.¹⁵⁹ From the 1930s through the 1960s, the U.S. Federal Housing Administration manipulated risk factor formulas to methodically exclude minority groups from obtaining loans in certain communities.¹⁶⁰ Even creditworthy minority applicants were systematically denied their applications under the facially neutral policy simply because they resided in low-income areas.¹⁶¹ The inequitable practice was outlawed by the Fair Housing Act of 1968, but its chilling aftermath continues to manifest itself in large urban areas to this day.¹⁶² If not properly implemented, algorithms used in

¹⁵⁶ *Of Prediction and Policy*, THE ECONOMIST (Aug. 20, 2016), <https://www.economist.com/news/finance-and-economics/21705329-governments-have-much-gain-applying-algorithms-public-policy>.

¹⁵⁷ Abraham, *supra* note 61.

¹⁵⁸ See Jordan Pearson, *AI Could Resurrect a Racist Housing Policy*, MOTHERBOARD (Feb. 2, 2017, 10:23 AM), https://motherboard.vice.com/en_us/article/4x44dp/ai-could-resurrect-a-racist-housing-policy. Other legal areas concerned with algorithmic bias include employment law, *see, e.g.*, *Munoz v. Orr*, 200 F.3d 291, 305 (5th Cir. 2000) (containing a claim of discriminatory variables in the United States Air Force’s Promotions and Placement Referral System), and university admissions formulas, *see Grutter v. Bollinger*, 539 U.S. 306 (2003).

¹⁵⁹ See SAM CORBETT-DAVIES ET AL., ALGORITHMIC DECISION-MAKING AND THE COST OF FAIRNESS 8 (2017), <https://arxiv.org/pdf/1701.08230.pdf>.

¹⁶⁰ These formulas demonstrate the ability of an algorithm to be manipulated through the inclusion of “course data,” described as “digital noise [added] to the input data of the favoured group,” skewing results in their favor. Pearson, *supra* note 158.

¹⁶¹ See CORBETT-DAVIES ET AL., *supra* note 159.

¹⁶² See Emily Badger, *Redlining: Still a Thing*, WASH. POST (May 28, 2015), <https://www.washingtonpost.com/news/wonk/wp/2015/05/28/evidence-that->

the criminal justice context are just as vulnerable to the biased processes found in redlining.¹⁶³ An inherent tension results in which efforts to minimize violent crime must be balanced with fair and equitable procedure.¹⁶⁴ Risk assessment tools, such as the PSA, demonstrate that a “single-threshold rule” focused purely on administrative variables (as opposed to “race-specific thresholds”)¹⁶⁵ can maximize public safety while simultaneously satisfying core constitutional principles of fairness in the judicial process.

Potential bias in algorithmic methods can indeed be limited. “Machines are trained to find patterns that predict future criminality from past data. They can therefore be told to find patterns that both predict criminality and avoid disproportionate false categorisation of . . . future offenders.”¹⁶⁶ The true benefit of algorithms lies in the fact that “predictive software will only base its results on the formal factors that are coded into its system,” avoiding unconscious, implicit human bias in its decision-making capabilities.¹⁶⁷ Proven algorithmic assessments like the PSA have been extensively tested¹⁶⁸ to ensure a process of decision-making free from biased outcomes not meant to be “tweaked” by jurisdictions choosing to adopt them.¹⁶⁹ Ensuring the software itself is free from biased proxies is crucial to the effective implementation of risk assessment algorithms in the criminal justice system.

Opponents claim algorithms impose limits on the open nature of the judicial process, pointing to the secrecy shrouding the proprietary makeup of certain formulas, particularly those used in the sentencing process.¹⁷⁰ While this logic may apply to certain

banks-still-deny-black-borrowers-just-as-they-did-50-years-ago/?utm_term=.8d464981152c.

¹⁶³ See CORBETT-DAVIES ET AL., *supra* note 159 (illustrating a parallel between redlining practices and the COMPAS sentencing algorithm).

¹⁶⁴ See *id.*

¹⁶⁵ *Id.*

¹⁶⁶ *Of Prediction and Policy*, *supra* note 156.

¹⁶⁷ Simmons, *supra* note 155, at 979.

¹⁶⁸ See *supra* Part III.

¹⁶⁹ See Dewan, *supra* note 64.

¹⁷⁰ See Danielle Citron, *(Un)Fairness of Risk Scores Used in Criminal Sentencing*, FORBES (July 13, 2016, 3:26 PM), <https://www.forbes.com/sites/daniellecitron/2016/07/13/unfairness-of-risk-scores-in-criminal-sentencing/>

portions of the judicial process, it is important not to rule out the use of risk assessments from every area. Some algorithms used in the sentencing phase have left defendants unable to examine the factors determining their fate, garnering due process and equal protection concerns from courts and scholars alike.¹⁷¹ However, in other contexts, such as predictive policing, concealing the variables comprising an algorithm may be necessary to prevent savvy criminals from working around its safeguard strategy. The use of algorithms in the context of bail procedure is separate and distinct from each of the above concerns. Unlike sentencing algorithms, bail algorithms such as the PSA are designed to be shared publicly and seek to offer universal application to the widest range of jurisdictions possible.¹⁷² While the adoption of these risk assessment tools is ultimately implemented by the legislature, their formulation by private research organizations dedicated to improving equity in the criminal justice system, in conjunction with police, judicial officials, and in some cases, the voting public, only furthers the value of an open, transparent bail reform policy benefiting both defendants and the community.

Bail algorithms are not yet a wholly perfect solution to resolving the conflicting principles at stake with pretrial release. In July 2017, a defendant in San Francisco was charged with the murder of a local photographer after being released by a judge pretrial for a separate offense on recommendation of his PSA score.¹⁷³ Critics quickly attacked the tool following the tragedy.¹⁷⁴ Chris Blaylock, a New Jersey bail bondsman and opponent of the Arnold Foundation, claimed the PSA's "sole purpose is to promote the mass release of offenders with the least restrictive conditions possible regardless of

(criticizing the COMPAS tool for its lack of transparency surrounding its sentencing methodology).

¹⁷¹ See *id.* See generally Freeman, *supra* note 57 (arguing that courts need to ensure proper due process protection prior to using algorithms during sentencing).

¹⁷² See Schuppe, *supra* note 130.

¹⁷³ See Eric Westervelt, *Did a Bail Reform Algorithm Contribute to This San Francisco Man's Murder?*, NAT'L PUB. RADIO (Aug. 18, 2017, 2:00 PM), <https://www.npr.org/2017/08/18/543976003/did-a-bail-reform-algorithm-contribute-to-this-san-francisco-man-s-murder>.

¹⁷⁴ See *id.*

the charges.”¹⁷⁵ Los Angeles Deputy District Attorney Eric Siddall raised concerns about the difficulty for judges to overturn decisions “couched in science,” noting fear of being overturned for keeping a defendant in custody.¹⁷⁶ In this instance, the non-profit organization Pretrial Diversion Project, who compiles the PSA analysis for the sheriff’s office, admitted to miscalculating the length of this defendant’s jail time producing an incorrect PSA score.¹⁷⁷ Tragedies such as this emphasize the need to maintain judicial discretion throughout the criminal process, accentuating that algorithms are simply another instrument in a judge’s arsenal to determine appropriate conditions of release pending trial. The overall effectiveness of algorithms serving as risk assessment tools is limited by the willingness of judicial officials to take the recommendations under advisement in conjunction with their own experience and understanding of the law. The commitment of early adopters is necessary to prove the effectiveness of risk assessment tools in practice, only increasing over time as technology develops, algorithms become increasingly automated, and human error is removed from the process.

C. Future Steps and Policy Measures in Pursuit of Reform

While avoiding bias in the process of implementing effective bail algorithms, courts and researchers alike can look to other areas of the criminal justice system, such as juvenile justice, for the best approach to putting these new policies into effect. When evaluating pretrial detention in the juvenile context, courts must consider non-monetary “community-based supervision strategies” that have results proven to lower recidivism, allow for more resources devoted to public safety, and reduce racial disparity in the process.¹⁷⁸ Applying these same strategies to the adult criminal system appears logical in light of continuing studies revealing adolescent maturity

¹⁷⁵ *Id.*

¹⁷⁶ *Id.*

¹⁷⁷ *See id.*

¹⁷⁸ PRETRIAL JUST. INST., *supra* note 58, at 9.

of the brain extends well into a child's mid-twenties,¹⁷⁹ particularly when "young adults aged 18-to-24 constitute 10 percent of the population but 30 percent of arrests."¹⁸⁰ Critics claim that these techniques, often centered around rehabilitative goals, are "soft on crime," but the resulting effects are just the opposite.¹⁸¹ Rehabilitative approaches have been proven to reduce crime long term by providing young defendants the help they need and through individualized treatment and assessments, in addition to keeping a conviction off of their record that will follow them the rest of their lives.¹⁸² The rationale of these strategies can equally be applied to the adult criminal system, as rehabilitative pretrial programs outside of juvenile justice are already in effect in some jurisdictions.¹⁸³ Much like algorithmic risk assessments, the pretrial procedures of the juvenile justice system are grounded in an assessment and strategy-based approach most appropriate for the individual defendant. A traditional bail schedule denoting particular monetary conditions for enumerated offenses only fosters recidivism among defendants who cannot afford release, jeopardizing public confidence in the criminal justice system as a whole.

Jurisdictions throughout the country are beginning to take notice of the value algorithms offer as tools aiding efforts to maintain the

¹⁷⁹ *Brain Maturity Extends Well Beyond Teen Years*, NAT'L PUB. RADIO (Oct. 10, 2011, 12:00 PM), <https://www.npr.org/templates/story/story.php?storyId=141164708>.

¹⁸⁰ Douglas Singleterry, *It's Time for Criminal Justice Reform to Focus on Young Adults*, THE HILL (Aug. 17, 2017, 3:20 PM), <http://thehill.com/blogs/pundits-blog/civil-rights/346975-its-time-for-criminal-justice-reform-to-focus-on-young-adults>.

¹⁸¹ *Id.* ("[A]ccording to one study, 84 percent of young adults released from prison were rearrested within five years. Recidivism means more crime.").

¹⁸² See LAEL CHESTER & VINCENT SCHIRALDI, PUBLIC SAFETY AND EMERGING ADULTS IN CONNECTICUT: PROVIDING EFFECTIVE AND DEVELOPMENTALLY APPROPRIATE RESPONSES FOR YOUTH UNDER AGE 21, at 12 (2016), https://www.hks.harvard.edu/sites/default/files/centers/wiener/programs/pcj/files/public_safety_and_emerging_adults_in_connecticut.pdf.

¹⁸³ For example, North Carolina courts offer a conditional discharge program for first time drug offenders under North Carolina General Statute 90-96 in which an individual who completes a drug education class and satisfies other conditions imposed by the court has their charge dismissed without a conviction on their record. N.C. DRUG EDUC. SCH., *supra* note 99, at 1–2.

balance of cases proceeding efficiently in court and keeping communities safe. In May 2015, Chief Justice Mark Martin of the North Carolina Supreme Court formed the North Carolina Commission on the Administration of Law and Justice, tasked with evaluating the state's court system and making recommendations for reforming the judicial process "within the existing administrative framework."¹⁸⁴ The Commission's Final Report, released in March 2017, recommended the statewide adoption of various reform methods—including the endorsement of the PSA—largely due to the algorithm's successful implementation in Mecklenburg County.¹⁸⁵ These reform measures have not been limited to the state arena but are beginning to take effect at the federal level as well. Senators Kamala Harris (D-CA) and Rand Paul (R-KY) have drafted bipartisan legislation with the central goals of "ensuring that no-one is detained simply because they are poor, and restoring a presumption of release for most defendants."¹⁸⁶ The proposed legislation seeks to achieve these goals through the use of algorithm-based risk assessment tools, such as the PSA, with the Senators claiming the added benefit of "restor[ing] Americans' faith in our justice system."¹⁸⁷

V. CONCLUSION

A leading authority on criminal law and procedure, Professor Jerold Israel¹⁸⁸ has identified a series of nine "cornerstone

¹⁸⁴ *About*, N.C. COMM'N ON THE ADMIN. L. JUST., <https://nccalj.org/about/> (last visited Mar. 26, 2018).

¹⁸⁵ *See Appendix C: Pretrial Justice*, in N.C. COMM'N ON THE ADMIN. L. JUST.: FINAL REPORT 214, 216 (2017), https://nccalj.org/wp-content/uploads/2017/pdf/nccalj_final_report.pdf.

¹⁸⁶ Megan Stevenson, *In US Bail Reform, Justice-by-Algorithm Can Only Go So Far*, THE HILL (Feb. 2, 2018, 8:15 AM), <http://thehill.com/opinion/civil-rights/371954-in-us-bail-reform-justice-by-algorithm-can-only-go-so-far>.

¹⁸⁷ Kamala D. Harris & Rand Paul, *Kamala Harris and Rand Paul: To Shrink Jails, Let's Reform Bail*, N.Y. TIMES (July 20, 2017), <https://www.nytimes.com/2017/07/20/opinion/kamala-harris-and-rand-paul-lets-reform-bail.html>.

¹⁸⁸ Professor Jerold Israel is a graduate of Yale Law School, two-term Supreme Court law clerk to Justice Potter Stewart, and author of the book *Modern Criminal Procedure*, 12th ed. *See Israel, Jerold H.*, U. MICH. L. SCH.,

objectives” embodying the “basic structure and the governing legal principles” of the judicial process.¹⁸⁹ Among these cornerstones, three emerge as encapsulating the values pretrial detention hearings seek to accomplish: “Respecting the Dignity of the Individual,” “Maintaining the Appearance of Fairness,” and “Achieving Equality in the Application of the Process.”¹⁹⁰ Risk assessment algorithms seek to further these three goals by correcting inequities present in the traditional bail schedule relying on imposed monetary conditions in order to function as intended. Defendants who neither pose a danger to the public safety nor risk of flight are identified as such. They are then released to their families and permitted to return to their jobs in lieu of remaining in custody at the expense of the taxpayer.

Despite the pronounced benefits of an algorithm-based bail determination process, many jurisdictions remain slow to embrace the reformed methodology in favor of the outdated procedures. They may be wary of a loss of discretion in the hands of their judges, or perhaps concerned with the notion of a formula systematically identifying groups of people as future offenders of criminal activity. The reality is that algorithms function as tools for judges to use in order to most effectively protect their communities while ensuring compliance with the criminal justice system. Bail reform legislation has been successful as a result of “a growing awareness that too many low-risk defendants stay behind bars because they are poor while too many dangerous defendants exploit the money bail system and are released with little to no supervision.”¹⁹¹ When implemented correctly through data-driven, proven analysis, risk assessment algorithms provide an answer to the question of how to correct the present inequities that exist in the traditional method of following a bail schedule corresponding to the offense committed and not the individual being detained.

<https://www.law.umich.edu/FacultyBio/Pages/FacultyBio.aspx?FacID=israelj>
(last visited Mar. 26, 2018).

¹⁸⁹ Israel, *supra* note 150, at 5.

¹⁹⁰ *Id.* at 19–21.

¹⁹¹ Cherise Fanno Burdeen, *Pretrial Justice Demands Less Money, More Values*, CRIM. JUST., Summer 2016, at 21, 23.