Predictive Analytics' Punishment Mismatch

JESSICA M. EAGLIN*

CONTENTS

I. INTRODUCTION

"Predictive analytics" refers to the use of statistically analyzed data to predict future outcomes. Public and private actors constantly use this method in an increasingly data-driven world.[1] For example, baseball teams analyze past data to recruit professional baseball

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[1] See, e.g., CATHY O'NEIL, WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY 61 (2016); VIKTOR MAYER-SCHONBERGER & KENNETH CUKIER, BIG DATA: A REVOLUTION THAT WILL TRANSFORM HOW WE LIVE, WORK, AND THINK 58 (2013).

players based on anticipated performance.[2] Beyond sports, predictive analytics informs decisions about employment,[3] advertising,[4] healthcare[5] and more.[6] Researchers find that using data can outperform individual, qualitative, seat of the pants predictions about what people want, what people do, and how people will perform in the future. This information benefits various actors – for example, the baseball recruiter – by providing overlooked or otherwise invisible insight regarding how to maximize desired outcomes in light of this information.

The 2017 I/S Symposium on Predictive Analytics, Law, and Policy explored tensions that arise in the application of this technique in various contexts. This invited contribution considers tensions that arise in its application to one public sector function: the imposition of punishment in the criminal justice system. In this context, developers apply predictive analytics to construct actuarial risk assessment tools that estimate whether individuals facing punishment will engage in specific behavior in the future.[7] As the argument goes, since judges inevitably predict future behavior in the decision-making process, predictive analytics can help them to do it better.[8]

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[2] *See, e.g.*, MICHAEL LEWIS, MONEYBALL: THE ART OF WINNING AN UNFAIR GAME 135 (2003).

[3] Claire Cain Miller, *Can an Algorithm Hire Better than a Human?*, N.Y. TIMES, June 28, 2015, at SR4.

[4] Charles Duhigg, *Psst, You in Aisle 5*, N.Y. TIMES, Feb. 19, 2012, at SM30.

[5] Bernard Marr, *How Big Data is Changing Healthcare*, FORBES (Apr. 21, 2015), https://www.forbes.com/sites/bernardmarr/2015/04/21/how-big-data-is-changing-healthcare/ [https://perma.cc/3LJB-KF4B] ("Big Data in healthcare is being used to predict epidemics, cure disease, improve quality of life and avoid preventable deaths.").

[6] Vivek Wadhwa, *The Rise of Big Data Brings Tremendous Possibilities and Frightening Perils*, WASH. POST (Apr. 18, 2014), https://www.washingtonpost.com/news/innovations/wp/2014/04/18/the-rise-of-big-data-brings-tremendous-possibilities-and-frightening-perils/?utm_term=.83e2e10a0267 [https://perma.cc/N2HD-ALAM].

[7] On development of actuarial risk assessment tools for sentencing, see BERNARD E. HARCOURT, AGAINST PREDICTION: PROFILING, POLICING, AND PUNISHING IN AN ACTUARIAL AGE 1 (2007); Jessica M. Eaglin, *Constructing Recidivism Risk*, 67 EMORY L.J. 59 (2017) [hereinafter Eaglin, *Constructing Recidivism*]; Sonja B. Starr, *Evidence-Based Sentencing and the Scientific Rationalization of Discrimination*, 66 STAN. L. REV. 803, 809 (2014).

[8] Regarding the use of prediction, see, Jurek v. Texas, 428 U.S. 262, 275 (1976) ("[P]rediction of future criminal conduct is an essential element in many of the decisions

"Risk-based sentencing" - meaning the use of actuarial risk assessments to inform judicial determinations of punishment - is presented as a well-intentioned and neutral intervention to improve a flawed and at times unnecessarily punitive system.[9] But successful application of the information produced to individual sentences demands critical reflection and innovation about the aims of the system and how actuarial tools are constructed. Otherwise, predictive analytics can create mismatches between what the tools do and the aims of the society.

Improvements in the method of prediction at sentencing do not ensure reflection. Indeed, predictive analytics' emphasis on repurposing existing data may invite developers to take the easy route in construction choices and reinforce flaws in the present system. Both results are counterproductive to efforts intended to address the economic and social costs of unnecessary reliance on incarceration in the justice system. These concerns demonstrate that scholars and policymakers who seek these decarcerative aims should engage with the politics of risk knowledge production in the criminal justice system.[10]

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rendered throughout our criminal justice system. The decision whether to admit a defendant on bail, for instance, must often turn on a judge's prediction of the defendant's future conduct. And any sentencing authority must predict a convicted person's probable future conduct when it engages in the process of determining what punishment to impose. For those sentenced to prison, these same predictions must be made by parole authorities."). Regarding the argument that risk assessment tools can improve decision making by informing judicial discretion about risk, see, Jordan M. Hyatt et al., *Reform in Motion: The Promise and Perils of Incorporating Risk Assessments and Cost-Benefit Analysis into Pennsylvania Sentencing*, 49 DUQ. L. REV. 707, 713 (2011).

[9] *See* John Monahan & Jennifer L. Skeem, *Risk Redux: The Resurgence of Risk Assessment in Criminal Sanctioning*, 26 FED. SENT'G REP. 158, 158 (2014) (noting consensus among politicians regarding the promise of risk-based sentencing to address flaws in the justice system).

[10] A growing contingent of scholars considers the production of information in the criminal justice system. *See, e.g.*, Andrea Roth, *Trial by Machine*, 104 Geo. L.J. 1245 (2016). At the same time, Science and Technology Studies literature considers the politics of expert knowledge production in the criminal justice system and outside it. *See, e.g.*, SHEILA JASANOFF, SCIENCE AND PUBLIC REASON (2012). Furthermore, a growing literature considers the specific role of risk in the administration of criminal justice. *See, e.g.*, Kelly Hannah-Moffat, *Punishment and Risk, in* THE SAGE HANDBOOK OF PUNISHMENT AND SOCIETY (Jonathan Simon & Richard Sparks eds. 2013) (encouraging law and policymakers focused on addressing mass incarceration to engage further with these works going forward).

Part II discusses the entry of predictive analytics into criminal justice. While forms of prediction have existed in the system for decades, the cultural resonance of big data and evidence-based criminal justice reforms drives a resurgence illustrated by the popularity of actuarial risk tools for sentencing. Part III explores potential tensions that may arise when applying predictive analytics to construct actuarial risk tools used for sentencing. Drawing on insight from a recent article, *Constructing Recidivism Risk*,[11] Part III illuminates important and contested policy questions about why and how we punish potentially obscured in the construction process. Part IV urges further engagement with the politics of risk knowledge production. Recidivism risk is a malleable concept that sets agendas. Though risk tools may alter the administration of justice, interventions are necessary to assure these changes further the aims of society.

II. PREDICTIVE ANALYTICS FOR PUNISHMENT

Analytics in some form has existed in the criminal justice system for a long time. CompStat, the police management technique developed in the New York City Police Department in 1994, harnessed data analytics to map crime and allocate police resources.[12] Similarly, prediction in some form has existed in the imposition of punishment for a long time. Clinical predictions of risk (meaning those conducted by skilled practitioners like psychologists) frequently appear in death

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Note, the term "decarcerative" is used broadly here. Efforts to address the social and economic costs of mass incarceration requires decarceration. *See* Jessica M. Eaglin, *Against Neorehabilitation*, 66 SMU L. REV. 189, 225 (2013) [hereinafter Eaglin, *Against Neorehabilitation*] ("Given that the costs of maintaining a prison, even without increasing the number of prisoners, still continue to rise every year, states cannot hope to decrease costs without decreasing prisoners."); Jessica M. Eaglin, *The Drug Court Paradigm*, 55 AM. CRIM. L. REV. 595, 602-03 (2016) [hereinafter Eaglin, *The Drug Court Paradigm*] (discussing economic and social pressures of incarceration on the states).

[11] Eaglin, *Constructing Recidivism*, *supra* note 7.

[12] *See* Letter from Jonathan J. Wroblewski, Director, Office of Policy and Legislation, Dep't of Justice, to Patti B. Saris, Chair, Sentencing Comm'n (July 29, 2014), https://www.justice.gov/sites/default/files/criminal/legacy/2014/08/01/2014annual-letter-final-072814.pdf [https://perma.cc/Y3TM-A6JQ] (pointing to CompStat as an example of criminal justice analytics); OLIVER ROEDER ET AL., BRENNAN CENTER FOR JUSTICE, WHAT CAUSED THE CRIME DECLINE? 9 (2015) (describing CompStat's origin and expansion).

penalty sentencing hearings.[13] Parole boards have long considered risk as a component of the parole release determination.[14]

We are now witnessing a resurgence of prediction and the expansion of analytics into the imposition of punishment.[15] Law and policymakers have introduced reforms focused on informing various criminal justice actors' individual decisions about punishment with data-driven risk assessments to estimate the likelihood of a defendant engaging in specific behavior in the future. As a prominent example, the National Institute of Corrections in partnership with the Center for Effective Public Policy rolled out an initiative to advance "evidence-based decision making" across select local justice systems in Colorado, Indiana, Minnesota, Oregon, Virginia, and Wisconsin.[16] Simultaneously, various criminal justice agencies and actors have adopted risk assessment tools for sentencing either of their own. accord or due to encouragement by state or local government.[17] At times these reforms are presented as part of a broader shift towards evidence-based practices.[18] At times advocates seek to integrate this information into decision making independent of that movement.[19]

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[13] *See, e.g.*, Barefoot v. Estelle, 463 U.S. 880, 899-900 (1983) (psychologist predicting recidivism risk); *see also* Buck v. Davis, 137 S. Ct. 759 (2017) (reversing and remanding death penalty sentence where psychologist predicted whether defendant poses risk to society based in part on race).

[14] *See, e.g.*, BERNARD E. HARCOURT, AGAINST PREDICTION: PROFILING, POLICING, AND PUNISHING IN AN ACTUARIAL AGE 48-76 (2005) (discussing the use and development of actuarial risk tools for parole decision making); *see also, e.g.*, W. David Ball, *Normative Elements of Parole Risk*, 22 STAN. L. & POL'Y REV. 395 (2011) (exploring the limits of actuarialism in parole release decision making).

[15] *See, e.g.*, Monahan & Skeem, *supra* note 10; Michael Tonry, *Legal and Ethical Issues in the Prediction of Recidivism*, 26 FED. SENT'G REP. 167 (2014).

[16] *Info*, NAT'L INST. OF CORRECTIONS, https://info.nicic.gov/ebdm/ [https://perma.cc/5KSK-B3G5]; *see also* CTR. FOR EFFECTIVE PUB. POL'Y ET AL., A FRAMEWORK FOR EVIDENCE-BASED DECISION MAKING IN LOCAL CRIMINAL JUSTICE SYSTEMS 6 (3d ed. 2010), http://cepp.com/wp-content/uploads/2015/12/A-framework-for-evidence-based-decision-making-in-local-criminal-justice-systems.pdf [https://perma.cc/8FHL-H6S9].

[17] Eaglin, *Constructing Recidivism*, *supra* note 7, at 114-15.

[18] Cecelia Klingele, *The Promises and Perils of Evidence-Based Corrections*, 91 NOTRE DAME L. REV. 537, 564-67 (2015).

[19] In a sense, most jurisdictions have adopted risk assessment tools at sentencing outside the "evidence-based" criminal justice movement because little evidence exists to prove that

   Constructing Recidivism Risk describes the development of various risk assessment tools used for sentencing. Public agencies, private companies, and non-profit organizations develop tools to estimate a defendant's likelihood of engaging in specific future behavior.[20] Developers use statistical analysis of people previously arrested or convicted of crimes to identify factors that correlate with the occurrence of a particular triggering event, defined as recidivism, in the future.[21] Drawing upon empirical research on recidivism, developers then select factors from the statistical model and weight it to approximate the model's outcomes in a simplified actuarial risk tool.[22] Developers then translate the tool's numerical outcome – a number indicating a statistical probability of the defendant engaging in the specified behavior – into a qualitative risk category.[23] The categories are usually high, medium, or low risk of recidivism.

   Actuarial risk assessment tools have been heralded as a new solution at sentencing meant to improve allocation of resources through objective, consistent, and neutral assessment.[24] Enthusiasm for the tools can be understood in part by the cultural embrace of

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the predictive tools "work." *See, e.g.,* Megan Stevenson, *Assessing Risk Assessment* (forthcoming 2018) (noting the scant empirical research on the implementation of risk assessment tools in the criminal justice system and examining their impact in the pretrial context); *see also* Andrew Guthrie Ferguson, *Policing Predictive Policing,* 94 WASH. U. L. REV. 1115, 1167-68 (2017) (noting the limited and ambivalent evidence that predictive policing technologies cause crime reductions). State agencies adopt the tools and encourage the practice anyway. *See infra* note 25.

[20] *See, e.g.,* Eaglin, *Constructing Recidivism, supra* note 7, at 69-71; Melissa Hamilton, *Adventures in Risk: Predicting Violent and Sexual Recidivism in Sentencing Law,* 47 ARIZ. ST. L. J. 1, 9 (2015); Sonja B. Starr, *Evidence-Based Sentencing and the Scientific Rationalization of Discrimination,* 66 STAN. L. REV. 803, 848 (2014).

[21] Eaglin, *Constructing Recidivism, supra* note 7, 72-84.

[22] *Id.*

[23] *Id.* at 85-87.

[24] *See, e.g.,* Ferguson, *supra* note 19, at 1122 ("Predictive tools . . . seek to help make these difficult, life-altering decisions more objective and fair"); Nathan James, *Risk and Needs Assessment in the Criminal Justice System,* CONG. RES. SERV. (Oct. 13, 2015) ("Assessment instruments might help increase the efficiency of the justice system by identifying low-risk offenders who could be effectively managed on probation rather than incarcerated, and they might help identify high-risk offenders who would gain the most by being placed in rehabilitative programs."); Starr, *supra* note 20, at 815-16 (summarizing arguments in favor of risk tools at sentencing).

data-driven interventions to reduce or eliminate human errors in various fields and bipartisan interest in criminal justice reform.[25] Like other instances of predictive analytics, these tools are meant to provide new insight for courts potentially unseen without data. Here, the insight concerns which defendants present a public safety risk. At sentencing, courts use the tools to determine whether to incarcerate or place a defendant on probation, how long the term of punishment should be, and what additional conditions to impose as part of the term of punishment.[26] Though not without controversy,[27] the practice continues to expand.[28]

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[25] *See, e.g.,* Klingele, *supra* note 18, at 565 (explaining the bipartisan appeal of data-driven reforms in sentencing and corrections); *see also* Note, State v. Loomis: *Wisconsin Supreme Court Requires Warning Before Use of Algorithmic Risk Assessments in Sentencing*, 130 HARV. L. REV. 1530, 1530 (2017) (attributing resonance of risk assessments for sentencing to "bipartisan interest in criminal justice reform and the rise of big data").

[26] *See, e.g.,* PAMELA M. CASEY ET AL., NAT'L CTR. FOR STATE COURTS, USING OFFENDER RISK AND NEEDS ASSESSMENT INFORMATION AT SENTENCING: GUIDANCE FOR COURTS FROM A NATIONAL WORKING GROUP 4 (2011), http://www.ncsc.org/~/media/Microsites/Files/CSI/RNA%20Guide%20Final.ashx [https://perma.cc/A4JA-N9CG].

[27] *See* Eric Holder, Att'y Gen., Remarks at the National Association of Criminal Defense Lawyers 57th Annual Meeting and 13th State Criminal Justice Network Conference (Aug. 1, 2014), https://www.justice.gov/opa/speech/attorney-general-eric-holder-speaks-national-association-criminal-defense-lawyers-57th [https://perma.cc/8CXF-BZA3]; Sonja B. Starr, Opinion, *Sentencing, by the Numbers*, N.Y. TIMES (Aug. 10, 2014), https://www.nytimes.com/2014/08/11/opinion/sentencing-by-the-numbers.html; Anna Maria Barry-Jester et al., *The New Science of Sentencing*, MARSHALL PROJECT (Aug. 4, 2015), https://www.themarshallproject.org/2015/08/04/the-new-science-of-sentencing [https://perma.cc/U9ED-3YPR].

[28] "Expansion" here means tools utilized in predictive analytics continue to evolve with new technology, see Eaglin, *Constructing Recidivism, supra* note 7, at 69 n.41, and the development of tools applying these techniques for decision making in different areas of the criminal justice system increases, see, Andrew Guthrie Ferguson, *Predictive Prosecutions*, 51 WAKE FOREST L. REV. 705, 707 (2016). Though this piece primarily focuses on post-conviction sentencing, similar tools have developed in different contexts relating to the imposition of punishment, including pretrial detention and corrections. *See, e.g.,* Shima Baradaran & Frank L. McIntyre, *Predicting Violence*, 90 TEX. L. REV. 497, 500 (2012) (pretrial); Lauryn Gouldin, *Defining Flight Risk*, 85 U. CHI. L. REV. (forthcoming 2017) (pretrial); Klingele, *supra* note 18 (corrections); Sandra G. Mayson, *Bail Reform and Restraint for Dangerousness: Are Defendants a Special Case?*, YALE L. J. (forthcoming 2017) (pretrial).

III. The Tensions

Actuarial risk assessment tools used at sentencing harness predictive analytics to produce information (a risk score classifies a defendant as low, medium, or high risk) that shapes sentencing outcomes. Yet tool results reflect important and contested policy choices about how, what, and why we punish determined in the construction process. This section highlights a few normative questions necessarily implicated in the construction process.[29] Tensions may arise if developers construct tools that contradict the values or aims of the jurisdiction using the tool.

Prediction does not exist in a vacuum in the criminal justice system. Developers require precise understanding about the purpose of the system to determine how predictive analytics may assist in achieving its specific goals.[30] As such, prediction becomes intertwined with normative judgments about punishment and justice. To answer the necessary questions regarding *what* to predict and *why* requires reference to *why* we punish and *how*. Because we care about *how* we punish, we also care about *how* we predict. These questions are normative, not empirical, and deeply contested. Whether and how these issues are resolved in the application of predictive analytics can produce mismatches between the tools and the system it aims to improve.

Why to Predict. Tensions arise when resolving whether and why to predict for punishment. The application of predictive analytics requires precise understanding about why the information is being produced. At sentencing, this requires clarity about the purpose of punishment. There are four basic theoretical options: retribution,

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[29] *Constructing Recidivism Risk* provides a more complete discussion of the normative questions raised during the construction of actuarial risk tools for sentencing. A major decision not discussed here concerns how developers translate numerical risk estimates into qualitative risk categories. *See*, Eaglin, *Constructing Recidivism*, *supra* note 7.

[30] The aims of the criminal justice system are not always clear and precise. For an example of a precise outcome from another context, statisticians harnessed predictive analytics in baseball to achieve a singular aim: increase wins. Predictive analytics assisted towards this goal by illustrating that certain metrics, like runs batted in, did not correlate to wins, contrary to popular knowledge. It exposed other, previously hidden or overlooked variables with ramifications for wins. The application of predictive analytics in this context was successful because the aim (winning) was clear. *See generally* Lewis, *supra* note 2. Additional thanks to Professor David Ball for insight on baseball.

deterrence, incapacitation and rehabilitation.[31] Likelihood of engaging in future behavior only relates to the three utilitarian aims: deterring crime, incapacitating dangerous offenders, and rehabilitating an offender. If the aim of punishment is purely retributive, the tools have no place because an offender's future conduct is not relevant to a determination about past behavior.[32]

As a practical matter, most states allow courts to pursue any of the four purposes of punishment at sentencing.[33] Yet even if future behavior is considered at sentencing, whether an actuarial risk tool provides valuable information to determine the length of a sentence is contested. If tools are meant to influence decisions about incapacitation or deterrence – as it appears they are at sentencing[34] – then they should consider how a sentence impacts the defendant's likelihood of engaging in future criminal behavior.[35] If a jurisdiction adopts a risk assessment tool to improve correctional rehabilitation efforts, then the outcomes should not affect how long a defendant is punished.[36] Currently, most actuarial risk tools do not specify their aim. Even those actuarial risk tools developed for rehabilitative

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[31] See, e.g., Aya Gruber, A Distributive Theory of Criminal Law, 52 WM. & MARY L. REV. 1, 4 (2010).

[32] See, e.g., Paul H. Robinson, Punishing Dangerousness: Cloaking Preventive Detention as Criminal Justice, 114 HARV. L. REV. 1429, 1440-41 (2001).

[33] See Dawinder S. Sidhu, Moneyball Sentencing, 56 B.C. L. REV. 671, 684 (2015).

[34] Risk tools can be used to identify the select few individuals who require more punishment through incapacitation to deter recidivism. See Kelly Hannah-Moffat, Punishment and Risk, in THE SAGE HANDBOOK OF PUNISHMENT AND SOCIETY 10 (Jonathan Simon & Richard Sparks eds. 2013). This is selective incapacitation. See, Eaglin, Constructing Recidivism, supra note 7, at 222-23. Incapacitation includes more than just incarceration. Additional forms of criminal justice supervision, including treatment programs, represents incapacitating interventions as well. See Eaglin, The Drug Court Paradigm, supra note 10, at 632 (describing incapacitating conditions of criminal justice supervision other than incarceration).

[35] Starr, Evidence-Based Sentencing, supra note 7, at 855-58; Sonja B. Starr, The New Profiling: Why Punishing Based on Poverty and Identity is Unconstitutional and Wrong, 27 FED. SENT'G REP. 229 (2015); Eaglin, Constructing Recidivism, supra note 7, at 141.

[36] The "rehabilitative risk model" encourages sanctions that reduce recidivism, like treatment interventions. Nevertheless, "offenders who score high on rehabilitative-oriented risk-need scales will continue to endure incapacitation, especially if they are classified as non-responsive to treatment." Hannah-Moffat, supra note 34, at 10. When this information is used at sentencing, it increases punishment through incapacitation. See supra note 34.

purposes may be used to further different sentencing aims.[37] These challenges can create a mismatch between tool design, use, and the aims of the justice system.

What to Predict. Developers interested in applying predictive analytics for sentencing converge around estimating the likelihood of a defendant recidivating in the future. "Recidivism," meaning the recurrence of criminal behavior in the future, is an ambiguous term.[38] For example, tools vary in the outcomes they choose to predict. Different tools can predict the occurrence of a violent offense, a property offense, or criminal behavior in general. That event may be measured by an arrest, an arrest and charge, conviction, or some other interaction with the justice system.[39]

How developers define the outcome of interest is a policy decision that can create tensions between the tool and its application for punishment. For example, some states prohibit considering unadjudicated behavior, so the value of information that predicts the occurrence of an arrest is dubious.[40] More broadly, whether a defendant engages in any type of behavior that could result in re-arrest, such as failure to pay court fines or even speeding, does not necessarily relate to the public safety risk the tools are meant to address.[41]

These challenges are not limited to sentencing, as the pretrial bail context provides another poignant example of the policy implications of defining outcomes for tools using predictive analytics to improve decision-making that leads to incarceration.[42] Most pretrial risk tools

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[37] Often states or jurisdictions place no limits on which kinds of risk tools may be considered at sentencing. *See*, Eaglin, *Constructing Recidivism*, *supra* note 7, at 114-15.

[38] Joan Petersilia, *Recidivism, in* ENCYCLOPEDIA OF AMERICAN PRISONS 382, 382-86 (Marilyn D. McShane & Frank P. Williams III eds., 1996); Robert Weisberg, *Meanings and Measures of Recidivism*, S. CAL. L. REV. 785, 785 (2014).

[39] See, Eaglin, *Constructing Recidivism*, *supra* note 7, at 75-78.

[40] *See, e.g.*, Kevin R. Reitz, *Sentencing Facts: Travesties of Real-Offense Sentencing*, 45 STAN. L. REV. 523 (1993) (challenging policy reasons for relying on unadjudicated conduct at sentencing).

[41] Eaglin, *Constructing Recidivism*, *supra* note 7, at 75-77, 116.

[42] The aims of pretrial detention are not "punitive" like post-conviction sentencing, and therefore the use of risk assessment tools at pretrial bail hearings does not create some of the other tensions discussed in this essay. Still, the pretrial determination to detain a

predict a defendant's risk of "pretrial failure."[43] Yet whether pretrial failure is a valuable metric for a judge to determine whether to detain a defendant before trial is not a foregone conclusion. As Professor Lauryn Gouldin explains, tools often combine failure to appear and dangerousness into a single outcome. Yet failure to appear does not equate public safety risk.[44] This event of interest produces information that may not improve a judge's pretrial risk management task.[45]

The point here is simple: the value of the risk assessment centers on what the tool predicts. What the tool predicts relates to why the tools are used at a particular point in the administration of justice. How developers choose to define the event of interest may create a mismatch between tools utilizing predictive analytics and the aims of the justice system.

How to Predict. What counts at sentencing has been the source of longstanding debate. While judges once had broad discretion to sentence for any reason at all, many states and the federal government have limited the factors that courts can consider when imposing punishment as a means to ensure fairness.[46] Tensions arise when predictive analytics consider factors that may undermine conceptions of procedural justice in the criminal justice system.[47]

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defendant on bail leads to incarceration, and so similarities exist between these applications of predictive analytics to improve allocation of resources. *See* Laura I. Appleman, *Justice in the Shadowlands: Pretrial Detention, Punishment & The Sixth Amendment*, 69 WASH. & LEE L. REV. 1297, 1302 (2012) (noting that we classify pretrial treatment as "detention" and not "punishment," but arguing for procedural protections because the experience of incarceration is inherently punitive).

[43] Lauryn P. Gouldin, *Disentangling Flight Risk from Dangerousness*, 2016 BYU L. REV. 837, 842, 867-71 (2016) [hereinafter Gouldin, *Disentangling Flight Risk*] (explaining that pretrial risk assessment tools often conflate flight risk and dangerousness).

[44] *Id.* at 842. Even predicting "failure to appear" creates important policy concerns. *See also* Lauryn P. Gouldin, *Defining Flight Risk* 85 U. CHI. L. REV. (forthcoming 2017).

[45] Gouldin, *Disentangling Flight Risk, supra* note 43, at 888-90.

[46] Eaglin, *Constructing Recidivism, supra* note 7, at 84; *see also* Monahan & Skeem, *supra* note 9, at 161.

[47] "Procedural justice" refers to "the psychological links people tend to draw between characteristics of legal practices and of interactions that citizens have with legal authorities and their conclusions that laws, systems, or authorities are fair." Benjamin Justice & Tracey L. Meares, *How the Criminal Justice System Educates Citizens*, 651 ANN. AM. ACAD. POL. & SOC. SCI. 159 (2014); *see generally* E. ALLAN LIND & TOM TYLER, THE SOCIAL PSYCHOLOGY OF PROCEDURAL JUSTICE (1988) (expanding the concept of procedural justice

Actuarial risk tools rely on a variety of pre-identified factors that correlate with the occurrence of the triggering event to determine likelihood of recidivism.[48] Some of these factors, like gender, cannot be considered directly at sentencing.[49] Others, like employment, education level, and family ties, may not be permissible factors depending on the jurisdiction. Several scholars have objected to the use of risk tools at sentencing because risk tools consider some or all of these factors. These critiques, including my own,[50] focus on the constitutional or public policy infirmities of these factors at sentencing.[51]

Whether tools relying on these factors are relevant at sentencing highlights a deeper question about what makes a sentence fair. Should the state differentiate between defendants on the basis of risk as defined by factors outside an individual's control at sentencing? This question concerns how we punish and how we predict. Some scholars

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first introduced by social psychologist John Thibault and law professor Laurens Walker. JOHN THIBAULT & LAURENS WALKER, PROCEDURAL JUSTICE: A PSYCHOLOGICAL ANALYSIS (1st ed. 1976)).

[48] Current tools used at sentencing rely on factors identified by developers consistent with empirical research, but future tools may rely on any factors that correlate with the occurrence of the event of interest as identified by machine. Eaglin, *supra* note 7, at 119-20; *see generally* RICHARD BERK, CRIMINAL JUSTICE FORECASTS OF RISK: A MACHINE LEARNING APPROACH (2012).

[49] *See* Starr, *Evidence-Based Sentencing, supra* note 7, at 824 ("modern courts have consistently held (outside the [risk-based sentencing] context, that it is unconstitutional to base sentences on gender"); *see also* Carissa Byrne Hessick, *Race and Gender as Explicit Sentencing Factors*, 14 J. GENDER RACE & JUST. 127, 128 (2010) ("modern sentencing systems do not permit the explicit consideration of race or gender"). While risk tools consider gender as a factor to predict risk, tools do not consider race because it is controversial and potentially unconstitutional. Some data scientists push to include race as a factor in predictive models so as to control for it in the predictive outcomes.

[50] *See, e.g.*, Eaglin, *Constructing Recidivism, supra* note 7, at 194; Jessica M. Eaglin, *May the Odds Be (Never) in Minorities' Favor? Breaking Down the Risk-Based Sentencing Divide*, HUFF. POST (Aug. 22, 2014), http://www.huffingtonpost.com/jessica-eaglin/may-the-odds-be-never-in-_b_5697651.html [https://perma.cc/D5Q3-7TAK].

[51] For constitutional debate, compare Starr, *Evidence-Based Sentencing, supra* note 7, *and* Dawinder S. Sidhu, *Moneyball Sentencing*, 56 B.C. L. REV. 671, 694 (2015) *with* J.C. Oleson, *Risk in Sentencing: Constitutionally Suspect Variables and Evidence-Based Sentencing*, 64 SMU L. REV. 1329, 1340 (2011) (arguing constitutionally sound). For an overview of the policy debate, see John Monahan, *A Jurisprudence of Risk Assessment: Forecasting Harm Among Prisoners, Predators, and Patients*, 92 VA. L. REV. 391, 405-06 (2006); John Monahan & Jennifer L. Skeem, *Risk Assessment in Criminal Sentencing*, 12 ANN. REV. CLINICAL PSYCHOL. 489, 499 (2016).

say yes, risk is a legitimate basis of differentiation. As such the predictive accuracy of a risk tool is the most important factor to ensure fairness at sentencing, regardless of the factors considered to estimate that outcome.[52] Others, myself included, argue that risk is not an independently legitimate basis of differentiation at sentencing. Because risk is simply the compilation of underlying factors with varying degrees of legitimacy, justice requires considering the development process when determining whether tools undermine fairness at sentencing, not just the predictive outcome.[53] The entry of predictive analytics for punishment exposes this conflict.

Tensions regarding what counts at sentencing and the meaning of fairness may produce a mismatch between application of the technique and the aims of the justice system. This concern is exacerbated by the opacity accompanying the technique. Because developers may not disclose the factors considered to predict risk, defendants, criminal justice actors, and the general public cannot know whether suspect factors impact risk scores used at sentencing.[54] Relatedly, if courts do not disclose how risk scores affect a sentence, defendants cannot know how these factors affect a sentence. Finally, risk tools may obscure the debate about whether, why and when to consider certain controversial factors at sentencing because predictive analytics reframes the discourse around accuracy rather than fairness.[55]

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[52] *See, e.g.*, Oleson, *supra* note 51, at 1376 (arguing that courts may allow consideration of race and other suspect classifications if it produces more accurate risk estimates for sentencing); *see also* Sandra G. Mayson, Bias In, Bias Out: Criminal Justice Risk Assessment and the Myth of Race Neutrality (unpublished manuscript) (on file with author) (arguing that statistical accuracy in risk tools is an essential element of fairness, but urging more nuance in what to predict).

[53] *See* Starr, *Evidence-Based Sentencing, supra* note 7, at 870 (criticizing inclusion of suspect factors in risk prediction tools on empirical and constitutional grounds); Sidhu, *supra* note 52, at 674 ("risk assessment tools have no legitimate basis in any recognized penological theories"); *see also*, Eaglin, *Constructing Recidivism, supra* note 7, at 91-94, 109 (arguing that statistical accuracy alone should not define legitimacy of risk tools for sentencing).

[54] *See, e.g.*, Rebecca Wexler, *Life, Liberty, and Trade Secrets: Intellectual Property in the Criminal Justice System*, 70 STAN. L. REV. (forthcoming 2018); *see also*, Eaglin, *Constructing Recidivism, supra* note 7, at 111-21 (discussing opacity issues with risk tools).

[55] *See, e.g.*, State v. Loomis, 2016 WI 68, ¶ 86, 371 Wis. 2d 235, 881 N.W.2d 749 (Wis. 2016) (upholding use of risk tools relying on gender as a predictive factor because "gender promotes accuracy that ultimately inures the benefits of the justice system").

IV. BEYOND PREDICTION

In summary, numerous issues arise in the construction of actuarial risk tools that threaten to produce a mismatch between the application of predictive analytics and a jurisdiction's aims when imposing punishment. Some of the challenges identified here are surmountable. Stakeholders could provide more precise information for developers to apply predictive analytics in more valuable ways. Democratic engagement with the normative construction choices could occur. Indeed, *Constructing Recidivism Risk* proposes a variety of measures to infuse the construction of actuarial risk tools with public accountability as a means to prevent some of the threats that tools present at sentencing.[56]

This section looks beyond whether predictive tools should be used in the system. Rather, it considers whether, without intervention, risk tools will be constructed to improve the system by reducing unnecessary reliance on incarceration. In other words: if, as most advocates of risk-based sentencing are careful to assert, risk tools *can* reduce incarceration by producing objective, neutral and accurate information about a defendant's risk that will lead to diverting more low-level defendants and reserving limited resources for select high risk defendants,[57] will tools naturally be constructed to further those decarcerative goals? Here, I express skepticism about that vision.

A. *The Easy Route*

Risk assessment tools are not the first effort to introduce automation to sentencing. In the 1970s, widespread sentencing critiques resulted in the creation of sentencing guidelines to inform judicial sentencing discretion.[58] Sentencing guidelines, created in the

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[56] Eaglin, *Constructing Recidivism, supra* note 7, at 105-21.

[57] *See, e.g.,* NATHAN JAMES, CONG. RESEARCH SERV., R44087, RISK AND NEEDS ASSESSMENT IN THE CRIMINAL JUSTICE SYSTEM 1 (2015) ("Assessment instruments might help increase the efficiency of the justice system by identifying low-risk offenders who could be effectively managed on probation rather than incarcerated, and they might help identify high-risk offenders who would gain the most by being placed in rehabilitative programs"); Jordan M. Hyatt, Steven L. Chanenson, Mark H. Bergstrom, *Reform in Motion: The Promise and Perils of Incorporating Risk Assessments and Cost-Benefit Analysis into Pennsylvania Sentencing*, 49 DUQ. L. REV. 707, 713 (2011) (incorporating risk tools can alleviate resource constraints in Pennsylvania).

[58] *See* Tonry, *supra* note 15, at 174.

states and the federal system, seek to narrow the range of punishment within which a judge exercises discretion at sentencing. At the federal level, the sentencing guidelines created widespread opposition and little popularity upon adoption.[59] Judges and law and policymakers alike criticized aspects of the tool, leading up to the deconstruction of the guideline system through a series of Supreme Court cases on the Sixth Amendment jury trial right.[60]

To the extent that the federal guidelines are perceived as a failure, it has as much to do with tool developers' inability to confront difficult questions at sentencing and the political machinations behind its creation as it does with the tool itself.[61] The U.S. Sentencing Commission declined to select a guiding purpose of punishment to construct the guidelines;[62] instead the Commission adopted an empirical approach that simply averaged out historical data on judicial sentencing practices as a baseline.[63] The data that the Commission used – presentence reports from a sample of 10,500 cases – was insufficient for the categories of cases covered by the resulting guidelines.[64] Moreover, it merely correlated the mention of

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[59] *See, e.g.*, Daniel J. Freed, *Federal Sentencing in the Wake of Guidelines: Unacceptable Limits on the Discretion of Sentencers*, 101 YALE L.J. 1681, 1685 (1992) (noting "dismay and evasion in the federal courts and the bar" over the first five years of implementing the guidelines).

[60] *See* United States v. Booker, 543 U.S. 220, 245 (2005) (rendering the federal sentencing guidelines as advisory based on the Sixth Amendment jury trial right); Blakely v. Washington, 542 U.S. 296, 305 (2004) (invalidating a sentence under Washington State's mandatory sentencing guideline scheme based on the jury trial right).

[61] *See, e.g.*, Albert W. Alschuler, *Disparity: The Normative and Empirical Failure of the Federal Guidelines*, 58 STAN. L. REV. 85, 92-94, 117 (2005) (defending the idea of sentencing guidelines but criticizing its development and implementation at the federal level); Amy Baron-Evans & Kate Stith, *Booker Rules*, 160 U. PA. L. REV. 1631, 1680-81 (2012) (recognizing flaws in the construction and implementation of the federal sentencing guidelines but defending the post-*Booker* advisory sentencing guidelines).

[62] U.S. SENTENCING GUIDELINES MANUAL § 1A1.1 (U.S. SENTENCING COMM'N 2004) (noting that "as a practical matter, in most sentencing decisions both [retributive and utilitarian] philosophies may prove consistent with the same result"); *see also* Stephen Breyer, *The Federal Sentencing Guidelines and the Key Compromises Upon Which They Rest*, 17-18 HOFSTRA L. REV. 1, 17 (1988) (relying on past sentencing practice was an important compromise to the difficult philosophical questions presented by constructing sentencing guidelines).

[63] KATE STITH & JOSE CABRANES, FEAR OF JUDGING 61 (1998).

[64] *Id.*

particular facts in the presentence reports to the sentence ultimately imposed.[65] The Commission also averaged select parole board decisions as the "numerical anchor" to determine the average length of sentence among defendants.[66] It excluded any sentences where the defendant received probation rather than incarceration, and thereby increased the average punishment in the data "overnight."[67] The Commission additionally raised penalties for certain offenses, even though this produced mechanized sentence ranges much more severe than the empirical data supported.[68] Even after the federal guidelines became advisory, the tool is considered unnecessarily punitive in some instances. On this account, some judges categorically reject its use for some types of cases.[69]

Similarities exist between this approach and the construction of actuarial risk tools developed for sentencing. Like the federal sentencing guidelines, many actuarial risk tools do not specify a particular sentencing purpose for their use.[70] Like the federal sentencing guidelines, actuarial risk tools rely on already existing data without critically engaging with flaws inherent to its repurposing. For the guidelines, as described above, concern stemmed from how the Commission reconstructed past sentencing practices. For the risk assessment tools, such concerns arise due to use of arrest data and the biases that data may reflect.[71] These similarities suggest the need for critical engagement with the construction stage when tools are developed for use at punishment.

Without careful consideration and reflection in the construction of actuarial tools, automated information produced through predictive

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[65] *Id.*

[66] Andrea Roth, *Trial by Machine*, 104 GEO. L.J. 1245, 1281 (2016).

[67] *Id.* (citing Lynn Adelman, *What the Sentencing Commission Ought to Be Doing: Reducing Mass Incarceration*, 18 MICH. J. RACE & L. 295, 297 (2013)).

[68] *See* J.C. Oleson, *Blowing Out the Candles: A Few Thoughts on the Twenty-Fifth Birthday of the Sentencing Reform Act of 1984*, 45 U. RICH. L. REV. 693, 710-11 (2011).

[69] *See, e.g.*, Kimbrough v. United States, 552 U.S. 85, 109-10 (2007) (allowing judges to vary from the guideline recommendations based on policy disagreement "even in a mine-run case" post-*Booker*).

[70] *See*, Eaglin, *Constructing Recidivism*, *supra* note 7, at 161.

[71] *See*, Eaglin, *Constructing Recidivism*, *supra* note 7, at 136-37 (discussing racial biases reflected in arrest data).

analytics may not improve the allocation of punishment in the justice system. As I explain in *Constructing Recidivism Risk*, tool developers have unique self-interests – like cost, access to data, and market competition – that shape how they use data analytics to predict recidivism risk.[72] It shapes foundational decisions like what data to use and the definition of recidivism selected when applying predictive analytics for punishment outcomes.[73] These decisions have consequences, intentional or not, that can discourage decarcerative aims. For example, predicting future arrest is much easier than predicting other outcomes because it occurs in a shorter period of time. But predicting risk of arrest can replicate biases already existing in the system that do not correlate with public safety.[74] Predicting failure to appear in the pretrial context may be easier because data exists for repurposing, but this measure also captures defendants who do not present public safety threats.[75] In each instance, easier to predict results are over-inclusive in whom they identify as a risk. Over-inclusive estimates can encourage unnecessary incarceration.[76] Rather than reducing this flaw in the system, tools may exacerbate it.

Advocates and scholars interested in applying predictive analytics to the administration of justice should take heed. If the sentencing guidelines provide any insight, it demonstrates the dangers in producing information for punishment without careful reflection and engagement. As predictive analytics continue to expand to influence decision-making that can result in incarceration, the need for criminal justice scholars and advocates to engage with the production of information only increases.[77] Unless we confront the difficult value

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[72] *See, id.* at 142-46; *see also* Gouldin, *supra* note 43 (describing similar incentives in pretrial bail context).

[73] *See*, Eaglin, *Constructing Recidivism, supra* note 7, at 142-46; *see also* Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CALIF. L. REV. 671 (2016) (describing foundational choices for predictive analytics in employment).

[74] Eaglin, *Constructing Recidivism, supra* note 7, at 95-97.

[75] *See* Gouldin, *supra* note 43, at 885.

[76] *See, e.g., id.* at 888-89 (risk tools nudge courts in a particular direction); Starr, *Evidence-Based Sentencing, supra* note 7, at 862-64 (tools produce information meant to change sentencing practices based on risk level).

[77] On the increasing resonance of risk logic in criminal justice, see Hannah-Moffatt, *supra* note 34, at 17 ("Despite its conceptual and methodological deficiencies, it is unlikely that the emphasis on risk will dissipate").

choices upfront, automated tools do not guarantee the improvements sometimes promised.

B. *Slavery to the Present*

Skepticism regarding the expansion of predictive analytics to allocate punishment reaches beyond skepticism about tool construction. It goes to the very purpose of the tools' application: to change the justice system. Predictive analytics fit – albeit awkwardly[78] – into the larger evidence-based policy paradigm, which seeks to expand interventions proven to "work." This model is, at its core, "extraordinarily conservative."[79] As Dr. Marie Gottschalk explains, "such a narrow construction of evidence resting on what has already been shown to work fosters a kind of slavery to the present."[80] It suggests that the way forward is to do what we've already done before, only better.

In the punishment context, we've done predictions before with deleterious result. States tried to embrace efforts to identify and selectively incapacitate the most dangerous defendants in the 1980s and 90s.[81] Those efforts translated into the policies and practices focused on total incapacitation, including habitual offender laws and mandatory minimum penalties for those who have any previous connection to the criminal justice system.[82] These policies contributed to the massive increase in size and scope of the incarcerated population, which made the United States the lead incarcerator in the world.[83] Actuarial risk tools represent another attempt at selective

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[78] *See supra* note 19.

[79] MARIE GOTTSCHALK, CAUGHT: THE PRISON STATE AND THE LOCKDOWN OF AMERICAN POLITICS 261 (2015) (quoting Todd Clear). *See also* Eaglin, *The Drug Court Paradigm*, *supra* note 10, at 624-34 (chronicling the limits of drug courts as a mechanism to define sentencing reforms).

[80] *See* GOTTSCHALK, *supra* note 79, at 261.

[81] HARCOURT, *supra* note 7, at 88; Eaglin, *Constructing Recidivism*, *supra* note 7, at 222-23.

[82] Melissa Hamilton, *Back to the Future: The Influence of Criminal History on Risk Assessments*, 20 BERKELEY J. CRIM. L. 75, 80, 96 (2015); *see also* Eaglin, *Against Neorehabilitation*, *supra* note 10, at 223.

[83] *See*, Eaglin, *Constructing Recidivism*, *supra* note 7, at 223-26.

incapacitation, but with supposedly more accurate information. The tools alone do not create a new way of thinking about punishment.

Of course, predictive risk information is both empowering and debilitating in the face of mass incarceration.[84] After all, using the tools cuts both ways – it provides a justification to increase or decrease incarceration. Advocates of predictive analytics for individual punishment embrace the empowering aspect of risk information – perhaps people will take more risk because they can quantify it. Through this lens, the information may facilitate new approaches to punishment over time.

Yet this argument overlooks a key reality exposed by examining the construction of actuarial risk tools. While scholars and policymakers debate how stakeholders should *use* the information produced by predictive analytics for punishment,[85] they often overlook questions about how risk should be *produced*. But risk is a malleable and fluid concept.[86] It can reinforce present policies and practices, and exacerbate current flaws, all while distancing the public from the punished. Producing actuarial information on recidivism risk necessarily takes a step towards a particular vision of the system whether intended or not. Simply stated, producing predictive risk information is not a neutral and objective process in the criminal justice system; rather, it is a form of agenda-setting.[87]

Unfortunately, recent history suggests that automated tools in the criminal justice system tend to set the agenda in one direction: towards more punishment. As Professor Andrea Roth explains, the creation of mechanized tools, such as the guidelines, for sentencing

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[84] *See, e.g.,* Anthony Giddens, *Risk and Responsibility*, 62 MOD. L. REV. 1, 3-4 (1999) (risk has a negative connotation, but it also emboldens initiatives by demonstrating alternative options). For a definition of mass incarceration, see Eaglin, *Constructing Recidivism*, *supra* note 7, at 191.

[85] For an example of risk assessments as a tool of decarceration, see, Ball, *supra* note 14.

[86] *See, e.g.,* SHEILA JASANOFF, SCIENCE AND PUBLIC REASON 137 (2012) ("A policy-shaping conceptual framework such as *risk* builds upon underlying social models of agency, causality, and responsibility. Such frames in turn are intellectually constraining in that they delimit the universe of scientific inquiry, political discourse, and possible policy options").

[87] *See, e.g.,* Pat O'Malley, *Risk and Responsibility, in* FOUCAULT AND POLITICAL REASON: LIBERALISM, NEOLIBERALISM, AND RATIONALITIES OF GOVERNMENT (1996) ("Technologies, although they have their own dynamic, nevertheless develop primarily in terms of their role in relation to specific political programmes.").

often subtly seek to "increase the uniformity and rationality of punishment, but typically in a certain direction: away from undue leniency."[88] Risk assessment tools used at sentencing could be different from previously developed automated tools. Time will tell. History, however, is not on its side.

V. CONCLUSION

The United States is a lead incarcerator in the world, our prisons and jails are overcrowded, and racial disparities are rampant throughout the system.[89] Mass incarceration and its effects plague states across the country such that critics from the left and the right demand changes to improve the system.[90] Many suggest that harnessing predictive analytics to inform decisions about the imposition of punishment may provide a path forward to resolve dilemmas spurring from the pressures of mass incarceration. But application of this technique for individualized punishment threatens to introduce mismatches between the information produced and the aims of the criminal justice system to which it is applied. This essay identifies possible mismatches through the lens of challenges faced when constructing actuarial risk tools used for sentencing.

The mismatches between criminal justice and predictive analytics make one thing clear: law must engage with the politics of producing knowledge used to administer criminal justice. As states produce or purchase data-driven tools to predict criminal risk, law scholars and policymakers need to respond to ensure that the technique furthers societal values and goals rather than just furthering the proliferation

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[88] Roth, *supra* note 66, at 1266.

[89] Barack Obama, *The President's Role in Advancing Criminal Justice Reform*, 130 HARV. L. REV. 811, 816-19 (2017).

[90] *See, e.g.*, AMERICAN CIVIL LIBERTIES UNION, SMART REFORM IS POSSIBLE: STATES REDUCING INCARCERATION RATES AND COSTS WHILE PROTECTING COMMUNITIES 20–21 (2011), https://www.aclu.org/smart-reform-possible-states-reducing-incarceration-rates-and-costs-while-protecting-communities [https://perma.cc/GJ8G-8GL4]; *Mass Incarceration*, ACLU, https://www.aclu.org/issues/mass-incarceration#current [https://perma.cc/757E-QYEV]; *Crime and Justice*, Heritage Foundation, http://www.heritage.org/crime-and-justice [https://perma.cc/9AHD-AYF3]; *NAACP Criminal Justice Program Issues*, NAACP, http://www.naacp.org/criminal-justice-issues/ [https://perma.cc/C5KE-NUTZ]; *Civil & Criminal Justice*, Texas Public Policy Foundation, https://www.texaspolicy.com/issues/detail/civil-criminal-justice [https://perma.cc/J8Z8-L4EU].

of tools. Prediction for its own sake may change society, but it does not guarantee improvements in the imposition of punishment.