Evidence-Informed Criminal Justice

*Brandon L. Garrett**

ABSTRACT

The American criminal justice system is at a turning point. For decades, as the rate of incarceration exploded, observers of the American criminal justice system criticized the enormous discretion wielded by key actors, particularly police and prosecutors, and the lack of empirical evidence that has informed that discretion. Since the 1967 President's Commission on Law Enforcement and Administration of Justice report, The Challenge of Crime in a Free Society, *there has been broad awareness that the criminal system lacks empirically informed approaches. That report unsuccessfully called for a national research strategy with an independent national criminal justice research institute, along the lines of the National Institutes of Health. Following the report, police agencies continued to base their practices on conventional wisdom or "tried-and-true" methods. Prosecutors retained broad discretion, relying on their judgment as lawyers and elected officials. Lawmakers enacted new criminal statutes, largely reacting to the politics of crime and not empirical evidence concerning what measures make for effective crime control. Judges interpreted traditional constitutional criminal procedure rules in deference to the exercise of discretion by each of these actors. Very little data existed to test what worked for police or prosecutors, or to protect individual defendants' rights. Today, criminal justice actors are embracing more data-driven approaches. This raises new opportunities and challenges. A deep concern is whether the same institutional arrangements that produced mass incarceration will use data collection to maintain the status quo. Important concerns remain with relying on data, selectively produced and used by officials and analyzed in nontransparent ways, without sufficient review by the larger research and policy community. Efforts to evaluate research in a systematic and interdisciplinary fashion in the field of medicine offer useful lessons for criminal justice. This Essay explores the opportunities and concerns raised by a law, policy, and research agenda for an evidence-informed criminal justice system.*

TABLE OF CONTENTS

* L. Neil Williams, Jr. Professor of Law, Duke University School of Law. Many thanks to Roger Fairfax and the organizers of the conference hosted by The George Washington University Law School, and to the participants in that conference.

INTRODUCTION

In the fifty years since the 1967 President's Commission on Law Enforcement and Administration of Justice report, *The Challenge of Crime in a Free Society* ("Report"),[1] awareness has only grown that the criminal justice system lacks empirically informed approaches. That Report noted, "Few domestic social problems more seriously threaten our welfare or exact a greater toll on our resources," and yet "[w]e need to know much more about crime."[2] The Report called for a national research strategy with an independent national criminal justice research institute, along the lines of the National Institutes of Health. The Report emphasized that, rather than adopt evidence-informed approaches, "society has relied primarily on traditional answers and has looked almost exclusively to common sense and hunch for needed changes."[3]

In the decades that followed, lawmakers and courts further reinforced deference to "traditional answers" uninformed by empirical data. Police typically deployed and trained officers based on what was traditionally done, not based on research. Prosecutors made charging decisions based on their policies and priorities, not based on empirical data. The interdisciplinary scientific research enterprise that the 1967 President's Commission had called for never materialized. Legislation expanded funding for criminal justice research, but through the Department of Justice, not an independent scientific entity.[4] Policymak-

1 PRESIDENT'S COMM'N ON LAW ENF'T & ADMIN. OF JUSTICE, THE CHALLENGE OF CRIME IN A FREE SOCIETY (1967).

2 *Id.* at 273, 279.

3 *Id.* at 273.

4 *See* Daniel S. Nagin, *Deterrence in the Twenty-First Century*, *in* 42 CRIME AND JUSTICE IN AMERICA, 1975–2025, at 199, 203 (Michael Tonry ed., 2013); Michael Tonry, *Evidence, Ideol-*

ers continued to disregard research showing that tough-on-crime policies were largely not working.[5] Meanwhile, a series of decisions by the Burger, Rehnquist, and Roberts Courts eroded the constitutional protections afforded to criminal defendants.[6] Those judicial decisions enhanced the traditional discretion of police and prosecutors, while creating exceptions to exclusionary rules and limiting civil remedies, and state and federal legislators enacted tough-on-crime laws and sentencing guidelines that ushered in an era of plea bargaining and mass incarceration.[7]

Far from being evidence-based, the politics of criminal justice were said to be irredeemably "pathological" and incapable of being addressed in the courts or legislatures.[8] The criminal justice system had collapsed—or, more accurately, it had metastasized. In his 2001 article, *The Pathological Politics of Criminal Law*, William Stuntz observed, without much hope that change was possible, that the tough-on-crime era might be receding, but if the same institutional structures persisted, then police and prosecutors would continue to dominate criminal justice.[9]

As those indictments were uttered, change was underway, largely at the local level, but not in constitutional criminal procedure, which is most visible and subject to academic commentary.[10] Data-driven approaches may support these changes or create new concerns and challenges. As crime, including violent crime, continues to fall[11]—

---

ogy, and Politics in the Making of American Criminal Justice Policy, *in* 42 CRIME AND JUSTICE IN AMERICA, 1975–2025, *supra*, at 1, 1–2.

5 *See* Tonry, *supra* note 4, at 5.

6 *See, e.g.*, Stephen A. Saltzburg, *Foreword: The Flow and Ebb of Constitutional Criminal Procedure in the Warren and Burger Courts*, 69 GEO. L.J. 151, 208 (1980); Louis Michael Seidman, *Factual Guilt and the Burger Court: An Examination of Continuity and Change in Criminal Procedure*, 80 COLUM. L. REV. 436, 436 (1980); Tom Stacy, *The Search for the Truth in Constitutional Criminal Procedure*, 91 COLUM. L. REV. 1369, 1450 (1991); Carol S. Steiker, *Counter-Revolution in Constitutional Criminal Procedure? Two Audiences, Two Answers*, 94 MICH. L. REV. 2466, 2468 (1996).

7 *See* Saltzburg, *supra* note 6, at 157–58.

8 *See generally* William J. Stuntz, *The Pathological Politics of Criminal Law*, 100 MICH. L. REV. 505, 510–11, 529–39 (2002).

9 *See id.* at 510 ("The current tough-on-crime phase of our national politics will someday end; indeed it seems to be ending already, as the current controversies over the death penalty and racial profiling suggest.").

10 For a cogent and prescient call for empiricism in constitutional criminal procedure specifically, see Tracey L. Meares & Bernard E. Harcourt, *Foreword: Transparent Adjudication and Social Science Research in Constitutional Criminal Procedure*, 90 J. CRIM. L. & CRIMINOLOGY 733, 735, 743 (2000) (calling "for a new generation of criminal procedure jurisprudence, one that places empirical and social scientific evidence at the very heart of constitutional adjudication").

11 AMES C. GRAWERT & JAMES CULLEN, BRENNAN CTR. FOR JUSTICE, CRIME IN 2017 1–2

although budget pressures on state and local government remain[12]—criminal justice reforms designed to reduce reliance on incarceration have increased in momentum.[13] Incarceration rates, which reached record levels with increased prison populations every year from 1970 to 2007, began to decline modestly in 2008.[14] Efforts to reduce reliance on incarceration are increasingly bipartisan.[15] Lawmakers are not simply seeking cost savings.[16] Lawmakers and policymakers are beginning to rely more on evidence-informed methods not only to achieve public safety and reduce incarceration, but also to improve the quality of evidence used in courtrooms, to improve policing through technology, and to gather better data on criminal justice operations.[17] The question that this Essay addresses is whether and how such efforts, focusing on those that seek to rely on data, can work lasting change in the criminal justice system.

At each stage of the criminal justice process, actors increasingly use evidence-informed practices. Evidence-informed practices refer to a family of approaches that have brought greater use of data and science into the criminal justice system.[18] These reforms have occurred through collaborations between local government, police, probation

---

(2017), https://www.brennancenter.org/press-release/new-data-crime-and-murder-down-2017 [https://perma.cc/X2TX-33DN].

12 *See* Mary D. Fan, *Beyond Budget-Cut Criminal Justice: The Future of Penal Law*, 90 N.C. L. REV. 581, 583 (2012).

13 *See* Charlie Savage, *Trend to Lighten Harsh Sentences Catches On in Conservative States*, N.Y. TIMES (Aug. 13, 2011), https://www.nytimes.com/2011/08/13/us/13penal.html [https://perma.cc/QME6-7U6Z].

14 *See, e.g.*, LAUREN E. GLAZE & DANIELLE KAEBLE, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2013, at 2 (2014), http://www.bjs.gov/content/pub/pdf/cpus13.pdf [https://perma.cc/M7LX-6PEK]; SENTENCING PROJECT, TRENDS IN U.S. CORRECTIONS 1 (2018), https://sentencingproject.org/wp-content/uploads/2016/01/Trends-in-US-Corrections.pdf [https://perma.cc/QN6E-6WLL].

15 *See* Newt Gingrich & Pat Nolan, *Prison Reform: A Smart Way for States to Save Money and Lives*, WASH. POST (Jan. 7, 2011), http://www.washingtonpost.com/wp-dyn/content/article/2011/01/06/AR2011010604386_pf.html [https://perma.cc/QQ4G-WGYZ]; *The Criminal Justice Challenge*, RIGHT ON CRIME, http://rightoncrime.com/the-criminal-justice-challenge [https://perma.cc/Z7LJ-YWK9].

16 *See* SENTENCING PROJECT, THE STATE OF SENTENCING 2015, at 3–4 (2016), http://sentencingproject.org/wp-content/uploads/2016/02/State-of-Sentencing-2015.pdf [https://perma.cc/69AQ-92SJ].

17 *See generally* Isaac Nevo & Vered Slonim-Nevo, *The Myth of Evidence-Based Practice: Towards Evidence-Informed Practice*, 41 BRIT. J. SOC. WORK 1176, 1176–97 (2011); *see also* CTR. FOR EFFECTIVE PUB. POLICY, A FRAMEWORK FOR EVIDENCE-BASED DECISION MAKING IN LOCAL CRIMINAL JUSTICE SYSTEMS 7 (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/9RS4-QT9D].

18 The term "evidence-informed," rather than "evidence-based," has been used to refer to

offices, and state courts, alongside researchers in multiple disciplines, in partnership with scientific organizations and nonprofits, and with substantial private funding. Efforts have focused on public safety, reducing incarceration, and preventing wrongful convictions. Thus, pretrial release has been reshaped by state and local lawmakers and judges, and based on analysis of recidivism data; reforms adopted in more than half of the states rely on risk instruments.[19] Police increasingly look to data concerning crime patterns, as well as patterns and practices affecting officers' decisions to use force.[20] Decades of psychological research have transformed the use of eyewitness identification procedures.[21] Mental health screening is increasingly conducted and informed by medical standards. In each area, new policies raise concerns about due process, criminal procedure, and equality and nondiscrimination, as well as the quality of the evidence and analysis on which criminal justice actors rely and their ability to rely upon it.

Part I of this Essay addresses what characterizes evidence-informed criminal justice. Today, evidence-informed approaches have exploded in an area largely resistant to empirically informed approaches of the past. Police agencies traditionally used training and best practices principally based on conventional wisdom. Probation decisionmaking relied upon the judgment of probation officers. Sentencing decisionmaking relied on the judgment of sentencing judges. Constitutional criminal procedure rules were based on rights that judges traditionally identified as "fundamental."[22] Very little data existed in criminal justice settings to test what worked to accomplish crime control or to protect individual rights.[23] Use of data and technology is transforming much of our lives in profound and complex ways and those changes are now reaching the criminal justice system.

---

the manner in which evidence may not provide a rigid formula for professionals but instead may inform their practices. *See* Nevo & Slonim-Nevo, *supra* note 17, at 1176–97.

19 *See* SENTENCING PROJECT, *supra* note 16, at 2–4 (describing reforms enacted in thirty states just in the year 2015).

20 *See* Brandon Garrett & Seth Stoughton, *A Tactical Fourth Amendment*, 103 VA. L. REV. 211, 217–18, 301 (2017).

21 *See generally* NAT'L RESEARCH COUNCIL OF THE NAT'L ACAD., IDENTIFYING THE CULPRIT: ASSESSING EYEWITNESS IDENTIFICATION (2014).

22 *See, e.g.*, Medina v. California, 505 U.S. 437, 445–46 (1992) (stating that applicable due process test regarding state criminal procedure is a "fundamental fairness" test and not the cost-benefit balancing test of *Mathews v. Eldridge*, 424 U.S. 319, 335 (1976)).

23 For an extensive bibliography, see *Annotated Bibliography: Evidence-Based Practices in the Criminal Justice System*, NAT'L INST. CORRECTIONS, https://s3.amazonaws.com/static.nicic.gov/Library/026917.pdf [https://perma.cc/54VQ-A44K].

Part II explores several key areas in which actors have adopted evidence-informed approaches to criminal justice, despite the U.S. Supreme Court having done little to constrain traditional exercise of discretion. First, Part II describes the movement toward justice reinvestment statutes—designed to reduce incarceration and direct savings toward alternative sentencing and treatment—which have so far accomplished only modest results. Second, as part of bail reform, jurisdictions have moved toward using evidence-informed instruments at the pretrial stage. Third, police increasingly use predictive data-mining, new forms of surveillance, and body cameras. Fourth, scientific research has driven the innocence revolution in criminal procedure. Although judges in their postconviction rulings seemed largely indifferent to claims of innocence—and the Supreme Court refused, except hypothetically, to acknowledge due process claims of innocence—hundreds of DNA exonerations have informed reforms drawing on social science research. Finally, judges have begun to use risk instruments in sentencing, which raises new possibilities and concerns.[24]

Part III of this Essay explains valid and sound uses of empirical data and central concerns with the use of such data in criminal justice. Criminal justice actors collect notoriously inadequate data. When data exist, they are often disconnected from the types of social and non-criminal justice data one would want to promote positive outcomes. Looking too narrowly at criminal justice data may engender answers unduly focused on criminal justice. Criminal justice actors are often institutionally reluctant to use evidence-informed approaches, and the underlying discretion of police, jurors, prosecutors, and judges may be constitutionally protected. Even when adopted, evidence-informed approaches must account for individual cognitive bias affecting exercise of that discretion and for resulting errors in judgment. Evidence-informed reforms at one stage may have unanticipated upstream and downstream effects that have not been studied.[25] There is also a juris-

---

24 For an overview, see Brandon L. Garrett & John Monahan, *Judging Risk* (Va. Pub. Law & Legal Theory Research Paper No. 2018-44), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3190403 [https://perma.cc/YQX6-8M3H].

25 *See* Jessica M. Eaglin, *Constructing Recidivism Risk*, 67 EMORY L.J. 59, 89–99 (2017); Sonja B. Starr, *Evidence-Based Sentencing and the Scientific Rationalization of Discrimination*, 66 STAN. L. REV. 803, 842–62 (2014). For broader objections to the use of predictive or actuarial instruments, see generally BERNARD E. HARCOURT, AGAINST PREDICTION: PROFILING, POLICING, AND PUNISHING IN AN ACTUARIAL AGE (2007). *But see* Starr, *supra*, at 805–06 ("I strongly endorse the objective of informing criminal justice policy generally, and sentencing specifically, with data. My objection is specifically to the use of demographic, socioeconomic, family, and neighborhood variables to determine whether and for how long a defendant is incarcerated.").

dictional dimension: evidence-informed reforms in one jurisdiction may not reflect outcomes in another type of jurisdiction. High-quality systematic reviews of studies, like those conducted in medicine, will be needed in criminal justice. Further, researchers must ask what data we need and not just what we have.

Evidence-informed methods have already resulted in changes at every level of the criminal justice process. The criminal justice system in the United States is undergoing deep change; the hope is that this change will be well informed by evidence.

I. THE ORIGINS OF EVIDENCE-BASED AND EVIDENCE-INFORMED DECISIONMAKING

Evidence-informed methods, first championed by researchers in medicine, have been adopted by government actors more generally, and more recently by criminal justice actors.[26] The evidence-based revolution in medicine provides a model for how a tradition-bound profession can change its approach to supplement and inform traditional discretion and judgment with sound scientific research.[27] However, even in the field of medicine, where there are deep-pocketed for-profit companies that provide services and conduct research, it has taken decades to formulate standards for conducting studies and integrating results in systemic reviews.[28] In criminal justice, over the past decade, a broader set of law enforcement and criminal justice actors have adopted evidence-informed approaches.[29] This Part describes evidence-informed methods, as developed in medicine through work in several scientific fields, and how those methods have slowly come to influence other areas, including criminal justice. Part II will turn to how research is impacting sentencing, pretrial detention, and a range of aspects of policing that have remained focused on traditional professional discretion for many decades.

---

26 *See* Edward T. Jennings, Jr. & Jeremy L. Hall, *Evidence-Based Practice and the Use of Information in State Agency Decision-Making* 6–8 (Inst. for Federalism & Intergovernmental Relations Working Paper Series, Paper No. 10, 2009), http://martin.uky.edu/sites/martin.uky.edu/files/IFIR/Pub/IFIR-WP-2009-10.pdf [https://perma.cc/488B-Y8DP].

27 *See* JOHN S. HALLER, JR., SHADOW MEDICINE: THE PLACEBO IN CONVENTIONAL AND ALTERNATIVE THERAPIES 1–2 (2014).

28 *See id.*

29 Jeffrey J. Rachlinski, *Evidence-Based Law*, 96 CORNELL L. REV. 901, 901, 904 (2011).

A. *Evidence-Based and Evidence-Informed Methods*

The term "evidence-based" first came into wide usage in the field of medicine.[30] A 1992 article by Dr. David Sackett (one of the founders of the evidence-based medicine movement) and his colleagues described the then-new approach of evidence-based medicine, in which the goal was to assess medical practices empirically.[31] They describe the practice as "conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients."[32] The object was to collect empirically validated, group-based data that could then be used to inform the individual practices of doctors.[33] That model has a real application in the criminal justice setting; the goal is not to eliminate the discretion of individual practitioners but to provide sound information to inform those practitioners' exercise of discretion.

The evidence-based medicine movement attempted to systematically assess which studies provided sound data that should inform doctors when making clinical judgments.[34] With the proliferation of medical studies and new medical treatments being introduced, clinicians struggled to decide how best to treat a patient. In addition to the concern that studies be systematically reviewed, there were also concerns that the clinical judgments of physicians, relying on experience or perhaps anecdote, might be not only informed by inadequate data but also affected by cognitive biases.[35] Even sound data might not inform practitioners if they were not disposed to make use of it. This related effort was grounded in psychological research.[36] Developing empirically informed decision methods might minimize the role that such cognitive biases play. Further, a nationwide clearinghouse for evidence-based clinical practice guidelines was created under the auspices of the U.S. Department of Health and Human Services.[37]

---

30 *See id.* at 901.

31 Evidence-Based Med. Working Grp., *Evidence-Based Medicine: A New Approach to Teaching the Practice of Medicine*, 268 JAMA 2420, 2420 (1992).

32 David L. Sackett et al., *Evidence Based Medicine: What It Is and What It Isn't*, 312 BRIT. MED. J. 71, 71 (1996).

33 *See* Evidence-Based Med. Working Grp., *supra* note 31, at 2420–21; Jeffrey A. Claridge & Timothy C. Fabian, *History and Development of Evidence-Based Medicine*, 29 WORLD J. SURGERY 547, 550, 552 (2005). *See generally* David M. Eddy, *History of Medicine: The Origins of Evidence-Based Medicine—A Personal Perspective*, 13 AM. MED. ASS'N J. ETHICS 55, 58 (2011).

34 *See* Evidence-Based Med. Working Grp., *supra* note 31, at 2420.

35 *See id.* at 2423.

36 *See* HALLER, *supra* note 27, at 16.

37 AGENCY FOR HEALTHCARE RES. & QUALITY, https://www.ahrq.gov/gam/index.html [https://perma.cc/CV47-Y8JR]. As of July 2018, however, this effort is no longer being funded.

As part of the evidence-based medicine approach, the medical community began to support systematic reviews of patient outcomes under different health interventions, using criteria set out in advance and not dependent on the outcomes of studies.[38] Researchers established the Cochrane Collaboration, a global network of clinicians working on systematic reviews.[39] This work was rooted in epidemiology, the branch of medicine that analyzes the distribution and determinations of health conditions in certain populations. The Cochrane Collaboration criteria require that studies be objective, replicable, and generalizable. Experiments are ideally done in randomized, double-blind controlled trials, in which any information that might influence the tester or the subject is withheld until the testing is completed,[40] so that the persons participating in and running the experiment cannot influence the results.[41] Where that is not possible, quasi-experiments may be conducted, which use a similar design to separate persons being treated, but without random assignment. The bottom of the hierarchy for quality of research in an area was traditional expert opinion.[42] At the top of the hierarchy lay systematic reviews, assessing data across studies using meta-analysis, with rigorous statistical analysis of data.[43] Thus, one 1992 study found major discrepancies between medical opinions concerning therapies following heart attacks as compared to results from randomized controlled trials, including where doctors continued to recommend "ineffective or possibly harmful" therapies.[44] More recently, the use of algorithms developed through machine learning, and not fully specified in advance, have been developed to mine relationships in health data to identify potential treatments.[45]

See Guidelines and Measures Updates, AGENCY FOR HEALTHCARE RES. & QUALITY, https://www.ahrq.gov/gam/updates/index.html [https://perma.cc/PGC3-FB6U].

38 *About Us*, COCHRANE, http://www.cochrane.org/about-us [https://perma.cc/3K4R-KPY5] ("Our mission is to promote evidence-informed health decision-making by producing high-quality, relevant, accessible systematic reviews and other synthesized research evidence.").

39 *See* COCHRANE, https://www.cochrane.org [https://perma.cc/5XS5-CM8B].

40 R. BRIAN HAYNES ET AL., CLINICAL EPIDEMIOLOGY: HOW TO DO CLINICAL PRACTICAL RESEARCH 94–95 (3d ed. 2006).

41 DAVID L. SACKETT ET AL., CLINICAL EPIDEMIOLOGY 196–97 (2d ed. 1991).

42 *See Oxford Centre for Evidence-Based Medicine—Levels of Evidence*, CTR. FOR EVIDENCE-BASED MED. (Mar. 2009), https://www.cebm.net/2009/06/oxford-centre-evidence-based-medicine-levels-evidence-march-2009 [https://perma.cc/3NYH-939T].

43 *See, e.g.*, *id.*

44 *See* Elliott M. Antman et al., *A Comparison of Results of Meta-analyses of Randomized Control Trials and Recommendations of Clinical Experts: Treatments for Myocardial Infarction*, 268 JAMA 240, 241 (1992).

45 *See generally* W. Nicholson Price II, *Black-Box Medicine*, 28 HARV. J.L. & TECH. 419 (2015).

The U.S. Supreme Court's adoption of an empirically informed standard for expert evidence in *Daubert v. Merrill Dow Pharmaceuticals, Inc.*[46] and subsequent cases seemed to support this evidence-based approach in medicine.[47] However, the courts have not uniformly insisted on empirical foundations for expert testimony; they largely rely on traditional expert credentials in the medical practice context, while focusing on empirical evidence in the toxic tort context, where causation is frequently a disputed issue.[48] In criminal cases, *Daubert* has seldom been applied, and the Supreme Court's Sixth Amendment Confrontation Clause rulings regarding the obligation of the state to call expert witnesses for cross-examination have done little to regulate the quality of forensic science.[49] Judges have not insisted on even the most basic empirical research to support many forensic techniques, much less systematic reviews or rigorous statistical analyses.[50] Only gradually have ineffective assistance of counsel cases addressed more of the underlying problems in the area.[51] That experience provides a cautionary tale for criminal procedure in an era of evidence-based criminal justice. More promising have been civil and regulatory efforts to address criminal justice problems, as discussed in the sections that follow.[52]

B. Discretionary Criminal Justice

Since the 1967 President's Commission on Law Enforcement and Administration of Justice report, *The Challenge of Crime in a Free Society*, there has been awareness that the criminal system lacks adequate and empirically informed approaches.[53] That Report emphasized that many agencies were "not sure what their needs [were] or how their practices compare[d] to the best practice of the field."[54] The Report noted that state or regional bodies might be provided with

---

46 509 U.S. 579 (1993).

47 *See id.* at 592–95; *see also* Kumho Tire Co. v. Carmichael, 526 U.S. 137, 141 (1999); Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 (1997).

48 Stephen Chris Pappas, *Curing the* Daubert *Disappointment: Evidence-Based Medicine and Expert Medical Testimony*, 46 S. TEX. L. REV. 595, 598 (2003).

49 *See* Brandon L. Garrett & Gregory Mitchell, *The Proficiency of Experts*, 166 U. PA. L. REV. 901, 902–05 (2018).

50 *See id.*

51 *See generally* Brandon L. Garrett, *Constitutional Regulation of Forensic Evidence*, 73 WASH. & LEE L. REV. 1147 (2016).

52 *See* Garrett & Mitchell, *supra* note 49 (discussing the failure of judicial gatekeeping in forensic science and the need for regulation of proficiency of experts).

53 *See* PRESIDENT'S COMM'N ON LAW ENF'T & ADMIN. OF JUSTICE, *supra* note 1, at 273.

54 *Id.* at 286.

resources to conduct studies and assessments to help improve criminal justice.[55] The Report offered that the federal government could lead in efforts to improve the collection of data needed by criminal justice agencies.[56] This was imagined not just as collection of criminal records or fingerprints (today, DNA databases, which are maintained federally), but also information to evaluate the effectiveness of criminal justice itself.[57] There was insufficient data to assess how effective policing was on crime, much less the costs and benefits of alternative approaches.[58] The Report called for "major demonstration projects" to assess whether "major changes" could "improve the system of criminal justice" in state and local jurisdictions.[59] Interdisciplinary research, involving "top scholars from the social and natural sciences, law, social work, business administration and psychiatry," would be convened in institutes centered at universities to address criminal justice research and to analyze data.[60]

These recommendations were largely neglected, although leading research bodies such as the National Academies of Sciences did continue to convene scholars to study criminal justice. The National Institute for Justice, housed at the Department of Justice, was created to fund criminal justice–related research, and leading nonprofits continued to analyze criminal justice data, including with federal grant support.[61]

For decades thereafter, as crime rates rose,[62] criminal justice policy was dominated by a tough-on-crime approach, in which incarceration and severe sentencing were embraced as the best responses to

---

55 *Id.*

56 *See id.*

57 *Id.*

58 *Id.* at 287.

59 *Id.* at 286.

60 *Id.* at 287–88.

61 *See* Tonry, *supra* note 4, at 1–2; *see also* David Weisburd et al., Preface, *Assessing Systematic Evidence in Crime and Justice: Methodological Concerns and Empirical Outcomes*, 587 ANNALS AM. ACAD. POLITICAL & SOC. SCI. 6 (2003).

> Much practice in crime and justice, as in fields like medicine or education, is based on long-term traditions and clinical experience. Although tradition and experience often provide the only guidance for criminal justice practitioners, there is a growing consensus among scholars, practitioners, and policy makers that crime control practices and policies should be rooted as much as possible in scientific research.

Id. (citations omitted).

62 *See* Lauren-Brooke "L.B." Eisen & Oliver Roeder, *America's Faulty Perception of Crime Rates*, BRENNAN CTR. FOR JUST. (Mar. 16, 2015), https://www.brennancenter.org/blog/americas-faulty-perception-crime-rates [https://perma.cc/J23M-UP88] (showing that the incidence of violent crime sharply increased between 1960 and 1980).

rising crime. Policymakers did have a view of the evidence: they generally thought that there was insufficient evidence to support rehabilitative alternatives to incarceration. Efforts to treat mental illness were abandoned due to concerns about abysmal conditions at state mental hospitals.[63] Criminal adjudication was largely supplanted by a system of plea bargaining. Data-driven approaches played little role in these transformations of the criminal system.

While evidence-informed approaches were slow to come to criminal justice, several early pieces of federal legislation did provide some nascent encouragement to the field.[64] In 1972, the Omnibus Crime Control and Safe Streets Act of 1968[65] was amended to require that local criminal-justice grants be evaluated.[66] In the 1970s, the first efforts to assess the accuracy of forensic science disciplines were undertaken, including an early program to assess the accuracy of forensic experts in their routine casework.[67] The 1988 Anti-Drug Abuse Act Byrne Grants program stated that grants should be provided only to projects of "proven effectiveness."[68] Those conditions, however, did not produce large bodies of new research on effective criminal justice strategies. Michael Tonry has called criminal justice policy an "evidence-free zone."[69] He has noted that despite "[t]he creation of governmental institutions that sponsor and fund research, the development of university departments in criminal justice and criminology, and the accumulation of large sophisticated scientific literatures have not resulted in the development of evidence-based policies as a norm in American criminal justice systems."[70] Tonry has bemoaned how evidence-based policing has focused on crime control, rather than "evidence-based sentencing, sanctioning, drug policy, and gun policy." Evidence supporting tough-on-crime policies was em-

63 *See* John Monahan & Jennifer L. Skeem, *Risk Redux: The Resurgence of Risk Assessment in Criminal Sanctioning*, 26 FED. SENT'G REP. 158, 158 (2014).

64 *See* STAN ORCHOWSKY, JUSTICE RESEARCH & STATISTICS ASS'N, AN INTRODUCTION TO EVIDENCE-BASED PRACTICES 2–5 (2014), http://www.jrsa.org/pubs/reports/ebp_briefing_paper_april2014.pdf [https://perma.cc/38H2-SKAA].

65 Omnibus Crime Control and Safe Streets Act of 1968, Pub. L. No. 90-351, 82 Stat. 197 (codified as amended in scattered sections of 18 U.S.C. and 42 U.S.C.).

66 *See* Orchowsky, *supra* note 64, at 4.

67 *See* Garrett & Mitchell, *supra* note 49, at 914–18.

68 Lawrence W. Sherman, *Introduction: The Congressional Mandate to Evaluate*, *in* LAWRENCE W. SHERMAN ET AL., PREVENTING CRIME 1-1 (1997).

69 *See* Tonry, *supra* note 4, at 1.

70 *Id.* at 11–12.

braced but not evidence supporting rehabilitative or preventative policies.[71]

Things began to slowly change, however, in the area of policing. Evidence-based policing, as described by Lawrence W. Sherman in a 1998 report, came to refer to a family of information-driven approaches that police agencies began to use increasingly in the 1990s.[72] Sherman argued that the "paradigm of 'evidence-based medicine' holds important implications for policing."[73] Sherman called for "proactive" efforts to collect and analyze new data to better assess police practices.[74] Much of this consisted of problem-oriented and hot-spot policing.[75] By the late 1990s, more data was being collected on police activity, particularly to inform targeting and arrests, but also for other purposes.[76]

For example, by the late 1990s, civil rights groups were seeking to use police data to document and evaluate patterns of racial profiling.[77] Lawsuit settlements, consent decrees, statutes, and voluntary efforts by agencies were requiring police to collect data on stops, searches, and uses of force to track race-based patterns and identify officers who might be overusing force.[78] To be sure, efforts to remedy race-based patterns in searches and use of force could drag on for years, while efforts to target police would be implemented quickly and at great cost.[79] But data collection became at least somewhat more two-sided: used to both deploy and evaluate policing. In this area, at least, criminal justice was becoming modestly more evidence-informed.

II. THE RISE OF EVIDENCE-INFORMED CRIMINAL JUSTICE

In the past fifteen years, evidence-informed methods have reached more broadly into criminal justice. Not just police, but sen-

---

71 *See id.* at 13.

72 *See generally* Lawrence W. Sherman, *Evidence-Based Policing*, IDEAS AM. POLICING, July 1998, at 1, 3–4, 6–8, 13.

73 *Id.* at 1.

74 *See id.*

75 *See* Lawrence W. Sherman, *The Rise of Evidence-Based Policing: Targeting, Testing, and Tracking*, *in* 42 CRIME AND JUSTICE IN AMERICA, 1975–2025, *supra* note 4, at 377, 378–79, 403–05.

76 *See* Brandon L. Garrett, *Remedying Racial Profiling*, 33 COLUM. HUM. RTS. L. REV. 41, 115–25 (2001).

77 *Id.* at 115–16.

78 For an early analysis, see Garrett, *supra* note 76, at 45–46, 78–82, 92.

79 *See* Rachel A. Harmon, *Promoting Civil Rights Through Proactive Policing Reform*, 62 STAN. L. REV. 1 (2009) (describing limited Department of Justice resources to reform police departments).

tencing commissions, jails, prisons, prosecutors, and courts have begun to consider criminal justice data. These efforts have touched each stage in the criminal process, and they are worth considering as a group. There is the concern that inadequate research currently exists on many important questions. Moreover, these types of problems are interdisciplinary; they require knowledge of mental health, risk assessment, cognitive bias, police practices, correctional practices, judicial practices, and more. Cecelia Klingele puts it well: "The prospect of wading through literature on human behavior, psychology, and medicine to locate practices that are supported by sound research is a daunting task for most criminal justice agencies, many of whom do not employ analysts or other formally trained social scientists."[80] A first wave of scholarship has examined whether these new technologies can or should raise new constitutional questions.[81] Questions regarding the accuracy, effectiveness, and equity of these methods have already become front-and-center concerns.[82] This Part will introduce such concerns in each area, but these concerns will be the focus of Part III.

A. Justice Reinvestment

Perhaps the most far-reaching recent evidence-informed intervention in the United States, in its ambition and in its degree of legislative adoption, has been the Justice Reinvestment Initiative ("JRI"). The JRI is a partnership between the U.S. Department of Justice Bureau of Justice Assistance, the Council of State Governments Justice Center, the Crime and Justice Institute, the Pew Charitable Trusts, and the Vera Institute of Justice.[83] They initiated the JRI during the

---

80 Cecelia Klingele, *The Promises and Perils of Evidence-Based Corrections*, 91 NOTRE DAME L. REV. 537, 557 (2015).

81 *See, e.g.*, Andrew Guthrie Ferguson, *Big Data and Predictive Reasonable Suspicion*, 163 U. PA. L. REV. 327, 335 (2015) (discussing the effect of big data technology on policing and on distorting the reasonable suspicion standard); Michael L. Rich, *Machine Learning, Automated Suspicion Algorithms, and the Fourth Amendment*, 164 U. PA. L. REV. 871 (2016). For analysis in the area of forensic evidence, see generally Andrea Roth, *Trial by Machine*, 104 GEO. L.J. 1245 (2016). For analysis in the area of pretrial risk assessment, see generally Sandra G. Mayson, *Dangerous Defendants*, 127 YALE L.J. 490, 507–18 (2018).

82 *See* Fan, *supra* note 12, at 639–40 ("Telling the public that rehabilitation can work, and providing data on how the shared interest in safety and reform is served, is more effective in building coalitions to facilitate progress than preaching from a particular normative worldview.").

83 *See Justice Reinvestment Initiative*, BUREAU JUST. ASSISTANCE, https://www.bja.gov/Programs/jri_background.html [https://perma.cc/HM7M-AR4W]; *see also* NANCY LA VIGNE ET AL., URBAN INST., THE JUSTICE REINVESTMENT INITIATIVE (2013), https://www.urban.org/sites/default/files/publication/23881/412879-The-Justice-Reinvestment-Initiative-Experiences-from-the-States.pdf [https://perma.cc/T94A-X9UM].

2001–2003 post-dot-com recession, chiefly to alleviate state budget challenges.[84] The object was to analyze data to focus on reducing incarceration and using the resulting savings to reinvest in further efforts to reduce incarceration. Cecilia Klingele has written that "it is difficult to overstate the influence that JRI, [National Institute of Corrections], and similar state and locally initiated efforts have on the spread of evidence-based correctional practices."[85]

More than thirty states have adopted some version of JRI legislation,[86] as have lawmakers in the United Kingdom, but the results so far appear mixed. A group of scholars and lawyers, for example, examined twenty-seven states that have participated in the JRI, eighteen of which have adopted legislation, and noted that the outcomes in the states have been complex.[87] These reviewers suggest that savings from reducing incarceration have generally not been redirected toward further crime prevention or rehabilitation, but rather committed to general state budgets.[88] Further, the JRI has often reduced prison growth but not reduced the current (and record) levels of incarceration.[89] One reason for this, these reviewers suggest, is that the JRI has been less informed by evidence than its architects intended. The JRI approach sought to have policymakers reduce incarceration, study the impact of those changes, and set out options for further savings and reduced incarceration.[90] Beginning in 2008, however, as the authors of an important 2015 report described, the JRI now has more general goals, without detailed language on measuring performance, impacts, and ensuring accountability.[91] Some states have largely used the savings to provide more resources to police for crime control, and have not adequately reinvested in data-driven efforts to prevent crime and reduce incarceration.[92]

Thus, the push for JRI has not been nearly as evidence-informed as it was originally intended to be, nor has substantial reinvestment typically resulted. Thus, the authors of the 2015 report note, "If the goal is to reduce mass incarceration, there is scant evidence of success.

---

84 *See* JAMES AUSTIN ET AL., ENDING MASS INCARCERATION 1, 2 (2013).

85 Klingele, *supra* note 80, at 566.

86 *31 States Reform Criminal Justice Policies Through Justice Reinvestment*, PEW CHARITABLE TR. (Jan. 2016), http://www.pewtrusts.org/~/media/assets/2016/01/pspp_jrireformmatrixoverview.pdf [https://perma.cc/2HWE-KCLW].

87 *See* AUSTIN ET AL., *supra* note 84, at 1.

88 *See id.* at 1–3.

89 *Id.* at 1.

90 *See id.* at 6–7.

91 *Id.* at 7.

92 *See id.* at 7, 9 (discussing Wisconsin and Oklahoma legislation).

More alarming, there is little indication that historic rates of incarceration will be reduced in the future."[93] Indeed, four states that have accomplished large reductions in incarceration, California, New York, New Jersey, and Michigan, have done so for very different reasons, including sentencing reforms and prison-related litigation independent of JRI.[94] More recently, states like Illinois, Louisiana, and Maryland have accomplished new declines in incarceration, largely due to JRI legislation in Maryland and Louisiana and broader criminal justice reform statutes in Illinois.[95] Although incarceration declined in thirty states in the past year, incarceration increased in twenty states in 2016–2017, particularly in Kentucky and Tennessee.[96] Still other states, like Texas, have accomplished declines in prison growth but not a significant reduction in incarceration.[97] It remains to be seen whether a second generation of legislative efforts can rely more forcefully on evidence to reduce reliance on incarceration.

B. Pretrial Diversion and Risk Assessment

Jurisdictions have experimented with approaches toward releasing certain classes of offenders outright pretrial or providing treatment alternatives to incarceration, including as part of the JRI statutes described above. One way that evidence-informed methods have altered criminal justice has been the creation of alternative dockets and courts that are not focused on incarceration. Drug courts, for example, have proliferated. Studies of such courts suggest that they can reduce recidivism, although the selection of individuals for drug courts can make it difficult to assess their efficacy.[98] Concerns remain regarding drug courts, particularly with respect to racial disparity and the disad-

---

93 *Id.* at 11.

94 *Id.* at 12. The U.S. Supreme Court ruled in the overcrowding case concerning California prisons that an Eighth Amendment remedy was required, and that did have a real effect in California. *See* Brown v. Plata, 563 U.S. 493, 511 (2011).

95 *See* Nicole Lewis, *Maryland Leads as Prison Populations Continue to Decline*, MARSHALL PROJECT (May 18, 2018, 12:00 AM), https://www.themarshallproject.org/2018/05/18/maryland-leads-as-prison-populations-continue-to-decline [https://perma.cc/NN26-KTDJ].

96 See *id.*

97 *See* AUSTIN ET AL., *supra* note 84, at 15.

98 *See* U.S. GOV'T ACCOUNTABILITY OFFICE, GAO-05-219, ADULT DRUG COURTS: EVIDENCE INDICATES RECIDIVISM REDUCTIONS AND MIXED RESULTS FOR OTHER OUTCOMES 45 (2005), http://www.gao.gov/new.items/d05219.pdf [https://perma.cc/XTV7-LZLQ]; Eric L. Jensen & Clayton Mosher, *Adult Drug Courts: Emergence, Growth, Outcome Evaluations, and the Need for a Continuum of Care*, 42 IDAHO L. REV. 443, 463 (2006).

vantaged.[99] A range of jurisdictions have required judges to consider a risk or lethality assessment in domestic violence cases.[100]

A range of jurisdictions have considered using evidence-informed methods as an alternative to traditionally judge-made decisions whether to release someone on bail or not. The concern with the traditional approach was that those with resources can afford to make bail, while the poor are kept in jail, including many people who might not actually pose any risk of reoffense or flight. The Constitution has little to say on that subject, since the Supreme Court has to date interpreted the Eighth Amendment's excessive bail requirement as not creating a right to bail but rather calling for a broad balancing of "compelling government interest" as against the individual's rights.[101] However, many more jurisdictions are studying and implementing sweeping changes to pretrial treatment of arrestees. Reasons for doing so include concern with overincarceration and lengthy periods of detention pretrial, concern regarding the harmful effects of that detention (including for vulnerable populations), and the cost of burgeoning jail populations, as well as suicides by individuals detained and media attention to jail conditions.[102]

Another driving force behind reform has been the availability of new instruments to be used for purposes of making decisions regarding pretrial release. State supreme courts, such as the Indiana Supreme Court, the Kentucky Supreme Court, the Nebraska Judicial Council, and the New Jersey Supreme Court have ordered studies or sweeping changes.[103] New Jersey, as well as more than two dozen local jurisdictions, is using a public safety assessment tool funded by the

---

99 *See* Josh Bowers, *Contraindicated Drug Courts*, 55 UCLA L. REV. 783, 786, 803–04 (2008); Eric J. Miller, *Embracing Addiction: Drug Courts and the False Promise of Judicial Interventionism*, 65 OHIO ST. L.J. 1479, 1568–69 (2004).

100 *See, e.g.*, ARIZ. REV. STAT. § 13-3601.91 (LexisNexis 2015); ME. REV. STAT. ANN. tit. 25 § 2803-B(1)(D)(5) (2015).

101 U.S. CONST. amend. VIII ("Excessive bail shall not be required . . . ."); United States v. Salerno, 481 U.S. 739, 754–55 (1987) (noting that the Eighth Amendment does not grant absolute right to bail).

102 *See, e.g.*, *Salerno*, 481 U.S. at 754–55.

103 *See, e.g.*, Am. Order, *In re* Authorizing Non-Financial Uniform Schedule of Bail Administrative Release Program, No. 2015-24 (Ky. Dec. 2, 2015); *Pretrial Release Outcomes Studied by Nevada Judiciary*, NVCOURTS.GOV (Oct. 2, 2015, 1:41 PM), http://nvcourts.gov/Supreme/News/Pretrial_Release_Outcomes_Studied_by_Nevada_Judiciary [https://perma.cc/BPW3-YAED]; *Supreme Court Issues Order on Pretrial Release*, IND. LAWYER (Dec. 23, 2014), http://www.theindianalawyer.com/supreme-court-issues-order-on-pretrial-release/PARAMS/article/35974 [https://perma.cc/E9SV-6X6X].

nonprofit Laura and John Arnold Foundation.[104] The tool, based on analysis of 1,500,000 criminal cases, is publicly available for free and designed to remove factors that have in the past been associated with disparate pretrial detention of minorities—such as arrest history—in favor of factors such as history of missing court appearances.[105]

In addition to the focus on risk, other assessment instruments focus on needs separately or in conjunction with a risk assessment. New mental health screening instruments are being developed to identify and potentially divert arrestees for treatment. For example, Virginia implemented new mental health screening measures at jails statewide in 2017.[106]

In addition to legislation seeking to divert categories of offenders pretrial, evidence-informed practices have begun to reach other criminal justice actors often neglected in the legal literature. Discussions of institutional incentives in criminal justice often do not include departments of corrections and community corrections agencies but instead focus on police and prosecutors.[107] However, in some states corrections agencies have been tasked with reducing prison populations, and in others corrections have taken it upon themselves to study ways to reduce the use of jail in local communities.[108] The National Institute of Corrections has described how its recommended evidence-informed approach proceeds, for community corrections, first by assessing actual risks and needs in a jurisdiction, then by supporting targeted interventions, reinforcing those efforts, training state and local actors, measuring progress, and providing further reinforcement and feedback.[109] To take on this approach, "[o]rganizations must critically examine their missions and values; gain new knowledge and skills; adjust their infrastructure to support new ways of doing business and transform their organizational culture."[110] Corrections agencies that make

104 *See* Jon Shuppe, *Post Bail*, NBC NEWS (Aug. 22, 2017), https://www.nbcnews.com/specials/bail-reform [https://perma.cc/UW3B-69SV].

105 *See id.*

106 Evanne Armour, *Virginia Addressing Mental Health Within Jails*, WAVY.COM (June 20, 2017, 8:08 PM), http://wavy.com/2017/06/20/virginia-addressing-mental-health-within-jails [https://perma.cc/M6ZT-SHUS].

107 *See, e.g.*, Stuntz, *supra* note 8.

108 *See generally* Francis T. Cullen et al., *Eight Lessons from* Moneyball*: The High Cost of Ignoring Evidence-Based Corrections*, 4 VICTIMS & OFFENDERS 197, 197–213 (2009).

109 MEGHAN GUEVARA & ENVER SOLOMON, CRIME & JUSTICE INST. & NAT'L INST. OF CORR., IMPLEMENTING EVIDENCE-BASED POLICY AND PRACTICE IN COMMUNITY CORRECTIONS, at x–xi (2d ed. 2009), https://s3.amazonaws.com/static.nicic.gov/Library/024107.pdf [https://perma.cc/98ZR-NQA8].

110 *See id.* at xii.

probation decisions, or decisions on whether to release individuals pretrial, use risk- and needs-based instruments increasingly to make their decisions.[111] In the area of indigent defense, a number of state commissions and individual offices have used data collection to inform how they conduct their work.[112]

C. *Policing*

Over the past few decades, policing has been transformed by greater reliance on evidence, even if much remains to be studied and improved. Traditional policing relied upon patrols and reactive responses to crime reports, and during investigations police used their own judgment, largely, to gather and test evidence.[113] Over the past three decades, there has been a steady shift toward analysis of crime data and proactive assessment of how to target crime, predict it, and reassess police methods.[114] None of this was affected by the courts or by constitutional criminal procedure, which largely enshrined traditional police discretion.[115] Instead, this revolution came about due to innovations by police and researchers. Beginning in the 1990s, police departments adopted databases to track crime patterns and target resources; the COMPSTAT approach in New York City is a well-known example.[116]

Broader in its approach, problem-oriented policing emerged, as defined by Herman Goldstein, as a way of orienting policing around underlying causes of community problems and not just crime patterns.[117] In a way, the goal was to focus on a broader array of evidence, not just solving crimes but preventing crime and other social

---

111 *See, e.g.*, *Evidence-Based Policies and Practices*, CITY N.Y., http://www.nyc.gov/html/prob/html/about/evidence.shtml [https://perma.cc/U8NP-5JZP] ("Evidence-based policies and practices (EBPP) use current research and the best available data to guide decisions and produce the outcomes that our stakeholders—probation clients, victims, and communities—expect.").

112 *See generally* Jennifer E. Laurin, Gideon *by the Numbers: The Emergence of Evidence-Based Practice in Indigent Defense*, 12 OHIO ST. J. CRIM. L. 325 (2015); Pamela Metzger & Andrew Guthrie Ferguson, *Defending Data*, 88 S. CAL. L. REV. 1057 (2015).

113 Sherman, *supra* note 75, at 378.

114 *Id.* at 378–79.

115 One early reliance on research concerning police shootings, in the Supreme Court's ruling in *Tennessee v. Garner*, 471 U.S. 1 (1985), was largely eroded by subsequent rulings. *See* Garrett & Stoughton, *supra* note 20, at 224.

116 *See* Sherman, *supra* note 75, at 378–79. *See generally* POLICE EXEC. RESEARCH FORUM, BUREAU OF JUSTICE ASSISTANCE, COMPSTAT (2013), https://www.bja.gov/Publications/PERF-Compstat.pdf [https://perma.cc/4J9D-SJGR].

117 Herman Goldstein, *What Is POP?*, CTR. FOR PROBLEM-ORIENTED POLICING (2001), http://www.popcenter.org/about/?p=whatiscpop [https://perma.cc/35VC-DM7H].

problems.[118] Many police agencies now adopt some version of a problem-oriented policing approach.[119] Crime analysts began to be employed by police agencies.[120] Reactive investigations became more informed by scientific methods and forensic techniques.[121] The National Research Council conducted an assessment of the problem-oriented policing literature, and just one systematic review exists.[122]

Still more recently, police have begun to use far more sophisticated data mining. Police use algorithms to find patterns in data concerning offenders to target resources and even target individuals, using what Michael Rich calls "automated suspicion algorithms."[123] These data may include arrest and crime reports but also other content, including data from social media.[124] Individuals may be tracked using GPS or video.[125]

Policing data has also been used to evaluate police practices. Studies have examined whether police have stopped and searched individuals disproportionately because of race;[126] what types of search criteria are more likely to result in arrests;[127] whether police use of

---

118 *See id.*

119 *See History of Problem-Oriented Policing*, CTR. FOR PROBLEM-ORIENTED POLICING, http://www.popcenter.org/about/?p=history [https://perma.cc/LL9V-7M4X]; *see also* Sherman, *supra* note 75.

120 *A History of Crime Analysis*, JUST. ACAD. 4, http://www.justiceacademy.org/iShare/Library-CrimeAnalysis/historyofcrimeanalysis.pdf [https://perma.cc/C8ZL-ZX9X].

121 *See Key Elements of Problem-Oriented Policing*, CTR. FOR PROBLEM-ORIENTED POLICING, http://www.popcenter.org/about/?p=elements [https://perma.cc/3RC7-9XLG]; *see also* Sherman, *supra* note 75.

122 *See* NAT'L RESEARCH COUNCIL, FAIRNESS AND EFFECTIVENESS IN POLICING 243–46 (Wesley Skogan & Kathleen Frydl eds., 2004) (finding modest effectiveness among the variable approaches adopted, but also noting the small number of solid studies and the lack of consistent effort to study which problem-oriented interventions work); David Weisburd et al., *Is Problem-Oriented Policing Effective in Reducing Crime and Disorder?: Findings from a Campbell Systematic Review*, 9 CRIMINOLOGY & PUB. POL'Y 139, 164 (2010).

123 Rich, *supra* note 81, at 876.

124 *Id.* at 873–74.

125 Michael L. Rich, *Machines as Crime Fighters—Are You Ready?*, 30 CRIM. JUST. 10, Winter 2016, at 10.

126 *See, e.g.*, Expert Report of Jeffrey Fagan at 63, Floyd v. City of New York, 959 F. Supp. 2d 540 (S.D.N.Y. 2013) (No. 08-1034), https://ccrjustice.org/sites/default/files/assets/files/Expert_Report_JeffreyFagan.pdf [https://perma.cc/U48A-XRJJ]; *Racial Disparity in Consent Searches and Dog Sniff Searches: An Analysis of Illinois Traffic Stop Data from 2013*, ACLU ILL. (Aug. 13, 2014), https://www.aclu-il.org/en/publications/racial-disparity-consent-searches-and-dog-sniff-searches [https://perma.cc/R7FM-RLCM].

127 *See generally* Jeffrey Fagan, Terry's *Original Sin*, 2016 U. CHI. LEGAL F. 43, 43–96 (2016); Sharad Goel et al., *Precinct or Prejudice? Understanding Racial Disparities in New York City's Stop-and-Frisk Policy*, 10 ANNALS APPLIED STAT. 365, 365–94 (2015).

data to conduct hot-spot policing is effective;[128] and whether police and large-scale stop-and-frisk programs have been effective in deterring crime.[129] The chief remedy that emerged from litigation, statutes, and changes to policy—both voluntary and due to federal consent decrees—was data collection.[130]

How problems are defined, which data are used, and how data are categorized raise difficult questions. Jennifer Laurin notes that "determining whether the best measure of the quality of a stop-and-frisk program [is] the number of arrests, the number of charges brought, the amount of contraband recovered, the sense of satisfaction of members of the community, or some other measure is far from a value-neutral process."[131] Without transparency, it may be difficult for researchers or the public to know whether the algorithms used are fair or accurate. Law enforcement often keeps investigative methods non-public and has often entered contracts with private companies to supply technology, conditioned by nondisclosure contracts.[132] Moreover, there has been little review of the methods used, outside of litigation concerning race discrimination in police activity. Sherman notes, "the vast scale of the rise of evidence in policing leaves it without a fair comparison group."[133] That does not itself provide cause to be sure that these interventions are working.

That said, there has been a remarkable shift in the culture of police organizations, researchers, and professionals, with government repositories of research on policing, police chiefs endorsing research and evidence-based methods, and a broad embrace of data-oriented approaches.[134] It is a remarkable culture shift.

D. The Innocence Movement

An innocence revolution in criminal justice in the United States has resulted in a culture shift toward greater use of scientific and more accurate evidence in criminal cases. Postconviction DNA testing has

---

128 Anthony A. Braga et al., *The Effects of Hot Spots Policing on Crime: An Updated Systematic Review and Meta-Analysis*, 31 JUST. Q. 633, 633 (2014).

129 *See, e.g.*, David Weisburd et al., *Do Stop, Question, and Frisk Practices Deter Crime?: Evidence at Microunits of Space and Time*, 15 CRIMINOLOGY & PUB. POL'Y 31 (2015) (finding modest deterrent effect). *But see* Richard Rosenfeld & Robert Fornango, *The Impact of Police Stops on Precinct Robbery and Burglary Rates in New York City, 2003–2010*, 31 JUST. Q. 96 (2014).

130 *See* Garrett, *supra* note 76, at 107–47.

131 Laurin, *supra* note 112, at 333.

132 *See* Rich, *supra* note 125, at 14.

133 Sherman, *supra* note 75, at 380.

134 *See id.* at 381–82; *History of Problem-Oriented Policing*, *supra* note 119.

exonerated 350 men and women; 20 had been sentenced to death.[135] Additional research has studied broader groups of exonerations; most comprehensive is the National Registry of Exonerations, which documented over two thousand individuals exonerated in the United States in just the past twenty-five years.[136] A body of empirical research has explored the facts underlying such exonerations. In response to these developments, all legislatures in the United States have now enacted statutes to permit postconviction access to new evidence of innocence. Many jurisdictions have improved procedures concerning interrogations, lineups, and other types of evidence. Prosecutors have created conviction-integrity units tasked with reinvestigating closed cases. In the past, wrongful convictions were thought to be rare if not impossible occurrences.[137] Judge Learned Hand famously called "the ghost of the innocent man convicted" an "unreal dream."[138] As in other areas, accuracy was seen as a topic to be left to the discretion of investigators tasked with gathering reliable evidence.[139] Investigators were not required to document that evidence carefully. Interrogations were unrecorded. Eyewitness identification procedures were informal. Forensic analyses were presented based on the experience and judgment of an analyst. In more than four decades, the Supreme Court has not revisited the factors set out in its 1976 ruling *Manson v. Brathwaite*,[140] which held that eyewitness identifications may be admitted if deemed "reliable," even if police engaged in contaminating suggestion.[141]

Prompted by the experience of those exonerations and decades of research involving thousands of studies, the National Academy of Sciences produced a detailed report in 2014, *Identifying the Culprit: Assessing Eyewitness Identification*.[142] The report was informed by

---

135 For a current count of such cases, see *Featured Cases*, INNOCENCE PROJECT, http://www.innocenceproject.org/all-cases/#exonerated-by-dna [https://perma.cc/GAP4-U4K9]. For an in-depth study of the first 250 such cases, see BRANDON L. GARRETT, CONVICTING THE INNOCENT (2011). For detailed data regarding DNA exoneration cases, see CONVICTING THE INNOCENT: DNA EXONERATIONS DATABASE, http://www.convictingtheinnocent.com [https://perma.cc/5J8G-4TVU].

136 A current count of exonerations may be found on the National Registry of Exonerations website. *See* NAT'L REGISTRY EXONERATIONS, https://www.law.umich.edu/special/exoneration/Pages/about.aspx [https://perma.cc/FMR7-3S57].

137 PRESIDENT'S COUNCIL OF ADVISORS ON SCI. & TECH., EXEC. OFFICE OF THE PRESIDENT, FORENSIC SCIENCE IN CRIMINAL COURTS 78 (2016).

138 United States v. Garsson, 291 F. 646, 649 (S.D.N.Y. 1923).

139 *See id.*

140 432 U.S. 98 (1977).

141 *See id.*; *see also* Perry v. New Hampshire, 565 U.S. 228 (2012).

142 *See* NAT'L RESEARCH COUNCIL OF THE NAT'L ACAD., *supra* note 21.

neuroscience, social science, and statistics, and it set out best practices for policing agencies, recommendations for courts, and a research agenda for further eyewitness memory research.[143] Those recommended procedures include conducting identifications "blind" or "blinded" so that the person running the procedure could not inadvertently signal the answer. More agencies are improving their eyewitness identification procedures. In 2017, the U.S. Department of Justice adopted a set of guidelines on best practices for federal law enforcement agencies. In the area of false confessions research, an important white paper from the American Psychology and Law Society lays out a set of reforms to prevent contaminated and false confession statements. Most important is that entire interrogations be videotaped.[144]

Forensic science increasingly looks to basic science to improve methods. Aggregate data lies behind modern DNA testing, which, rather than relying on the traditional experience and judgment of a forensic analyst, relies on population data concerning genetic traits and statistical calculations concerning the random likelihood that another individual might share a given genetic profile. DNA profiles are stored in large databanks to be compared with DNA recovered during unsolved crime investigations. In 2009, an influential National Academy of Sciences report concluded, "With the exception of nuclear DNA analysis, however, no forensic method has been rigorously shown to have the capacity to demonstrate consistently, and with a high degree of certainty, a connection between evidence and a specific individual or source."[145] Seven years later, in 2016, the President's Council of Advisors on Science and Technology issued a report highlighting that little had changed and more strongly stating that several forensic techniques should no longer be used in court until sufficient scientific research is done to validate their accuracy and reliability.[146] That report also emphasized the need for information about error rates in forensic disciplines and proficiency of particular examiners and laboratories.[147]

The research underlying these reforms, as the role of the National Academy of Sciences suggests, has occurred across several scientific disciplines, including neuroscience, psychology, and statistics. A new

---

143 *Id.*

144 *See* Saul M. Kassin et al., *Police-Induced Confessions: Risk Factors and Recommendations*, 34 LAW & HUM. BEHAV. 3, 19 (2010).

145 NAT'L RESEARCH COUNCIL OF THE NAT'L ACAD., STRENGTHENING FORENSIC SCIENCE IN THE UNITED STATES 7 (2009).

146 *See* PRESIDENT'S COUNCIL OF ADVISORS ON SCI. & TECH., *supra* note 137, at 57, 102.

147 *Id.* at 12.

generation of statistical work has examined whether machine learning or more sophisticated statistical models can provide a sound empirical basis for traditional pattern-matching forensics like fingerprinting or ballistics, which have involved subjective and not quantitative conclusions in the past.[148] A new generation of psychological work has examined cognitive bias issues in forensics, including how a range of biases in information and practices can alter the conclusions that forensic analysts reach.[149] As a result, the connection between law and science in informing the accuracy of criminal justice has never been greater.

E. Risk-Based Sentencing

Incarceration may produce diminishing returns as a method to prevent crime.[150] Of prisoners released, three-fourths will be rearrested within five years, and half will return to jail or prison.[151] A series of studies, including a recent meta-analysis, suggests that empirical evidence is lacking to show that severe sentences have a deterrent effect on crime.[152] As a result, better detection of crime and more certain and speedy imposition of consequences may better deter: improved policing may prove more useful in combatting crime than imprisonment. One alternative is to use risk assessment.

In the past, states have based length of sentences in part on an assessment of the future dangerousness of the offender, as did parole agencies.[153] The U.S. Supreme Court has approved the use of future dangerousness at sentencing, including in death penalty cases and including using traditional clinical judgments that may be highly unrelia-

---

148 *See, e.g.*, NICHOLAS D.K. PETRACO ET AL., DOCUMENT NO. 239048, APPLICATION OF MACHINE LEARNING TO TOOLMARKS: STATISTICALLY BASED METHODS FOR IMPRESSION PATTERN COMPARISONS (2011); Brandon L. Garrett, Gregory Mitchell & Nicholas Scurich, *Comparing Categorical and Probabilistic Fingerprint Evidence*, 63 J. FORENSIC SCI. 1712 (2018).

149 *See* NAT'L RESEARCH COUNCIL OF THE NAT'L ACAD., *supra* note 21, at 10; *see also* Itiel E. Dror & David Charlton, *Why Experts Make Errors*, 56 J. FORENSIC IDENTIFICATION 600, 610–14 (2006).

150 FRANKLIN E. ZIMRING & GORDON HAWKINS, INCAPACITATION: PENAL CONFINEMENT AND THE RESTRAINT OF CRIME 5 (1995).

151 MATTHEW R. DUROSE ET AL., BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, RECIDIVISM OF PRISONERS RELEASED IN 30 STATES IN 2005: PATTERNS FROM 2005 TO 2010, at 7 (2014); Jeremy Travis, *But They All Come Back: Rethinking Prisoner Reentry*, SENT'G & CORRECTIONS, May 2000, at 2–4.

152 *See* Natalie Schell-Busey et al., *What Works?: A Systematic Review of Corporate Crime Deterrence*, 15 CRIMINOLOGY & PUB. POL'Y 387, 397 (2016).

153 *See* MODEL PENAL CODE § 6.06 (AM. LAW INST., Proposed Final Draft 2017) (regarding sentencing).

ble.[154] The Court has explained that "prediction of future criminal conduct is an essential element in many of the decisions rendered throughout our criminal justice system."[155] The Court has also found unconstitutionally ineffective the conduct of a defense attorney who failed to object to an expert's use of race when making predictions of dangerousness.[156]

Today, an increasing number of states use risk-based instruments to inform decisionmaking at sentencing.[157] State supreme courts have approved the use of risk assessment in sentencing, and statutes have required judges to consider risk assessment during sentencing.[158] A 2007 National Center for State Courts report on evidence-based sentencing encouraged this movement.[159] The Model Penal Code revisions considered in 2017 encouraged the development of "actuarial instruments or processes to identify offenders who present an unusually low risk to public safety."[160] One reason is that "[i]n virtually every decision-making situation for which the issue has been studied, it has been found that statistically developed predictive devices outperform human judgments."[161] The science and data behind predicting recidivism has improved in the past few decades, while traditional clinical predictions have not.[162] Going still further, the Model Penal Code endorses evidence-based sentencing, stating that sentencing commissions should "develop actuarial instruments or processes, supported by current and ongoing research, that will estimate the relative

---

154 *See* Barefoot v. Estelle, 463 U.S. 880, 896–99 (1983).

155 Jurek v. Texas, 428 U.S. 262, 275 (1976) (plurality opinion).

156 Buck v. Davis, 137 S. Ct. 759, 776 (2017).

157 *See* J.C. Oleson, *Risk in Sentencing: Constitutionally Suspect Variables and Evidence-Based Sentencing*, 64 SMU L. REV. 1329, 1399–402 (2011); Monahan & Skeem, *supra* note 63, at 159–60.

158 *See, e.g.*, KY. REV. STAT. ANN. § 532.007 (West 2011); OHIO REV. CODE ANN. § 5120.114 (LexisNexis 2014); OKLA. STAT. ANN. tit. 22, § 988.19 (2003); 42 PA. STAT. AND CONS. STAT. ANN. § 2154.7 (West 2016); WASH. REV. CODE § 9.94A.500 (2016); Malenchik v. State, 928 N.E.2d 564, 571–73 (Ind. 2010); State v. Gauthier, 939 A.2d 77, 81, 85–86 (Me. 2007) (approving use of risk score in sentencing).

159 *See* ROGER K. WARREN, NAT'L INST. OF CORR., U.S. DEP'T OF JUSTICE, Evidence-Based Practice to Reduce Recidivism (2007), https://s3.amazonaws.com/static.nicic.gov/Library/023358.pdf [https://perma.cc/KK8G-WT59]; *see also* PAMELA M. CASEY ET AL., NAT'L CTR. FOR STATE COURTS, USING OFFENDER RISK AND NEEDS ASSESSMENT INFORMATION AT SENTENCING (2011).

160 *See* MODEL PENAL CODE § 6.06(5) note on status of section (AM. LAW INST., Proposed Final Draft 2017) (regarding sentencing).

161 Stephen D. Gottfredson & Don M. Gottfredson, *Accuracy of Prediction Models*, *in* CRIMINAL CAREERS AND "CAREER CRIMINALS" 212, 247 (Alfred Blumstein et al. eds., 1986).

162 John Monahan, *A Jurisprudence of Risk Assessment: Forecasting Harm Among Prisoners, Predators, and Patients*, 92 VA. L. REV. 391, 406 (2006).

risks that individual offenders pose to public safety" to be incorporated into sentencing guidelines, but only in order to grant more lenient sentences to comparatively lower risk individuals.[163] The Code also calls for needs assessments to match offenders with rehabilitative and treatment interventions.[164]

One concern is with the predictive accuracy of risk assessment. For example, predicting more serious offenses is more challenging than predicting low-risk offenders.[165] The thresholds for categorizing individuals as higher or lower risk themselves must be set and doing so raises significant policy questions. A second concern is that risk assessment may not make public the factors relied upon or how they are weighted. The Model Penal Code recommends that risk-assessment tools be reviewed for their reliability, and that they be considered at the discretion of the sentencing judge.[166] As a result, the defendant can challenge the findings of an assessment "in open court" and can "contest any adverse findings."[167] Certain private software used by judges, for example, apparently relies on, in addition to static factors such as age and criminal history, socioeconomic and family factors.[168] Such factors may strongly correlate with race.[169]

Thus, a related concern is with taking into account invidious factors, whether directly or indirectly. Sonja Starr has argued that explicitly taking gender into account also violates the Equal Protection Clause.[170] Others have countered that use of gender as a factor does not raise constitutional concerns, because risk-assessment recommendations are advisory, and because, as the Model Penal Code notes, gender is highly predictive.[171] Models may also take into account factors that are themselves highly correlated with race and ethnicity.[172] In

---

163 *See* MODEL PENAL CODE § 6B.09(2) (AM. LAW INST., Proposed Final Draft 2017) (regarding sentencing).

164 *Id.* § 6B.09(1).

165 *Id.* § 6B.09(1) note on section ("From an actuarial perspective, attempts to identify persons of low recidivism risk are more often successful than attempts to identify persons who are unusually dangerous."). *See* Richard Berk & Justin Bleich, *Statistical Procedures for Forecasting Criminal Behavior: A Comparative Assessment*, 12 J. CRIMINOLOGY & PUB. POL'Y 513, 515 (2013).

166 *See* MODEL PENAL CODE: § 6B.09(1) (AM. LAW INST., Proposed Final Draft 2017) (regarding sentencing).

167 *Id.* § 6B.09 note on section.

168 *See Northpointe Software Suite*, NORTHPOINTE, http://www.equivant.com/solutions/case-management-for-supervision [https://perma.cc/U38Y-2W23].

169 *See* Monahan & Skeem, *supra* note 63.

170 *See* Starr, *supra* note 25, at 824.

171 *See* Monahan, *supra* note 162, at 431.

172 *See* Michael Marcus, *Sentencing Support Tools: User Manual for Judges*, SMART SENT'G

the future, machine learning may be used so that a system adapts and "learns" over time which information is more predictive, but there as well, the concern that discrimination would result is important and already the subject of policy debate.[173]

Jurisdictions can adopt transparent risk-assessment tools and validate them over time. Perhaps the most prominent approach has been adopted in Virginia, the first state to use an actuarial risk-assessment tool to identify and divert low-risk offenders for drug and property offenses, and the state sentencing commission has monitored and assessed data on recidivism to improve the predictive quality of its measures.[174] However, recent work has shown that judges do not consistently apply that risk assessment in sentencing, raising questions regarding not just the design of risk assessment but also how well it is used in practice by officials with discretion.[175] Much more work needs to be done to examine how officials make decisions using risk assessment.

The use of risk assessment also raises questions concerning the purposes of punishment. Scholars have argued that risk is a legitimate consideration in sentencing, in part because it is also relevant to culpability and retribution; on a purely retrospective retributive approach, however, forward-looking considerations of risk are not relevant.[176] More broadly, this problem raises the question taken up in Part III: What evidence should criminal justice interventions be based on, and how should it be analyzed?

III. TOWARD AN EVIDENCE-INFORMED CRIMINAL JUSTICE SYSTEM

Criminal justice has persistently lacked adequate data to inform policy.[177] Evidence cannot inform criminal justice if there is not good evidence. Still worse, there is the concern with the quality of what

---

7, 10 (July 28, 2009), http://smartsentencing.com/2009%20judge%20instruction%20manual.pdf [https://perma.cc/86SJ-BLLU].

173 *See* Richard Berk & Jordan Hyatt, *Machine Learning Forecasts of Risk to Inform Sentencing Decisions*, 27 FED. SENT'G REP. 222 (2015); Aziz Z. Huq, *Racial Equity in Algorithmic Criminal Justice*, 68 DUKE L.J. (forthcoming 2019).

174 *See* BRIAN J. OSTROM ET AL., NAT'L CTR. FOR STATE COURTS & VA. CRIMINAL SENTENCING COMM'N, DOCUMENT NO. 196815, OFFENDER RISK ASSESSMENT IN VIRGINIA: A THREE-STAGE EVALUATION 25 (2002); 2010 VA. CRIM. SENT'G COMMISSION ANN. REP. 38–41.

175 *See* Garrett & Monahan, *supra* note 24; John Monahan, Anne Metz & Brandon L. Garrett, *Judicial Appraisals of Risk Assessment at Sentencing*, 36 BEHAV. SCI. & L. (forthcoming 2018) (on file with the author).

176 *See* Monahan, *supra* note 162, at 392–93.

177 NAT'L RESEARCH COUNCIL, STRENGTHENING THE NATIONAL INSTITUTE OF JUSTICE 9 (Charles F. Wellford et al. eds., 2010).

data is collected, including whether it is complete, consistent, too narrowly focused, or outright biased.[178] This Part will discuss persistent concerns about whether empirical research on existing data is well designed.[179] An additional set of questions asks whether institutional actors appropriately implement these methods in practice. An evidence-informed framework poses real challenges for criminal justice actors used to relying on traditional discretion and methods.[180] There can be perverse distorting effects or biases to relying on seemingly neutral data.[181] The challenges that this new revolution poses are that evidence-informed approaches can lead to decisions based on what can be quantified but neglecting patterns of bias that arise from factors that are not quantified or transparent.[182] Relatedly, the instruments or methods may be of the type that judges, lawyers, and jurors do not understand. Across each of these problem areas, the common problem is the interface between data and individual decisionmakers.

A. Inadequate Data Collection

A pervasive and persistent problem in criminal justice has been lack of adequate data across local jurisdictions and a lack of adequate research using sound designs to study these data.[183] The National Research Council issued a report in 2010 with sweeping recommendations for improving the federal role in researching criminal justice.[184] One common criticism of those federally funded studies has been the lack of experimental or quasi-experimental designs permitting evaluation of outcomes.[185] A separate report assessing the Bureau of Justice Statistics data collection noted the need for improved data collection, but also noted the "general difficulty of measurement in the justice system," particularly where state courts systems "vary strongly in their accessibility and sophistication" of their data collection.[186] The Bureau has operated statistical analysis centers to assist with improved data collection in criminal justice.[187]

---

178 *See id.*

179 *See* Weisburd et al., *supra* note 61, at 9.

180 *See* Roth, *supra* note 81, at 1289–90 (describing the challenge that an evidence-based framework imposes by restraining judicial discretion).

181 *See* Ferguson, *supra* note 81, at 401–02.

182 *See id.*

183 *See* Klingele, *supra* note 80, at 558.

184 *See* NAT'L RESEARCH COUNCIL, *supra* note 177, at 3–8.

185 *See id.* at 78.

186 NAT'L RESEARCH COUNCIL, ENSURING THE QUALITY, CREDIBILITY, AND RELEVANCE OF U.S. JUSTICE STATISTICS 7 (Robert M. Groves & Daniel L. Cork eds., 2009).

187 *Id.* at 43.

With inadequate data across jurisdictions, much of the research has examined data from the particular jurisdictions that have been willing to share that information with researchers.[188] Such data may be generalizable in some settings, but in other settings it may not. The memory of an eyewitness is not different in Houston as compared with Denver. The use of a stop-and-frisk policy, however, based on police practices, neighborhood characteristics, and crime patterns, may be quite different. The effectiveness of a drug treatment program may be perfectly generalizable in theory but not in practice, if it relies on local social services that differ across jurisdictions.

An additional concern in the criminal justice setting is that many agencies that do collect data do not make it public or share it with researchers. Police agencies may assess "hot spots" for purposes of policing or review body-camera footage to supervise officers and gather evidence, but they may not share these data with others. Police agencies may be reluctant to permit randomized trials, as is done in medicine, due to concerns about what the results might show, concerns about feasibility, or ethical concerns about harm to the "placebo" population that receives a different type of criminal justice "treatment."

These obstacles to research remain, but there is some progress because of the pervasive interest in collecting and analyzing data, and the accompanying need for researchers to assist in such analyses. More police agencies now, for example, have in-house data specialists. Federal funding through the Smart Policing Initiative has provided resources and training for agencies to hire analysts and then fund studies to assess the results.[189] There is now an International Association of Crime Analysts.[190] Private foundations have supported the creation of labs to study law enforcement and other government data.[191] That said, unavailability of data and concerns with poor data collection remain endemic.

---

188 *See id.* at 150.

189 *See* Erin Richey, *How Data Analysis Helps Police*, FORBES (June 3, 2014, 3:22 PM), https://www.forbes.com/sites/emc/2014/06/03/data-analysis-helps-police-departments-fight-crime [https://perma.cc/93GS-FXPN].

190 *See What Crime Analysts Do*, INT'L ASS'N CRIME ANALYSTS, https://www.iaca.net/dc_analyst_role.asp [https://perma.cc/S9SR-KHEQ].

191 The Lab @ DC is an example. *See* LAB @ DC, http://thelab.dc.gov [https://perma.cc/E39A-3AZ9].

B. *Interdisciplinary Research and Systematic Reviews*

A crucial safeguard against poorly designed or misinterpreted studies or generalizing from results in one jurisdiction, or potentially different conditions in another jurisdiction, is not just that the data and methods be sound but that systematic reviews be conducted to ensure consistency of results. Consistent and clear standards for conducting studies enable systematic reviews and comparison of results, which have been crucial in the evidence-based medicine context.[192] There is no criminal justice equivalent to the Cochrane Collaboration or the other efforts put into systematic reviews in the medical context.[193] The Campbell Collaboration, an effort to encourage systematic reviews in other contexts, has collected around a hundred criminal justice-related reviews.[194]

In areas in which systematic reviews have been conducted, they have sometimes shed important light on general phenomena related to criminal justice. For example, a federal review of studies concerning death sentencing in the United States concluded that there was strong evidence of racial bias in death sentencing.[195] Another review of studies concerning deterrence concluded that there was no evidence, in contrast, that the death penalty does or does not deter.[196] Those studies may have at least influenced policy debates in the area. In the eyewitness-memory area, several meta-analyses have been relied on by courts and researchers in their assessments of what improvements are needed to police lineup procedures.[197] In general, outside limited areas like those examples, no such systemic reviews exist, much less systemic reviews that meet standards of the Cochrane Collaboration.

Whether or not evidence-informed policy is generalizable outside a jurisdiction, the uses of data can and should be tested. Empirical approaches that rely on machine learning algorithms raise more challenging questions, since they adapt to data over time. Transparency, if attainable, may not help to assess the quality of the machine decision-making. Machine learning has the potential to advance the accuracy of

---

192 Weisburd et al., *supra* note 61, at 9 (advocating "clearer standards for reporting study findings and . . . recommending an approach to statistical testing that allows researchers to examine directly whether treatments achieve a minimal threshold of program success").

193 *See id.* at 6–7.

194 *See* CAMPBELL COLLABORATION, https://www.campbellcollaboration.org [https://perma.cc/2GDX-4VYU].

195 *See* U.S. GOV'T ACCOUNTING OFFICE, DEATH SENTENCING: RESEARCH INDICATES PATTERN OF RACIAL DISPARITIES (Feb. 26, 1990).

196 *See* NATIONAL RESEARCH COUNCIL, DETERRENCE AND THE DEATH PENALTY 3 (2012).

197 *See* NAT'L RESEARCH COUNCIL OF THE NAT'L ACAD., *supra* note 21.

a wide range of criminal justice decisions.[198] Models should be tested, and the data inputs should be evaluated, as well as the outputs. A new literature and public debate has only begun to engage with challenges that machine learning raises for criminal justice.

A still additional problem, discussed in Part II, is that many of the problems studied and research needed are interdisciplinary in nature. In medicine, systemic review methods form epidemiology-informed research, alongside psychological insights and other scientific methods. Psychology and statistics, among other disciplines, have informed wrongful convictions research. A randomized controlled trial may be the best way to study one type of criminal justice intervention, while a psychological study of judge or jury decisionmaking may be the best way to study another. One strength of the 1967 President's Commission Report was that it recommended that a national institute or center be created to house such an interdisciplinary research program.[199] The National Academy of Sciences has served an important role to bring together researchers from different disciplines, along with criminal-justice practitioners. The Report was correct that such work should be institutionalized. So far it has not been.

C. *Institutional Barriers*

In his landmark article, *The Pathological Politics of Criminal Law*, William Stuntz observed that though the tough-on-crime era might have been starting to recede, if the same institutional power dynamics persisted, then police and particularly prosecutors would continue to dominate the practice of criminal justice in the United States.[200] Perhaps the evidence-informed turn in criminal justice has only followed the same timeworn institutional grooves.[201]

The federal courts have largely been unreceptive to empirical research regarding criminal justice. After all, the U.S. Supreme Court has set out approaches indifferent to empirical findings, in areas ranging from the death penalty, in its opinion in *McCleskey v. Kemp*;[202] to eyewitness identifications, in its failure to reconsider *Manson v.*

198 *See generally* RICHARD BERK, CRIMINAL JUSTICE FORECASTS OF RISK: A MACHINE LEARNING APPROACH (2012).

199 *See* PRESIDENT'S COMM'N ON LAW ENF'T & ADMIN. OF JUSTICE, *supra* note 1, at 271.

200 *See* Stuntz, *supra* note 8, at 505, 510 ("The current tough-on-crime phase of our national politics will someday end; indeed it seems to be ending already, as the current controversies over the death penalty and racial profiling suggest.").

201 For an account of this phenomenon in the use of DNA technology, see generally Kerry Abrams & Brandon L. Garrett, *DNA and Distrust*, 91 NOTRE DAME L. REV. 757 (2015).

202 481 U.S. 279 (1987).

Brathwaite;[203] to policing, in its failure to regulate police use of force or stop-and-frisk.[204] Tracey Meares and Bernard Harcourt have called for "a new generation of criminal procedure jurisprudence, one that places empirical and social scientific evidence at the very heart of constitutional adjudication."[205] As described in Part II, that has not happened, for the most part, in the courts. Instead, a wide range of criminal justice actors have adopted new practices that have outstripped constitutional criminal procedure.[206] Perhaps the courts will over time further embrace scientific research in criminal justice. State courts, as described in Part II, have done so in areas ranging from eyewitness identification practices to the creation of alternative courts. That said, courts should also carefully consider whether evidence-informed practices threaten individual constitutional rights.

One concern is that existing evidence-informed interventions have been limited in their scale, making them more difficult to assess and of limited impact if successful. In the area of drug courts, for example, the concern is that those defendants most receptive to treatment may be referred to the courts, but those most in need of rehabilitation may not be taken.[207] More effective treatment may be far more expensive.[208] Many reforms to prevent wrongful convictions that have been broadly adopted have been inexpensive, such as changing lineup policies or videotaping interrogations.[209] In contrast, more expensive but less incremental reforms, like barring the use of coercive interrogation techniques or creating agencies tasked with investigations of claims of innocence, have rarely been seriously considered in the United States.[210] Improving use of forensic evidence faces chal-

---

203 432 U.S. 98 (1977).

204 *See McCleskey*, 481 U.S. at 317–18; *Manson*, 432 U.S. at 116; Brandon L. Garrett et al., *The American Death Penalty Decline*, 107 J. CRIM. L. & CRIMINOLOGY 561, 608 (2017).

205 Meares & Harcourt, *supra* note 10, at 735.

206 James S. Liebman & David Mattern, *Correcting Criminal Justice Through Collective Experience Rigorously Examined*, 87 S. CAL. L. REV. 585, 599 (2014) (recommending an "iterative and data-driven strategy" toward criminal justice).

207 Jessica M. Eaglin, *Against Neorehabilitation*, 66 SMU L. REV. 189, 213 (2013) (describing a concern that "drug courts frequently fail to address the offender populations most in need of treatment" and a concern with a "cherry pick[ing]" mentality).

208 Christopher T. Lowenkamp et al., *The Risk Principle in Action: What Have We Learned from 13,676 Offenders and 97 Correctional Programs?*, 51 CRIME & DELINQ. 1, 12–13 (2006).

209 *See Policy Reform*, INNOCENCE PROJECT, https://www.innocenceproject.org/policy [https://perma.cc/EH87-5PZR].

210 *See Conviction Integrity Units, Exonerations in 2016*, NAT'L REGISTRY EXONERATIONS 1–2 (Mar. 2017), https://www.law.umich.edu/special/exoneration/Documents/CIUs%202016%20Report.pdf [https://perma.cc/NR7D-B9SE].

lenges in our "antiquated criminal justice system," as Erin Murphy puts it.[211]

> As the 2015 report critiquing the JRI states:
>
> Some of the chief impediments to reducing the overuse of state prison are the structural disincentives (financial and risk) inherent in current law enforcement and corrections systems. If localities seek to develop alternative approaches to state prison, it is the localities which must bear the financial burden of establishing and maintaining those alternatives, which discourages local innovation and reinforces the easier and cheaper (to localities) option of prison, where the state picks up the costs.[212]

Changing power dynamics to focus on evidence over discretion may also proceed slowly. Then again, conviction integrity units have spread among prosecutors. Death sentencing has dramatically changed due to actions by prosecutors.

Where criminal justice actors themselves generate the data needed to assess criminal justice policy, there is the persistent concern that policymakers can "fudge or nudge the science," as Meares and Harcourt put it.[213] Klingele warns of "the danger of overselling the present state of knowledge."[214] Many have raised concerns over exacerbating racial bias, regarding predictive policing, sentencing,[215] and risk-based approaches toward incarceration.[216] The hope is that greater use of evidence can illuminate bias better than reliance on traditional discretion; the danger is that new forms of bias will go undetected.

One model for thinking more systematically about the relationships between the different stages in the criminal justice process and the different actors involved is the sequential intercept model used in the mental health setting.[217] This Essay has described evidence-in-

---

211 Erin Murphy, *The Mismatch Between Twenty-First-Century Forensic Evidence and Our Antiquated Criminal Justice System*, 87 S. CAL. L. REV. 633, 633 (2014).

212 AUSTIN ET AL., *supra* note 84, at 10.

213 Meares & Harcourt, *supra* note 10, at 797.

214 Klingele, *supra* note 80, at 576.

215 *See* HARCOURT, *supra* note 25; Oleson, *supra* note 157, at 1395–98; Starr, *supra* note 25, at 819.

216 *See generally* Eaglin, *supra* note 207, at 210–22.

217 Mark R. Munetz & Patricia A. Griffin, *Use of the Sequential Intercept Model as an Approach to Decriminalization of People with Serious Mental Illness*, 57 PSYCHIATRIC SERVICES 544, 544 (2006) ("The Sequential Intercept Model provides a conceptual framework for communities to use when considering the interface between the criminal justice and mental health systems as they address concerns about criminalization of people with mental illness. The model

formed interventions that variously have informed arrest practices, criminal investigations, pretrial decisions, trial practice, and postconviction remedies. In the mental health setting, the sequential intercept model maps out how persons with mental illness should be identified and intercepted early on, at the time of arrest or earlier, to prevent them from entering deeper into the criminal justice system. The focus is on crime prevention, diversion, and treatment, and the focus is systemic, centering on each stage in the process to prevent individuals from cycling through the criminal justice system. The same systematic approach could animate criminal justice reforms more broadly.

CONCLUSION

The new turn toward evidence-informed criminal justice has not yet realized the hopes of the drafters of the 1967 President's Commission Report. A centralized and independent scientific agency, like those drafters called for, is still desperately needed. That said, there has been a remarkable transformation in the direction of openness and use of data to inform criminal justice policy. The growing effort to use empirical data to inform the entire criminal justice process is ambitious and raises still larger questions, many of which do not yet have good answers. We should not view objections to particular types of evidence-informed interventions, like concerns about predictive policing or sentencing, in isolation. A more systematic approach, like the sequential intercept model in mental health, is needed. A national agency might coordinate such work, but none exists.

Going forward, policymakers and researchers can work toward the goal of expanding the evidence base, as well as the use of more systematic methods of analysis. There is a deep need to collect evidence beyond the current interests of the chief institutional actors. While police may want to maximize on arrests, they need to account for direct and collateral costs of those arrests, disparities in patterns of arrests, and outcomes of arrests. Prosecutors may want to maximize felony convictions and sentences, but they should account for the accuracy and quality of those convictions and sentences and the broader costs that they impose. Systematic reviews will be particularly important in our fragmented criminal justice system, where policies are often adopted piecemeal. Interdisciplinary and multidisciplinary approaches are helpful in many research settings, and this is particularly true in criminal justice research. A range of disciplines will offer im-

envisions a series of points of interception at which an intervention can be made to prevent individuals from entering or penetrating deeper into the criminal justice system.").

portant insights, including the use of economics to study costs and benefits, psychological research to study behavior of criminal justice actors, and medical research to study the efficacy of mental health and drug-treatment interventions.

As data is collected more comprehensively, new questions will arise regarding the interaction of evidence-informed practices with each other. If risk-based instruments are used at sentencing, then we must study how they interact with data-oriented approaches by the police who choose whether to arrest offenders in the first instance. Risk may be assessed—but we need much more information about how risk of offending can be reduced through needs assessment and rehabilitative programs. We must study whether rehabilitation programs magnify disparities in outcomes in sentencing or instead reduce them. We must study whether forensic and other new technologies distort whom police monitor and arrest, or how prosecutors choose to prosecute. We must study how biases flowing from the police's or prosecutor's feedback affect how that evidence is analyzed in the laboratory. Such interactions are only beginning to be brought forward as relevant concerns, much less the subject of research.

The evidence-informed criminal justice revolution is just beginning. Time will tell whether the rise in the collection and use of criminal justice data puts us in a brave new world or a more just world.