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Defending Data

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ARTICLES

DEFENDING DATA

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ABSTRACT

Defending Data proposes a data-driven, systems-based approach to improving public defense in America. Public defenders represent millions of defendants every year. Yet public defense remains a largely data-less enterprise, a black box of discretionary decisions disconnected from any systemic analysis about the relationship between defender practices and case outcomes. Defending Data adopts a novel approach to the crisis of public defense. Building off of the successful implementation of system-based approaches in other complex, high-risk industries such as aviation and medicine, Defending Data explains how defenders can develop a data-driven systems approach to public defense.

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INTRODUCTION

Public defenders represent millions of defendants every year.[1] Yet public defense remains a largely data-less enterprise, a black box of discretionary decisions disconnected from any systemic analysis about the relationship between defender practices and case outcomes.[2] No data systems record and analyze the factors that increase legal risk or improve attorney performance. Instead, public defenders trust that their diligence and zeal will optimize client outcomes.

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1. DONALD J. FAROLE, JR. & LYNN LANGTON, U.S. DEP'T OF JUSTICE, BUREAU OF JUSTICE STATISTICS, NCJ 228229, CENSUS OF PUBLIC DEFENDER OFFICES, 2007: STATE PUBLIC DEFENDER PROGRAMS, 2007 (Sept. 2010), http://www.bjs.gov/content/pub/pdf/spdp07.pdf; DONALD J. FAROLE, JR. & LYNN LANGTON, U.S. DEP'T OF JUSTICE, BUREAU OF JUSTICE STATISTICS, NCJ 231175, CENSUS OF PUBLIC DEFENDER OFFICES, 2007: COUNTY-BASED AND LOCAL PUBLIC DEFENDER OFFICES, 2007 (Sept. 2010), http://www.bjs.gov/content/pub/pdf/clpdo07.pdf.

2. *See, e.g.*, Ronald F. Wright & Ralph A. Peeples, *Criminal Defense Lawyer Moneyball: A Demonstration Project*, 70 WASH. & LEE L. REV. 1221, 1230 (2013) (recognizing that while "a few public defender services collect agency-wide statistics that track levels of attorney activity and early contact with clients, such as frequency of visitation with clients during the earliest phases of the representation," most have no systemic data collection system); Marea Beeman, *Using Data to Sustain and Improve Public Defense Programs*, JUST. MGMT. INST. 1 (Aug. 31, 2012), http://texaswcl.tamu.edu/reports/2012_JMI_Using_Data_in_Public_Defense.pdf [hereinafter Beeman, *Using Data*] ("Despite the value that data have for improving indigent defense, relatively little is known nationally about the types of data typically collected by defenders, how these data are managed and analyzed, and how best to use data."). *But see* James M. Doyle, *Learning from Error in American Criminal Justice*, 100 J. CRIM. L. & CRIMINOLOGY 109, 113 (2010) (characterizing Innocence Commissions as preliminary collaborative efforts to "mobilize the experiences of medicine and aviation" by gathering data about criminal justice error in order to reduce future error). Doyle urges, as we do, a "sustained *practice* of learning from error." *Id.* at 110. However, whereas Doyle urges collaboration among criminal justice stakeholders, we argue that the challenges of adversarial practice require defenders to develop a systems approach that focuses on improving client outcomes, rather than broader criminal justice goals, such as accuracy and public safety. *See infra* Part II.C.1.

While data increasingly influence the delivery of services in high-risk industries such as medicine, aviation, and engineering, public defenders have largely resisted systematized, data-driven approaches to improving the delivery of indigent defense services.[3] When public defenders collect data, they generally do so at the behest of hostile legislatures or regulatory agencies that measure efficiency rather than effectiveness. Instead of assembling empirical evidence about best practices, public defenders rely on experience, gut instinct, and individual talent.[4] The prevailing ethos remains that defending is "art," not science, and data is anathema to the

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3. *See* James M. Anderson & Paul Heaton, *How Much Difference Does the Lawyer Make? The Effect of Defense Counsel on Murder Case Outcomes*, 122 YALE L.J. 154, 209 (2012) ("Other professions and industries . . . appear to be far ahead of the legal profession in trying to design systems that do not depend upon the characteristics of the individual professional to reach a reliable outcome. The legal profession's heroizing of the fiercely independent solo practitioner may exacerbate this danger and serve as an obstacle to a more systems-based approach." (footnotes omitted)).

4. There is, however, an emerging interest in data-driven practice among academics and policymakers. For instance, the 2014 American Society of Criminology Conference featured several sessions on data analysis and outcome assessment in indigent defense. Papers from this conference are available in the 2015 *Miscarriages of Justice* volume of the *Albany Law Review*, which is jointly sponsored with the SUNY University at Albany's School of Criminal Justice. These six articles address the "new community of social scientists, legal scholars, practicing defenders, government employees, and others, all of whom are dedicated to research and data in the arena of public defense." Andrew Lucas Blaize Davies, *Editor's Introduction: How Do We "Do Data" in Public Defense?*, 78 ALB. L. REV. 1179, 1183 (2015).

Additionally, Professors Janet Moore and Andrew Davies have formed the Indigent Defense Research Association, a national organization of researchers and practitioners dedicated to collecting, developing, and implementing data-driven approaches to indigent defense. *See also* Cara H. Drinan, *Getting Real About Gideon: The Next Fifty Years of Enforcing the Right to Counsel*, 70 WASH. & LEE L. REV. 1309, 1323 (2013) ("The National Legal Aid & Defender Association (NLADA) has developed a committee of academics and practitioners whose charge is to identify best practices regarding defender data collection and to disseminate this information nationally."); Jennifer E. Laurin, *Gideon By the Numbers: The Emergence of Evidence-Based Practice in Indigent Defense*, 12 OHIO ST. J. CRIM. L. 325, 336 (2015) ("Imagine a research environment in which criminologists not only disagreed on whether arrests prevented crime, but also on whether crime prevention was a proper quality metric for policing, or one in which not only was the link between incarceration and nonrecidivism unknown, but the value of non-recidivism disputed."). In addition, the Department of Justice, through the National Institute of Justice and the Bureau of Justice Affairs, has begun funding grants for pilot projects that focus on data and evidence-driven projects. *See, e.g., Indigent Defense Research*, NAT'L INST. JUST., http://www.nij.gov/topics/courts/indigent-defense/Pages/research.aspx (last visited June 28, 2015); *Answering Gideon's Call: National Assistance to Improve the Effectiveness of Right to Counsel Services FY 2013 Competitive Grant Announcements*, U.S. DEP'T JUST. (Mar. 21, 2013), https://www.bja.gov/Funding/13AnsweringGideonsCallSol.pdf (citing examples of funding grants). *See also* JAMES DOYLE, NAT'L INST. OF JUSTICE, NCJ 247141, MENDING JUSTICE: SENTINEL EVENT REVIEWS 3–5 (2014), http://www.nij.gov/topics/justice-system/pages/mending-justice.aspx [hereinafter DOYLE, MENDING JUSTICE]; Marea Beeman, *Basic Data Every Defender Needs to Track: A Toolkit for Defender Leaders*, NAT'L LEGAL AID & DEFENDER ASS'N 5–7 (Oct. 27, 2014), http://www.nlada100years.org/node/16310 [hereinafter Beeman, *Basic Data Toolkit*].

complex, fact-specific, and human considerations of a particular case.[5]

This Article challenges defenders to rethink their attitudes about data collection and performance measures. While data alone canno† perfect a single, grand solution, a data-driven systems approach has revolutionized other high-risk practices, from trauma surgery to space travel.[6] The legal profession is also beginning to embrace a data-driven pursuit of efficiency and improvements.[7] Scholars have applied "Moneyball" inspired statistical analysis to legal practice.[8] The innocence movement and law professors such as Brandon Garrett have launched a number of studies designed to reduce the errors that contribute to wrongful convictions.[9] However, there has been no widespread effort to develop a data-driven approach to the highly adversarial practice of public defense, in part because public defense presents unique challenges for a data-driven systems approach.[10] In public defense, positive outcomes are defined by client interests, rather than by societal interests in accuracy or public safety. A wide range of causal factors contributes to public defender outcomes; many of those factors are

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5. In this regard, the state of public defense reflects a larger criminal litigation culture in which "everyone in the system agrees that mistakes come from bad apples and that litigation at the end of this process is well-designed to find them." Doyle, *supra* note 2, at 119. For further discussion of the operator-error approach to improving outcomes, see *infra* Part II.A.

6. See *infra* Part II for a discussion of how various high-risk professions have adopted systems approaches to optimize outcomes.

7. *See infra* Part II.C.1. *See generally* Joe Dysart, *How Lawyers are Mining the Information Mother Lode for Pricing, Practice Tips and Predictions*, ABA J. (May 1, 2013, 10:20 AM), http://www.abajournal.com/magazine/article/the_dawn_of_big_data/ (discussing how the legal profession is taking on a more data-driven approach); Jennifer Smith, *Should Lawyers Fear Big Data, or Embrace It?*, WALL ST. J. (Sept. 24, 2013, 6:24 PM), http://blogs.wsj.com/law/2013/09/24/should-lawyers-fear-big-data-or-embrace-it/.

8. Wright & Peeples, *supra* note 2, at 1222–23 (discussing whether it is possible to apply the *Moneyball* technique of looking to "statistical measures of [baseball] player quality" to criminal defense).

9. *See, e.g.*, BRANDON L. GARRETT, CONVICTING THE INNOCENT: WHERE CRIMINAL PROSECUTIONS GO WRONG (2011) (discussing the various causes of wrongful convictions); Brandon L. Garrett, *Judging Innocence*, 108 COLUM. L. REV. 55, 58–59 (2008) (presenting "the results of an empirical study that examines how our criminal system handled, from start to finish, the cases of the first 200 persons exonerated by post-conviction DNA testing in the United States"); Brandon L. Garrett, *Aggregation in Criminal Law*, 95 CALIF. L. REV. 383, 401 (2007) ("Data available from a comprehensive study of death penalty verdicts shows that both egregiously incompetent defense counsel and prosecutorial suppression of evidence are frequent and persistent causes of capital reversals.") [hereinafter Garrett, *Aggregation in Criminal Law*]; Jon B. Gould, Julia Carrano, Richard Leo & Joseph Young, *Predicting Erroneous Convictions: A Social Science Approach*, NAT'L INST. CORRECTIONS (Dec. 2012), https://www.ncjrs.gov /pdffiles1/nij/grants/241389.pdf.

10. Notably, however, some scholars have proposed "informal practice guidelines" to "improve resource allocation" in public defense. *See, e.g.*, Darryl K. Brown, *Defense Attorney Discretion to Ration Services and Shortchange Some Clients*, 42 BRANDEIS L.J. 207, 215 (2004) (proposing and advocating the use of informal practice guidelines).

beyond defenders' knowledge or control. Nevertheless, we believe that public defender organizations can modify the data-driven systems approach to improve outcomes for poor people charged with crimes. This Article explains how to develop the theory and practices necessary for the successful collection and analysis of public defender data.[11]

Part I describes the data deficit in public defense. A surfeit of data is collected about public defender budgets and caseloads.[12] However, there are no data systems that systematically collect and analyze the causal and correlative relationships between defender practices and case outcomes. Stories about defender errors—from pretrial investigation to post-trial sentencing—pervade case law and legal scholarship.[13] Yet there is no empirical evidence about the prevalence of these errors and the precautions that might cure them. And while many external factors—from case facts to prosecutorial policies—influence case outcomes, public defenders have no empirical information about those influences and are therefore ill-equipped to develop responsive practices. Part I also discusses the systemic, technological, and cultural reasons for this public defense data void. Resource constraints and technological limitations account for some of the data gap. However, as Part I explains, the culture of public defense may also substantially contribute to this data-less environment.

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11. As former public defenders, we are aware of the daily pressures, frustrations, and impossibilities of the public defender's job. Andrew Ferguson was a supervising attorney at the Public Defender Service for the District of Columbia. Pamela Metzger was an associate attorney in the Federal Defender Division of the Legal Aid Society of New York. We know that public defenders are hardworking and under-appreciated professionals who face unrelenting challenges. Indeed, after Hurricane Katrina, Professor Metzger sat on the board of New Orleans's Public Defender and ran a data-driven project assessing the legal needs of defendants evacuated during Hurricane Katrina. And, between 2009 and 2013, Professor Metzger served on the Louisiana Public Defender Board; her work included the development of policies and practices for data collection and analysis. Adopting a systems approach to public defense runs against our own training and sensibilities as public defense "artists." However, other high-stakes professions, such as aviation and medicine, have dramatically improved outcomes by implementing a data-driven "systems approach" to their work. We believe public defenders can do the same.

12. These data, however, are often woefully inaccurate. In addition, lack of standardized data measures or even a uniform terminology inhibits the relevance of the data for cross-jurisdictional comparison.

13. *See generally* Jenny Roberts, *Too Little, Too Late: Ineffective Assistance of Counsel, the Duty to Investigate, and Pretrial Discovery in Criminal Cases*, 31 FORDHAM URB. L.J. 1097, 1109 (2004) (discussing pretrial errors); Keith Cunningham-Parmeter, *Dreaming of Effective Assistance: The Awakening of Cronic's Call to Presume Prejudice from Representational Absence*, 76 TEMP. L. REV. 827, 843 (2003) (discussing trial errors or failures); Sarah French Russell, *Reluctance to Resentence: Courts, Congress, and Collateral Review*, 91 N.C. L. REV. 79, 89 (2012) (discussing sentencing errors); Carissa Byrne Hessick, *Ineffective Assistance at Sentencing*, 50 B.C. L. REV. 1069, 1080 (2009) (discussing sentencing errors).

Part II explains the systems approach to high-stakes activities and explores how public defenders can adapt this approach to the delivery of indigent defense services. The systems approach assumes the incidence of human error and looks to larger organizational systems for both cause and cure.[14] A systems approach creates and maintains an ongoing system for reporting and analyzing risks, errors, performances, and outcomes. Using these data, the systems approach creates a feedback loop that highlights risks, reduces errors, improves performances, and optimizes outcomes.[15] Part II explains how, using a data-driven systems approach, the fields of aviation and medicine substantially improved their safety and efficiency. However, as Part II demonstrates, there are significant differences between public defense and the fields of aviation and medicine. These differences require that a systems approach to public defense be modified to account for the public defender's unique adversarial context and the multi-causal nature of client outcomes.

Part III proposes a systems approach to public defense and, within the context of the current data-less and data-resistant practice, offers a preliminary typology of the data that such a system should collect and analyze. Using concrete examples, the proposal set forth in Part III highlights the importance of developing a data-driven systems approach to public defense that can account for internal and external factors that contribute to outcomes. Part III also emphasizes the importance of developing a systems approach focused on outcomes rather than errors. While a systems approach usually targets the organizational factors that contribute to human error, we believe that a myopic focus on defender error would overlook external causal factors, thereby depriving public defenders of information critical to their ability to plan and execute strategies for client representation. Moreover, a focus on defender error would preclude learning from defender success, overlooking the striking accomplishments of many public defenders who triumph over significant odds.

Keeping the unique defender mission in mind, Part III also addresses the challenges to implementing a data-driven systems approach to public defense. The image of the defender as a rebel, public servant, and hero runs directly against a data-driven approach to defender practice. While

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14. As discussed *infra* Part II.A, the systems approach should be contrasted with the "person approach" to error, which is a characteristic of both the existing attorney disciplinary system and the ineffective assistance of counsel doctrine. *See infra* notes 109–113 and accompanying text.

15. Teresa M. Schreffler, *Systems Approaches to Improving the Quality of Healthcare: Strengths, Weaknesses, and the Ideal Model of Medical Error Reporting*, 53 U. KAN. L. REV. 1249, 1263–64, 1277 (2005).

acknowledging this special, motivating ethos of the public defender, Part III questions the limitations of a self-identity that tolerates both brilliant mistakes and ordinary errors with some frequency.

Part IV offers concrete contextual suggestions about how public defender systems might implement a data-driven systems approach to indigent defense. As Part IV explains, the impetus for data collection and analysis must come from defenders themselves. Drawing on emerging defender practices, and upon the successful implementation of the systems approach in high-stakes industries such as aviation and healthcare, we offer practical suggestions for implementing a data-driven systems approach to outcome improvement in defender practice.

This Article concludes with a call to the indigent defense community to establish national standards for data collection that can be implemented across jurisdictions. Developing a shared vocabulary and framework for the analysis of defender data will be an important first step in reimagining the delivery of public defender services.

I. THE DATA CRISIS IN PUBLIC DEFENSE

A. PUBLIC DEFENSE AS A DATA-LESS PRACTICE

In most areas of the country, the promise of a high-quality public defender system goes largely unfulfilled.[16] More than fifty years after *Gideon v. Wainwright*, defenders still handle too many cases, with too few resources.[17] Defender training is inadequate, expert funding is limited,

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16. Nat'l Right to Counsel Comm., *Justice Denied: America's Continuing Neglect of Our Constitutional Right to Counsel*, THE CONST. PROJECT 1–15 (April 2009), http://www.constitutionproject.org/manage/file/139.pdf; Standing Comm. on Legal Aid & Indigent Defendants, Gideon*'s Broken Promise: America's Continuing Quest for Equal Justice: A Report on the American Bar Association's Hearings on the Right to Counsel in Criminal Proceedings*, AM. BAR ASS'N 19 (Dec. 2004), http://www.americanbar.org/groups/legal_aid_indigent_defendants/ initiatives/indigent_defense_systems_improvement/gideons_broken_ promise.html; AM. BAR ASS'N & NAT'L LEGAL AID AND DEFENDER ASS'N, GIDEON UNDONE: THE CRISIS IN INDIGENT DEFENSE FUNDING (John Thomas Moran ed., Nov. 1982) (discussing the problems created by inadequate funding for indigent defense).

17. *See* Tigran W. Eldred, *Prescriptions for Ethical Blindness: Improving Advocacy for Indigent Defendants in Criminal Cases*, 65 RUTGERS L. REV. 333, 336 (2013) ("The causes of these deep and persistent problems in indigent defense are well known. Invariably, any discussion begins with the underfunding of defense services and the excessive workloads that result. Simply put, lawyers with too many cases and too few resources cannot provide adequate representation to their clients."); Eve Brensike Primus, *Structural Reform in Criminal Defense: Relocating Ineffective Assistance of Counsel Claims*, 92 CORNELL L. REV. 679, 682–83 (2007) ("Deficient trial attorney performance is pervasive in criminal cases. An overwhelming majority of public defenders are catastrophically overworked."); Heidi Reamer Anderson, *Qualitative Assessments of Effective Assistance of Counsel*, 51 WASHBURN

investigations are poorly conducted, plea bargains are rushed, and "justice" remains staggeringly imperfect.[18] There is wide variation in the quality of public defense; defendants receive good or bad representation as a matter of chance, depending on the individual lawyer assigned to represent them.[19]

While defender offices differ in their level of quality and training, poor people accused of crime generally enter a patchwork of underfunded and understaffed public defense systems.[20] Almost everywhere, a relentless funding crisis requires that defenders handle ever-increasing caseloads with ever-dwindling resources.[21] And there are no solutions in sight. [22]

L.J. 571, 571 (2012) ("Public defenders have labored under excessive caseloads for decades. These excessive caseloads often prevent the affected lawyers from providing effective assistance of counsel to their indigent clients."); Cara H. Drinan, *The National Right to Counsel Act: A Congressional Solution to the Nation's Indigent Defense Crisis*, 47 HARV. J. LEGIS. 487, 491 (2010) [hereinafter Drinan, *National Right to Counsel Act*] ("With persistent funding problems come a host of other conditions that generate chronic and pervasive deprivations of the right to counsel. As a result of funding shortfalls, defense lawyers must manage workloads so excessive that it is literally impossible for them to provide effective representation to all (if any) of their clients."); Bruce A. Green, *Criminal Neglect: Indigent Defense from a Legal Ethics Perspective*, 52 EMORY L.J. 1169, 1169 (2003) ("[T]he under-funding of indigent defense also raises a serious and inadequately recognized problem of professional ethics: the systemic neglect of indigent defendants by their appointed lawyers."); Mary Sue Backus & Paul Marcus, *The Right to Counsel in Criminal Cases, A National Crisis*, 57 HASTINGS L.J. 1031, 1031–36 (2006) (profiling examples of overworked and underfunded public defense agencies).

18.   Deborah Leff & Melanca Clark, *Doing Justice to Gideon*, HUM. RTS., Apr. 2013, at 7, 7 ("That a crisis exists today in indigent defense is beyond dispute; poor people often do not have access to counsel, and when they do get an attorney, that lawyer is often overworked, undertrained, undercompensated, and placed in a system that encourages a quick plea bargain and discourages carefully listening to the needs of clients."); Cara H. Drinan, *The Third Generation of Indigent Defense Litigation*, 33 N.Y.U. REV. L. & SOC. CHANGE 427, 430 (2009) [hereinafter Drinan, *Third Generation*] ("Without adequate funding, states and counties cannot provide the fundamental elements of an effective, efficient, high-quality, and ethical public defense system."). *See also id.* at 429 ("In New York, where counties select indigent defense lawyers on a low-bid, flat-fee basis, attorneys are regularly assigned to cases with no regard for their level of training or experience, and the state provides no supervision or monitoring of attorney performance.").

19.   *See* Dick Thornburgh, *A Vigorous and Capable Prosecution and Defense*, 36 CHAMPION, June 2012, at 57, 57 ("While many of the lawyers who defend the accused are talented and dedicated, the quality of representation of criminal defendants is strikingly uneven and too often nowhere near that provided those with the financial resources to engage their own counsel.").

20.   *See generally* Alissa Pollitz Worden, Andrew Lucas Blaize Davies & Elizabeth K. Brown, *A Patchwork of Policies: Justice, Due Process and Public Defense Across American States*, 74 ALB. L. REV. 1423 (2011) (discussing the inconsistent and patchwork nature of indigent defense across jurisdictions); Andrew Lucas Blaize Davies & Alissa Pollitz Worden, *State Politics and the Right to Counsel: A Comparative Analysis*, 43 LAW & SOC'Y REV. 1 (2009) (analyzing the effect that state funding has on indigent defense programs). *See also* Abe Krash, *The Architects of the* Gideon *Decision: Abe Fortas and Justice Hugo Black*, 92 TEX. L. REV. 1191, 1203 (2014) ("Many public defender's offices throughout the country are underfunded and understaffed. The budget crisis in many states has aggravated the problem." (footnotes omitted)); Primus, *supra* note 17, at 686 ("Most public defenders are incredibly overworked and severely underfunded.").

21.   *See, e.g.*, Hurrell-Harring v. State, 930 N.E.2d 217, 222 (N.Y. 2010) (alleging that "the absence of clear and uniform guidelines reasonably related to need has commonly resulted in denials of

Amidst this persistent crisis, public defender systems rarely assess the efficacy of defenders' legal work. Few accountability mechanisms track attorney performance, and fewer still distinguish between competent and deficient performances. Public defender data systems fail to connect case "inputs" (investigations, motions, counseling, and advocacy) to case "outcomes" (convictions, acquittals, pleas, and sentences). As a result, public defender systems are largely data-less environments.

This information deficit means that public defenders have no empirical evidence to guide them in prioritizing effective practices and avoiding common errors. With rare exceptions, even the most passionate and diligent public defender must make hard choices about how to deploy her limited time and scarce resources.[23] Should she file a bond review motion for today's client or an evidentiary motion for tomorrow's trial? Should she draft a sentencing motion for a case she just lost or prepare a

representation to indigent defendants based on the subjective judgments of individual jurists"); Drinan, *National Right to Counsel Act, supra* note 17, at 488 ("Despite voluminous empirical evidence and scholarly research describing the national crisis in indigent defense services, this seemingly intractable crisis persists."); L. Song Richardson & Phillip Atiba Goff, *Implicit Racial Bias in Public Defender Triage*, 122 YALE L.J. 2626, 2631 (2013) ("Indigent defense is in a state of crisis. Defender offices are chronically underfunded, resulting in crushing caseloads. Most offices do not have caseload limits, and those that do regularly surpass them."); Nat'l Right to Counsel Comm., *supra* note 16, at 52 ("Although funding has gone up, it is still woefully insufficient, and many of the same problems exist today, more than four decades later."); Standing Comm. on Legal Aid & Indigent Defendants, *supra* note 16, at iv ("[T]housands of persons are processed through America's courts every year either with no lawyer at all or with a lawyer who does not have the time, resources, or in some cases the inclination to provide effective representation.").

    22. *See, e.g.*, Paul Marcus, *Why the United States Supreme Court Got Some (But Not a Lot) of the Sixth Amendment Right to Counsel Analysis Right*, 21 ST. THOMAS L. REV. 142, 152 (2009) ("Study after study, review upon review, report after report, make certain—with virtually no dissent—that the hope of providing capable lawyers to all poor defendants in criminal cases is not being realized. In spite of enormous sums of money being spent throughout the United States on tremendous numbers of cases, the system of providing counsel across much of our nation is, in a word, broken."); Robert P. Mosteller, *The Sixth Amendment Rights to Fairness: The Touchstones of Effectiveness and Pragmatism*, 45 TEX. TECH L. REV. 1, 4 (2012) [hereinafter Mosteller, *Sixth Amendment*] ("Neither the inadequate provision of resources to the defense nor the relative infrequency of trials is likely to change for the better any time soon. . . . [I]f anything, they are likely to get worse as the need for long-run deficit reduction systemically restricts the resources available to state and local governments . . . ."); Stephen B. Bright, *Legal Representation for the Poor: Can Society Afford This Much Injustice?*, 75 MO. L. REV. 683 (2010); Backus & Marcus, *supra* note 17, at 1045; Robert P. Mosteller, *Protecting the Innocent: Part of the Solution for Inadequate Funding for Defenders, Not a Panacea for Targeting Justice*, 75 MO. L. REV. 931, 954–57 (2010) [hereinafter Mosteller, *Protecting the Innocent*; Benjamin H. Barton & Stephanos Bibas, *Triaging Appointed-Counsel Funding and Pro Se Access to Justice*, 160 U. PA. L. REV. 967, 972–77 (2012).

    23. *See, e.g.*, Kim Taylor-Thompson, *Individual Actor v. Institutional Player: Alternating Visions of the Public Defender*, 84 GEO. L.J. 2419, 2434 (1996) ("Limited funds necessitated choosing cases and issues to which resources would be devoted or from which they would be denied. The competing needs of clients required considering factors beyond those arising in individual cases.").

witness for a case she might win?[24]

Public defender offices as a whole face the same hard choices. Should they spend more money training their attorneys or hiring additional supervisors? Should they prioritize pretrial motions practice over sentencing litigation? Lacking systemic data, defenders cannot distinguish between those practices that produce adverse client outcomes and those that produce optimal client outcomes. Without this data, public defender offices lack empirical mechanisms to identify how to optimize attorney performance, improve client outcomes, and maximize scarce defender resources.[25] In short, defenders do not know what they do not know; all they know for certain is that the system is failing poor people accused of crime.[26]

There is a burgeoning effort to develop data about public defense.[27] However, public defense is a high-volume practice with a low incidence of case review.[28] Most of the available public defender data tracks caseloads and budgets, rather than defender performance and case outcomes.[29] And,

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24.   *See generally* Darryl K. Brown, *Rationing Criminal Defense Entitlements: An Argument from Institutional Design*, 104 COLUM. L. REV. 801, 816 (2004) ("[If] far-less-than-ideal resources are all we can reasonably expect for now; how should lawyers distribute them?").

25.   *See* Wright & Peeples, *supra* note 2, at 1229–30 ("While individual attorney evaluations are important within public defender organizations, the current basis for these evaluations is anecdotal and intuitive. . . . Managers in public defense organizations do evaluate individual attorneys, but they typically do not rely on quantitative measures. When it comes to quantitative measures, these managers more often use data to evaluate defender offices as a whole, rather than relying on statistics to inform their assessment of particular staff attorneys."). *See also* Brown, *supra* note 10, at 217. Professor Brown notes that "[t]rial lawyers often lack information that is important to executing a policy of services allocation." *Id.* He urges criminal defense attorneys to prioritize the representation of innocent defendants and encourages attorneys to rely on "the large and growing literature on the sources of wrongful convictions and of erroneous trial information generally." *Id.* at 218. For reasons discussed *infra* notes 177–180, we believe that the wrongful conviction dataset is inadequate to this task.

26.   Eric H. Holder, Jr., *18th Annual Joseph L. Rauh, Jr. Lecture: University of the District of Columbia David A. Clarke School of Law*, 14 UDC/DCSL L. REV. 3, 6 (2011) ("Our indigent defense system . . . is broken; public defenders in some areas are so overwhelmed that they can spend, at most, an hour per case, many of which present life-altering legal questions and decisions.").

27.   *See infra* Part III.C.3.

28.   The reasons for the lack of review are complex. One structural reality is that plea bargaining resolves over 95 percent of criminal cases, which limits the ability of courts to review criminal cases. Missouri v. Frye, 132 S. Ct. 1399, 1407 (2012). In addition, resource limitations in defender officers impede the ability to institute robust internal reviews by supervisors. Finally, few external auditing organizations exist to investigate whether defender services are providing optimal legal services. As will be discussed throughout this Article, our systems approach attempts to address each of these problems.

29.   *See* ERINN HERBERMAN & TRACEY KYCKELHAHN, U.S. DEP'T OF JUSTICE BUREAU OF JUSTICE STATISTICS, STATE GOVERNMENT INDIGENT DEFENSE EXPENDITURES, FY 2008–2012– UPDATED (Apr. 2015), http://www.bjs.gov/content/pub/pdf/sgide0812.pdf ("In 2012, state governments spent 2.2 billion nationally on indigent defense.").

while hundreds of scholarly articles have examined the crisis of indigent defense,[30] there is limited empirical data about its daily practice.

For example, we know that "the Minnesota state legislature reduced the public defense budget for the 2009 fiscal year by four million dollars, thereby forcing the layoff of twenty-three public defenders. As a result of these layoffs, public defenders in Minnesota are now expected to manage a caseload of an estimated 550 felony cases per year, instead of the 450 felonies per year that each attorney managed prior to the cuts."[31] However, we do not know what legal advocacy was done in any of those 550 felony cases. Nor do we know how Minnesota public defenders should shift their lawyering priorities to effectively handle their increased felony caseloads. Intuitively, lawyers, judges, and scholars surmise that high caseloads are a key structural factor in defender errors. However, "[t]he quality of data available for any given criminal case is shallow and appalling, even though the sheer number of cases is impressive."[32]

Within this overworked and underfunded system, there are no data to suggest how defenders can maximize their scarce resources while improving client outcomes.[33] Defenders lack any empirical knowledge about what they *should* be doing; indeed, defenders often lack any empirical knowledge about what they *are* doing. The collection and analysis of data about defender practices and case outcomes can provide essential tools to remedy this knowledge gap.

Even the most egregious lawyering failures are not catalogued in any structured, analyzable manner.[34] We may know that a lawyer failed to properly inform a client of a plea,[35] but not whether, or how often, that failure has been repeated in other cases across the system. We may know that a lawyer failed to investigate a case,[36] but not whether this omission

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30. *See* sources cited *supra* notes 20–22.

31. Drinan, *National Right to Counsel Act, supra* note 17, at 491.

32. Wright & Peeples, *supra* note 2, at 1233.

33. As noted *infra* notes 176–179 and accompanying text, the limited data identifying causal factors in wrongful convictions are inadequate for the task of improving case outcomes across the larger public defender system. Some scholars have attempted to use anecdotal evidence to identify and assess practices that might improve case outcomes. However, it has been difficult to develop empirical support for their claims.

34. *See* sources cited *supra* note 25.

35. *See, e.g.,* Missouri v. Frye, 132 S. Ct. 1399, 1403 (2012) (holding that defense counsel's failure to inform the defendant of the prosecution's plea offer constituted ineffective assistance of counsel); Lafler v. Cooper, 132 S. Ct. 1376, 1391 (2012) (holding that defense counsel's mischaracterization of the prosecution's plea offer constituted ineffective assistance of counsel).

36. Wiggins v. Smith, 539 U.S. 510, 512 (2003) (holding that defense counsel's failure to investigate stemmed from "inattention" and was thus unreasonable); Williams v. Taylor, 529 U.S. 362,

was isolated or systemic.[37]

Improving client outcomes requires information. Public defender systems need to know what their lawyers do *and* how their lawyers' decisions affect client outcomes. The next section considers some of the obstacles to collecting this data.

B. THE CHALLENGES TO DEVELOPING DATA ABOUT PUBLIC DEFENSE

1. The Absence of Structural Incentives

Public defender organizations operate without significant legal, financial, or political pressure to develop qualitative data about public defender practices and outcomes. In contrast, industries that have robust practices of data collection and analysis developed those practices in part as a response to legal, financial, and political pressures.[38] The aviation and healthcare industries operate under strong structural incentives for risk minimization, error reduction, and outcome improvement. The threat of government regulation and the possibility of costly lawsuits (and the corresponding increase in insurance premiums) drive many risk management practices that might otherwise be considered too expensive.[39]

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363 (2000) (holding that trial lawyer's failure to investigate mitigating evidence was ineffective assistance of counsel).

    37.   *See* Wright & Peeples, *supra* note 2, at 1229–30 (pointing out that known information about public defending is usually anecdotal); Garrett, *Aggregation in Criminal Law, supra* note 9, at 402 ("[T]hough ineffective assistance claims are typically raised only in individual cases, indigent defense is provided by local government, and thus gross deficiencies would be likely across entire localities and states if the statutory funding scheme was deficient. Indeed, data from national studies documenting and analyzing ineffective and under-funded indigent defense counsel shows precisely such systemic ineffectiveness.").

    38.   *See infra* notes 93–106 and accompanying text (describing how public concerns over industrial and transportation safety sparked research into organizational error management).

    39.   *See* David M. Gaba, *Anesthesiology as a Model for Patient Safety in Health Care,* 320 BRIT. MED. J. 785, 785 (2000) (citing the soaring cost of malpractice insurance for anesthesiologists in the United States as a causal factor in that field's data-driven approach to safety); Victor Barley et al., *Letter: Defensive Culture of British Medicine Needs to Change,* 321 BRIT. MED. J. 505, 505 (2000) ("In the United States the insurance industry provided the impetus for the study of adverse events . . . ."); Robert L. Helmreich, *On Error Management: Lessons from Aviation,* 320 BRIT. MED. J. 781, 781 (2000) ("When error is suspected, litigation and new regulations are threats in both medicine and aviation."); Troyen A. Brennan et al., *Incidence of Adverse Events and Negligence in Hospitalized Patients: Results of the Harvard Medical Practice Study I,* 324 N. ENG. J. MED. 370, 370 (1991) ("This increase [in malpractice claims brought against health providers] has precipitated numerous state programs designed to moderate the number of claims and encourage providers to develop quality-of-care initiatives."). *But see* Saul N. Weingart et al., *Epidemiology of Medical Error,* 320 BRIT. MED. J. 774, 775 (2000) ("Data on [medical] risk management also underestimate medical error . . . because there is little association between malpractice claims and medical error."). Standing alone, concerns about liability, litigation and insurance might serve as disincentives for the candid reporting necessary

The same is not true for indigent defense. Despite class action lawsuits and government reports bemoaning the problems of public defense, there is no strong political will in favor of increasing funding or legal reform. Trial judges rarely intervene to identify and address ineffective assistance of counsel.[40] For obvious reasons, prosecutors usually withhold criticism.[41]

The constitutional standard of *Strickland v. Washington* renders most ineffective assistance of counsel challenges unsuccessful vehicles for developing data about the delivery of public defender services for at least four reasons.[42] First, *Strickland* requires prejudice; this means that substandard lawyering without prejudice is not recorded as a constitutional violation.[43] Courts routinely engage in the prejudice inquiry first and then, having determined that there was no prejudice, decline even to explore the question of attorney performance. As a result, *Strickland* case law has failed to develop any significant data about the relationship between public defender practices and case outcomes. Second, *Strickland* presumes attorney effectiveness based on an amorphous (data-less) standard of reasonableness.[44] *Strickland* opinions rarely assess or prescribe

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to a successful data-driven systems approach. Paul Barach & Stephen Small, *Reporting and Preventing Medical Mishaps: Lessons from Non-Medical Near Miss Reporting Systems*, 320 BRIT. MED. J. 759, 759 (2000); Leo Strunin, Maldwyn Morgan & Paul Cartwright, *Rapid Response: Differences Between Anaesthesia and Anaesthesiology*, BRIT. MED. J. (Mar. 18, 2000), http://www.bmj.com/rapid-response/2011/10/28/differences-between-anaesthesia-and-anesthesiology ("The imperative for change in attitude to safety in the United States was severe medico-legal pressures."). However, as discussed *infra* Part II, a successful systems approach accounts for, and changes, those disincentives.

    40. *But see* Jay William Burnett & Catherine Greene Burnett, *Ethical Dilemmas Confronting a Felony Trial Judge: To Remove or Not to Remove Deficient Counsel*, 41 S. TEX. L. REV. 1315, 1316 (2000) ("The judge in the American criminal trial process has an obligation to depart from traditional paradigms of judging and directly intervene when confronted with egregious defense counsel deficiencies. While the scope of that intervention may take various forms, ranging from an ex parte inquiry to the questioning of witnesses or removal of counsel, the nature of the judge's duty remains constant: to accept responsibility for the proper functioning of our legal system.").

    41. Abbe Smith, *Can You Be a Good Person and a Good Prosecutor?*, 14 GEO. J. LEGAL ETHICS 355, 394 (2001) ("[W]hy have I never encountered—or even heard of—a single prosecutor who has come forward to halt a trial in the face of plainly incompetent defense counsel?"); Vanessa Merton, *What Do You Do When You Meet a "Walking Violation of the Sixth Amendment" if You're Trying to Put that Lawyer's Client in Jail?*, 69 FORDHAM L. REV. 997, 1004 (2000); Fred C. Zacharias, *Structuring the Ethics of Prosecutorial Trial Practice: Can Prosecutors Do Justice?*, 44 VAND. L. REV. 45, 66–74 (1991).

    42. Primus, *supra* note 17, at 680–81 ("[T]here is no effective remedy for defendants whose attorneys are constitutionally deficient at trial. Most defendants are unable to challenge their trial attorneys' performance on direct appeal. Rather, they must first complete their appeals—a process that often takes four years or more—before they can present ineffective assistance of trial counsel claims in collateral review proceedings. By that time, most convicted defendants have served their full sentences, giving them little incentive to pursue further challenges." (footnotes omitted)).

    43. Strickland v. Washington, 466 U.S. 668, 687 (1984).

    44. *Id.* at 689 ("A fair assessment of attorney performance requires that every effort be made to

performance norms, much less develop performance and outcome data. Third, *Strickland* focuses on individual cases, treating attorney failure as the rare exception, and excuses error caused by systemic constraints (such as underfunding and overwork) that may prevent public defenders from doing what better-resourced attorneys would do under similar circumstances.[45] Finally, most jurisdictions require defendants to litigate ineffective assistance claims on collateral review, introducing assessment and accountability measures too late to provide an effective remedy.[46] This lag time between lawyering performance, case outcomes, and judicial review means that any *Strickland*-generated data are hopelessly out of date. When *Strickland* fails even to police bad lawyering, how can it hope to generate significant data about its occurrence and impact?[47]

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eliminate the distorting effects of hindsight, to reconstruct the circumstances of counsel's challenged conduct, and to evaluate the conduct from counsel's perspective at the time. Because of the difficulties inherent in making the evaluation, a court must indulge a strong presumption that counsel's conduct falls within the wide range of reasonable professional assistance.").

45. *See generally* Anderson, *supra* note 17, at 578 (discussing *Strickland*'s focus on individual cases).

46. *See* Eve Brensike Primus, *The Illusory Right to Counsel*, 37 OHIO N.U. L. REV. 597, 607 (2011) ("A majority of jurisdictions encourage criminal defendants to wait until state post-conviction review to raise claims of trial or appellate attorney ineffectiveness.").

47. *See* Meredith J. Duncan, *The (So-Called) Liability of Criminal Defense Attorneys: A System in Need of Reform*, 2002 BYU L. REV. 1, 19 (2002) ("First, the *Strickland* court encourages reviewing courts not to speak of incompetent legal representation in many situations, thereby eliminating an opportunity for courts to discuss and put defense lawyers on notice regarding unacceptable lawyering activities. Second, the Court set in place strong presumptions that unnecessarily favor poor lawyering conduct. Further, as a result of *Strickland*, an ineffective assistance of counsel claim is essentially rendered a viable claim available only to the truly innocent criminal defendant. Finally, a *Strickland* challenge requires the cooperation of the attorney about whom the petitioner complains. Any one of these reasons individually makes bringing a successful ineffective assistance of counsel claim—even where one received deplorable legal assistance—an arduous task. Taken together, they make *Strickland* challenges exceedingly difficult to win." (footnotes omitted)); William J. Stuntz, *The Political Constitution of Criminal Justice*, 119 HARV. L. REV. 780, 824 (2006) ("The Justices do not know which defense attorney tactics are most likely to produce defense victories, and which ones are bound to lead to defeat. Probably no one knows, since the answers depend on context, and (not incidentally) on the identity of defense counsel. To the extent that ineffective assistance doctrine requires such judgments, the Justices cannot do what their own doctrine requires." (footnote omitted)); Laurence A. Benner, *When Excessive Public Defender Workloads Violate the Sixth Amendment Right to Counsel Without a Showing of Prejudice*, AM. CONST. SOC'Y FOR L. & POL'Y 2 (Mar. 1, 2011), https://www.acslaw.org/files/BennerIB_ExcessivePD_Workloads.pdf ("Demonstrating prejudice because of an excessive caseload is thus problematic. Even if counsel conducted little or no investigation due to an excessive caseload, for example, how does one determine, sometimes years after the event, what a prompt and thorough investigation would have uncovered? Moreover, if favorable evidence is later uncovered, it is often, as one judge candidly admitted, 'impossible to know' in a post-conviction proceeding what effect the evidence would have had on the jury. Attempting systemic reform through post-conviction ineffective assistance of counsel claims is thus not an effective option.").

Outside institutions such as bar counsel and ethics panels have remained vigilant, but rather toothless in identifying substandard performance.[48] Civil lawsuits and legislative advocacy have spurred reform in some jurisdictions, but the national question of how to create an accountability mechanism to reduce practitioner error has not been answered.[49]

Finally, malpractice claims against defenders offer little opportunity to collect data. First, in some jurisdictions, malpractice claims against public defenders are barred by statutory immunity.[50] Even in the state courts that allow such suits,[51] defendants rarely recover damages.[52] Further, the Supreme Court has disallowed Section 1983 federal civil rights claims against defenders,[53] although federal defenders can still face state malpractice suits.[54] But even with a cause of action, any such civil claims

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48.   *See, e.g.*, Michael S. Frisch, *No Stone Left Unturned: The Failure of Attorney Self-Regulation in the District of Columbia*, 18 GEO. J. LEGAL ETHICS 325, 326 (2005) ("Unfortunately, the volunteer system [to consider ethical violations] has not worked. Cases are kept alive and pending for years."); Jenna C. Newmark, *The Lawyer's "Prisoner's Dilemma": Duty and Self-Defense in Postconviction Ineffectiveness Claims*, 79 FORDHAM L. REV. 699, 731 (2010) ("[W]hile some states require that all findings on ineffective assistance of counsel be reported to the state ethics board, lawyers are rarely disciplined for being ineffective."); Anne M. Voigts, *Narrowing the Eye of the Needle: Procedural Default, Habeas Reform, and Claims of Ineffective Assistance of Counsel*, 99 COLUM. L. REV. 1103, 1125–26 (1999) ("[I]neffective or incompetent counsel may have little to fear from state ethics boards.").

49.   *See* Hurrell-Harring v. State, 930 N.E.2d 217 (N.Y. 2010). *But see* Drinan, *Third Generation*, *supra* note 18, at 440.

50.   Vincent R. Johnson, *Legal Malpractice in a Changing Profession: The Role of Contract Principles*, 61 CLEV. ST. L. REV. 489, 492 n.12 (2013). *See, e.g.*, Osborne v. Goodlett, No. M2003-03118-COA-R3-CV, 2005 WL 1713868, at *3 (Tenn. Ct. App. July 22, 2005) (dismissing a legal malpractice action against a public defender in Tennessee because of statutory immunity); Thorp v. Strigari, 800 N.E.2d 392, 398 (Ohio Ct. App. 2003) (denying a malpractice claim in Ohio because of immunity provided by statute); Dziubak v. Mott, 503 N.W.2d 771, 773 (Minn. 1993) (holding that public defenders are immune from suit in Minnesota). *But see* Coronado Police Officers Ass'n v. Carroll, 131 Cal. Rptr. 2d 553, 564 (Ct. App. 2003) (denying public defenders immunity from malpractice claims in California).

51.   John P. Taddei, *Beyond Absolute Immunity: Alternative Protections for Prosecutors Against Ultimate Liability for § 1983 Suits*, 106 NW. U. L. REV. 1883, 1919 (2012). *See also id.* at 1919 n.252 (citing a number of state court cases discussing the immunity issue).

52.   *See* Jenny Roberts, *Ignorance is Effectively Bliss: Collateral Consequences, Silence, and Misinformation in the Guilty-Plea Process*, 95 IOWA L. REV. 119, 164 (2009) (recognizing that malpractice claims against public defenders are rarely successful); Donald A. Dripps, *Ineffective Assistance of Counsel: The Case for an Ex Ante Parity Standard*, 88 J. CRIM. L. & CRIMINOLOGY 242, 285 (1997) ("[B]y imposing significant costs on indigent defense lawyers (whether through insurance payments or the risk of adverse judgments), tort liability would only exacerbate the underlying resource deficiency. The courts understandably have given malpractice suits against public defenders a chilly reception.").

53.   Polk County v. Dodson, 454 U.S. 312, 325 (1981).

54.   Roberts, *supra* note 52, at 166 n.192 (citing Ferri v. Ackerman, 444 U.S. 193, 205 (1979)).

generally require a lawyer and the money and wherewithal to bring the lawsuit. As clients of public defenders are indigent—and many incarcerated—access to civil legal counsel is rare. The result is that legal malpractice claims expose only a small fraction of the professional malpractice that may be occurring.

2. Definitional and Operational Challenges

The practice of criminal defense does not intuitively lend itself to easy ordering, structuring, or categorization.[55] Criminal cases vary greatly according to the charged offense and to defendant characteristics. Moreover, public defenders generally do not specialize in particular types of cases or clients.[56] Accordingly, there is very little systematization in how lawyers handle criminal cases. Creating a data collection system that monitors public defense inputs and outcomes would require definitional clarity about what data to collect and the operational capacity required to collect them.

In aviation and medicine, data about the "techniques" of practice are collected pursuant to a vocabulary that is standardized across a wide range of geographical and legal boundaries.[57] There are normative expectations about best practices, such as what constitutes a safe landing approach and what dosages of medication are appropriate for a patient's weight and age. Key components of professional practice are standardized and given a common vocabulary.[58]

The Federal Aviation Administration ("FAA"), which regulates all aviation in the United States, has created national standards for professional "practice." Using these national standards, the FAA maintains several databases that track aviation outcomes with a data-language common to all pilots.[59] Similarly, the American Medical Association ("AMA"), which

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55. Worden, Davies & Brown, *supra* note 20, at 1463 ("[T]he stereotypical model of public defense representation—that typologized by *Gideon*—may not capture the challenges of representing a more diverse group of defendants, against a wider and more complex range of charges . . . .").

56. While capital and juvenile cases are notable exceptions to this observation, even the most specialized defenders recognize that every case is different.

57. However, medicine has "no standardised method of investigation, documentation, and dissemination" of information about accidents. Helmreich, *supra* note 39, at 781. *Accord* Weingart et al., *supra* note 39, at 776 ("Comparing studies is difficult because research methods are not standardised.").

58. The Federal Aviation Administration ("FAA") serves as the national accrediting and regulating organization for pilots. To a lesser extent, the American Medical Association ("AMA") regulates doctors. However, doctors, like lawyers, are licensed by state accrediting boards.

59. *FAA Operations and Performance Data*, FED. AVIATION ADMIN., http://aspmhelp.faa.gov/ (last modified Mar. 6, 2015).

plays a powerful role in standardizing medical education and patient treatment,[60] promulgates the Current Procedural Terminology ("CPT") codes. These CPT codes are the lingua franca of medical practice: they provide a "uniform language that accurately describes medical, surgical, and diagnostic services, and thereby serves as an effective means for reliable nationwide communication among physicians and other healthcare providers, patients, and third parties."[61]

In contrast, the systemic and regional differences between defenders in different jurisdictions have thwarted the development of a common data-language for public defender practice. Defender systems are different in every state and county in the country.[62] Some defender systems provide "horizontal" representation, some "vertical," some "holistic."[63] Some indigent defense systems are staffed by full time lawyers, others by part-time attorneys, still others by contractually assigned counsel.[64] These highly diverse practice structures complicate efforts to generate data that speaks to the national community of public defenders and their clients.[65]

Moreover, because there is no universal structure for the delivery of public defense services, there is no consensus about *what* data public defenders should collect and how they should collect them. From state to state, the administrative bodies responsible for overseeing the defender systems are markedly different.[66] Key legal terminology varies across

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60.   For example, the AMA runs the Physician Consortium for Performance Improvement, a "national, physician-led program dedicated to enhancing quality and patient safety." *Physician Consortium for Performance Improvement*, AM. MED. ASS'N, https://www.ama-assn.org/ama/pub/physician-resources/physician-consortium-performance-improvement.page (last visited June 29, 2015).

61.   *CPT Process—How a Code Becomes a Code*, AM. MED. ASS'N, http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billing-insurance/cpt/cpt-process-faq/code-becomes-cpt.page (last visited June 29, 2015).

62.   *See* Robert E. Stein, *Public Defenders*, HUM. RTS., April 2013, at 26, 26 ("According to data collected by the Bureau of Justice Statistics (BJS) in 2007, in forty-nine states and the District of Columbia, there are twenty-seven county and hybrid states with 763 individual offices and twenty-two states with 483 local offices that have a central state-based public defender office.").

63.   Anne Bowen Poulin, *Strengthening the Criminal Defendant's Right to Counsel*, 28 CARDOZO L. REV. 1213, 1254–55 (2006) (describing horizontal and vertical representation); Brooks Holland, *Holistic Advocacy: An Important but Limited Institutional Role*, 30 N.Y.U. REV. L. & SOC. CHANGE 637 (2006) (describing holistic advocacy).

64.   Randolph N. Stone, *The Role of State Funded Programs in Legal Representation of Indigent Defendants in Criminal Cases*, 17 AM. J. TRIAL ADVOC. 205, 209–10 (1993).

65.   *See* Worden, Davies & Brown, *supra* note 20, at 1424 ("As a result, public defense remains a low-visibility, decentralized, and highly variable element of state court operations.").

66.   As Phyllis Mann describes:
The administration of public defense services varies by jurisdiction and may be carried out by a state, a county, a city, an individual judge, or by every possible combination of these. Eighteen states have statewide commissions overseeing statewide public defense systems that are theoretically responsible for all public defense services within each state. Two states have

jurisdictions and practices can vary from court to court and judge to judge. This diversity hinders any effort to develop indigent defense data that can inform practice across jurisdictions. Without a national regulatory body, any data collection mandate must emerge from each state or locality.[67]

3. The Technological Challenges to Data Collection

Technological limitations remain an obvious impediment to the development of data about public defense. Aviation and healthcare professionals depend heavily upon technology. Indeed, technological devices are often considered "members" of aviation and healthcare teams.[68] This technology serves the profession while simultaneously recording data about professional practice and outcomes. This technology may provide real-time warnings about significant risks or about unanticipated changes in expected circumstances and outcomes. For example, an alert might signal an impending storm, or technology might be used to measure the strength of a metal airplane wing. Data protocols in both industries capture these technological moments.

By comparison, public defenders are impoverished in their access to technology. Many defender organizations operate in a constant state of crisis. They do not have the technological resources to capture basic information or adopt data-driven lawyering systems. They lack computers, let alone secure networks or the personnel to update and troubleshoot issues. For the poorest of defender systems, obtaining functioning computers, copiers, and phones remains a priority.[69] Sophisticated

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elected public defenders for each county or jurisdiction, who are directly accountable to the voters. Eight states have a state public defender operating the public defense system throughout the state, but the chief executive of the state public defender office is appointed by and serves at the pleasure of the governor without any public defense commission to insulate the provision of counsel to the poor from politics. Eleven states fall into a hybrid category. In the remaining eleven states, the individual counties and/or cities control the administration of trial-level indigent defense services, and there is no state oversight.

Phyllis E. Mann, *Ethical Obligations of Indigent Defense Attorneys to Their Clients*, 75 Mo. L. REV. 715, 716–23 (2010).

67.   As discussed *infra* Part III.C.3, some pioneering indigent defense offices are experimenting with this process. *See, e.g.*, Margaret A. Gressens & Daryl V. Atkinson, *The Challenge: Evaluating Indigent Defense*, N.C.   OFF.   INDIGENT   DEF.   SERV.   1   (June   2009), http://www.ncids.org/Systems%20Evaluation%20Project/News_Updates_Products/N&U%20Links.htm (under "Prior Publications").

68.   John Amoore & Paula Ingram, *Learning from Adverse Incidents Involving Medical Devices*, 325 BRIT. MED. J. 272, 272 (2002) (quoting TO ERR IS HUMAN. BUILDING A SAFER HEALTH SYSTEM 62 (Linda T. Kohn et al. eds., 1999)).

69.   *See, e.g.*, Backus & Marcus, *supra* note 17, at 1101 ("When the public defenders in Lake County, Montana need to do legal research, without the funds to subscribe to online legal research resources, they must drive seventy miles to the University of Montana Law School library. In Montgomery County, Ohio, the lack of basic equipment was so dire that some defenders resorted to

technology, integrated data systems, and big data analytics simply do not enter into their calculus for discretionary spending.

Many public defenders lack access to even the most basic case management systems, so they have no systemic technological support for managing crucial deadlines. Offices that do have case management software may not have—or may not know how to access—real-time data about defender caseloads or how to alert managers about "dangerous conditions," such as untenable workloads.

Among better-funded organizations, data collection competes with other lawyering, training, and administrative priorities. Defender offices that are focused on client services may spend additional funds on hiring new lawyers or paying for existing support operations, rather than on new technology.[70] When overworked defenders already spend too little time with their clients, they may be reluctant to "waste" precious time on data collection.[71] Resource concerns similarly overwhelm the administrators who might otherwise be tasked with much of the data collection.

Even in offices that have embraced evolving technology, individual lawyers' tactical decisions, client conversations, investigative insights, and case strategies are rarely recorded.[72] While lawyers may use mental checklists to organize a case, many of their important decisions are not recorded as such in their case files. When detailed case files do exist, they are rarely digitized, networked, or analyzed in comparison to other cases and outcomes. As Ronald Wright and Ralph Peeples concluded after examining the limited data about criminal defense lawyers:

> Given this data environment, it would be especially challenging to learn
> in detail about a criminal defense lawyer's work based on court or office
> records. Much of the recorded information is only captured on paper,
> with surprisingly little of it transferred to electronic format. The

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bringing their personal computers to the office to prepare motions and memoranda.").

70.   *See, e.g., id.* at 1102 ("In Connecticut, for instance, while the Division of Public Defender Services dedicated its resources to replacing outdated computer equipment and continuing to provide computerized legal research and case tracking information for its attorneys, the Chief State's Attorney's Office established a special unit to educate prosecutors on the latest multimedia courtroom presentation techniques.").

71.   While lawyers who embrace new technology might be willing to do data entry throughout the course of their workday, they may be unable to bring their laptops (or iPads) into courthouses or jails.

72.   Perhaps more accurately, they are not recorded in any place accessible for analysis. There are no doubt an abundance of lawyers' comments on sticky notes or yellow pads, but those are not easily subject to a data-driven systems analysis.

information that does make it into electronic format lands in separate data systems that do not communicate with each other.[73]

Most of the case management systems designed specifically for public defense lawyers involve active data processes that require lawyers to manually input case information. These systems are both time-consuming and error-prone. When lawyers bear primary responsibility for the active documentation of their work, the integrity of the data collection system depends upon the integrity of attorney input. Active data systems also do not correct errors or omissions; they merely record them. Moreover, many of these programs are too rudimentary to record all the inputs and outcomes necessary to develop a data-driven systems approach to public defense.[74] And, even if sufficiently sophisticated data collection processes existed, problems would remain in their application, with recent budget shortfalls only exacerbating the difficulty of implementing and maintaining defender technologies.[75]

4. A Data-Resistant Defender Culture

Defender culture also resists data innovation. Many defenders instinctively reject the idea of a data-driven systems approach to practice. Each case feels unique, each client is different, and each tactical decision reflects a myriad of idiosyncratic factors. Reducing a deeply human, highly particularized practice to a series of data points is an unappealing deviation from the client-centered ethos that motivates many defenders. This section briefly discusses the significant cultural challenges of adopting a data-driven approach to defending.

As a general matter, public defenders are anti-authoritarian—both toward "the state" and toward their bosses.[76] As lawyers, they have chosen

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73. Wright & Peeples, *supra* note 2, at 1232–33 (footnotes omitted).

74. *See* Beeman, *Using Data*, *supra* note 2, at 7 ("Public defender CMS [case management software] software programs have improved considerably over the years. JustWare, developed by New Dawn Technologies, and defenderData®, developed by JusticeWorks, are two examples of CMS programs that have proven to be customizable and responsive to the types of reports that defender agencies need to produce to effectively administer their offices.").

75. *See Hard Times and the Right to Counsel*, N.Y. TIMES (Nov. 21, 2008), http://www.nytimes.com/2008/11/21/opinion/21fri2.html ("With state revenues in free fall, the problem is reaching crisis proportions and creating a legal and moral challenge for the criminal justice system, state legislatures and the legal profession. Statewide public defenders in Kentucky and Minnesota and in cities such as Miami and Atlanta have been forced by budget cuts to fire or furlough lawyers.").

76. Robin Steinberg & David Feige, *Cultural Revolution: Transforming the Public Defender's Office*, 29 N.Y.U. REV. L. & SOC. CHANGE 123, 132 (2004) ("Let's face it. Public defenders are notoriously anti-authoritarian. It is one characteristic that makes them brave and great in a courtroom when faced with a tough judge, prosecutor, or cop. But that trait makes it difficult for defender managers alone to persuade staff that change is necessary and desirable.").

the chaos of criminal court over the relative predictability of civil or corporate practice.[77] As defenders, their constitutional and ethical role is to stand in opposition to the government.[78] Such a professional posture attracts rule-benders, iconoclasts, and revolutionary spirits, all of whom generally resist being beholden to a data-driven order. As Abbe Smith has eloquently explained, "The defender typecast is anti-authoritarian, feisty, nonconformist, irreverent, skeptical, slightly voyeuristic, slightly exhibitionist, and resilient."[79]

Whatever their "type," defenders practice on the borderline of contested moral, legal, and human dramas. This highly complex experience of the world may make defenders reluctant to look for binary or reductive practice norms. After all, their legal world is "gray," "the truth" is only what can be proven in court, and there are always at least two sides to any story. Within this world of contingent truth and uncertain futures, defenders view "outcomes" as highly unpredictable. A trial, a plea, or a life may depend upon inspired moments of genius or on random strokes of luck, but certainly cannot be predicted by metrics or checklists.

This atomistic and individualistic view of lawyering means that defenders rarely see themselves as part of any system—even a system of public defenders. Although most defenders handle the same types of cases, in the same courts, with the same law, using the same methods, defenders do not see a larger defender system at work. By oath and ethics, defenders devote themselves to one client above all other considerations.[80] As a result, defenders tend to view systemic data as unnecessary and errors as anomalous occurrences that occur in individual cases; they do not see errors as institutional failures that affect multiple clients in broad and often undiscovered ways.

Internal management structures contribute to this lack of focus on systemic data. Historically, resource constraints have prevented supervisors

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77. *See* MICHAEL SCOTT WEISS, PUBLIC DEFENDERS: PRAGMATIC AND POLITICAL MOTIVATIONS TO REPRESENT THE INDIGENT 88, 151 (2005) (interviewing public defenders about their motivations).

78. Charles K. Ogletree, Jr., *Beyond Justifications: Seeking Motivations to Sustain Public Defenders*, 106 HARV. L. REV. 1239, 1254 (1993) ("Systemic justifications of zealous advocacy are premised on the underlying structure of the adversary system.").

79. Abbe Smith, *Too Much Heart and Not Enough Heat: The Short Life and Fractured Ego of the Empathic, Heroic Public Defender*, 37 U.C. DAVIS L. REV. 1203, 1217 (2004) [hereinafter Smith, *Too Much Heart*] (footnotes omitted). Smith notes, however—and we concur—that "some defenders, including career defenders, may be contrary to type." *Id.*

80. Of course, each defender represents hundreds of clients (often at once) and is, in reality, constantly juggling the competing needs of these clients.

from maintaining intensive oversight of defenders' daily practice. And even in defender offices that provide significant supervisory support, most lawyers work autonomously. Unlike attorneys in private practice, defenders do not bill their time in six-minute increments, and they generally have complete control over their relative allocation of time across their individual caseloads. Defenders rely on their own professional judgment to represent clients; there is rarely any assessment of whether defenders allocate their time wisely or make the most outcome-optimizing decisions. Even defender offices with the luxury of full time supervisors focus on developing trial skills or enhancing sentencing advocacy, rather than creating systemic data that can improve case outcomes for larger numbers of clients. Developing and implementing data-driven performance enhancements requires a different sort of oversight and analysis.

Moreover, certain defender offices may be simply resistant to change because change is different and hard.[81] Like all lawyers, defenders get used to practicing a certain way; they assume certain professional freedoms and take certain calculated liberties. Defenders often meet innovations—data-driven or not—with resistance, and this resistance is often top-down.[82]

Even those defenders who relish innovation may not embrace the practical reality of data collection. Public defenders typically—and accurately—view themselves as overburdened by bureaucratic minutiae that interfere with client representation. The hassle of any additional work, even if time or technology allows, may be unappealing. Any lawyer who has tried to remember what she did in a day, for each client, at what time, and for how long, knows that recording this information is the least rewarding aspect of practice.

Naturally, defenders also worry that a structured system that collects

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81.   *See* Jonathan A. Rapping, *Directing the Winds of Change: Using Organizational Culture to Reform Indigent Defense*, 9 LOY. J. PUB. INT. L. 177, 181 (2008) ("Culture plays a critical role in defining every public defender system in need of reform."); William H. Simon, *Where Is the "Quality Movement" in Law Practice?*, 2012 WIS. L. REV. 387, 402–03 (2012).

82.   Jonathan A. Rapping, *You Can't Build on Shaky Ground: Laying the Foundation for Indigent Defense Reform Through Values-Based Recruitment, Training, and Mentoring*, 3 HARV. L. & POL'Y REV. 161, 173–74 (2009) ("[T]here is far more resistance to learning new approaches from seasoned practitioners than from newer lawyers. A common refrain is, 'I have been doing it this way for thirty years,' implying an unwillingness to change."). As defender organizations discovered when adopting more holistic practices, public defenders may be reluctant to try new approaches, even when those approaches increase defender resources. *See* Steinberg & Feige, *supra* note 76, at 123–24 ("The traditional defender office is lawyer-driven and case-oriented. The culture centers on a small cadre of trial lawyers esteemed for their trial skills. The obsessive focus on the trial as the crowning achievement of the public defender leads inescapably to the privileging of the canny trial attorney over the caring and effective advocate focused on both the client's legal and extra-legal needs.").

and analyzes data might value a routinized metric, like the number of motions filed, rather than the exercise of discretion over whether to file them. Experienced public defenders understand that success cannot always be measured in data. Could data properly measure a client's satisfaction with fair process? Could a systems approach properly account for the way in which a few months of sentence reduction can change a client's sense of justice? For public defenders, small victories, silver linings, and the avoidance of disaster are often the triumphs that sustain them.[83] In addition, defenders may fear that a reporting system to collect data could result in negative professional outcomes. Defenders may fear being criticized, reported, or demoted because of data metrics that have little to do with the quality of their lawyering.

Finally, defenders may have an instinctive resistance to data collection based upon very real concerns that these data might be used against their clients or their offices. Each decision to record a client secret or confidence, even within the confines of a protected electronic file, merits careful consideration. Are the risks of memorializing a client's undocumented immigration status worth the prospective benefits associated with data compilation or analysis? Should defenders now document meetings with inculpatory eyewitnesses that they might otherwise have left unrecorded? Will client data become relevant information in ineffective assistance of counsel claims, or other collateral litigation? If so, will the disclosure of those data undermine the interests of the office or of its former clients?[84]

Given their adversarial relationship with the state, defenders necessarily—and reasonably—harbor suspicions about creating centralized databases that contain information about their clients, their secrets, and their strategies. Most defender databases would be quite useful for law enforcement. Thus, in addition to data security issues arising from ordinary data breaches or accidental disclosure,[85] defenders must also consider how

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83. *See* Smith, *Too Much Heart, supra* note 79, at 1264 ("There is also nothing better than using whatever skill or talent you possess to rescue a client from disaster, whether it is by winning a case at trial or avoiding disaster through a well-negotiated plea and carefully crafted sentencing."); Michael E. Tigar, *Defending*, 74 TEX. L. REV. 101 (1995) (providing a defense attorney's account of his motivations for working in criminal defense); Ogletree, *supra* note 78, at 1271–74 (discussing how empathy can be a source of motivation for public defenders).

84. Ellen Henak, *When the Interests of Self, Clients, and Colleagues Collide: The Ethics of Ineffective Assistance of Counsel Claims*, 33 AM. J. TRIAL ADVOC. 347, 348 (2009); Newmark, *supra* note 48, at 728.

85. A data-driven defender practice certainly creates new risks related to data security; absent proper security measures, if a single defender loses her laptop, she could disclose her clients' private and privileged data, or even compromise the security of the entire defender system.

to shield the information from formal legal requests.[86] As will be discussed in Part IV, some of these concerns can be addressed through carefully designed network structure, data encryption, and the development of stronger legal and ethical rules to protect electronic records containing attorney-client information.[87]

II. HIGH-RISK PROFESSIONS, DATA, AND SYSTEMS APPROACHES

A systems approach to error uses data collection and analysis to develop systematic reforms that can identify risks, reduce errors, and improve outcomes throughout the system.[88] A core premise of the systems approach is that human errors are inevitable.[89] Accordingly, a systems approach views most human error as the consequence of "upstream systemic factors."[90] An organization or industry that successfully adopts a systems approach is "not immune to adverse events," but it uses these events to develop an "enhanced resilience of the system" of operations.[91] Rather than focusing on "isolated failures," the systems approach works to create as safe and effective a system as "is practicable in the face of its human and operational hazards."[92] While the systems approach was developed to improve safety in high-risk industries, its principles can be adapted to improve client outcomes in the high stakes practice of public defense.

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86. *See, e.g.,* Coronado Police Officers Ass'n v. Carroll, 131 Cal. Rptr. 2d 553, 555 (Ct. App. 2003) (denying police association's request to expose the San Diego Defender's internal database); State ex rel. Beacon Journal Publ'g Co. v. Bodiker, 731 N.E.2d 245, 254 (Ohio Ct. App. 1999) (allowing press request for capital defense data subject to in camera review). *See also* United States v. Grooters, No. 1:07-CR-001, 2008 WL 2561380, at *13 (W.D. Mich. June 24, 2008) ("Viewing the overall conduct at issue, defendant's use of the computer password and access to the database compromised the Federal Public Defender's office security and was a breach of her former employer's trust. In that sense, the Federal Public Defender's office was a victim of defendant's conduct.").

87. *See infra* Part IV.B.

88. Helmreich, *supra* note 39, at 781; R. Wilf-Miron et al., *From Aviation to Medicine: Applying Concepts of Aviation Safety to Risk Management in Ambulatory Care,* 12 QUALITY & SAFETY HEALTH CARE 35, 35 (2003); James Reason, *Human Error: Models and Management,* 320 BRIT. MED. J. 768, 768 (2000) [hereinafter Reason, *Models and Management*].

89. *See, e.g.,* Wilf-Miron et al., *supra* note 88, at 35; Reason, *Models and Management, supra* note 88, at 768 ("The basic premise in the systems approach is that humans are fallible and errors are to be expected . . . .").

90. *Id.*

91. *Id.* at 770.

92. *Id.*

A. THE SYSTEMS APPROACH TO OUTCOME IMPROVEMENT

Institutionalized interest in improving performance in complex and hazardous fields began during World War II, as military aviation began to address the negative impact that "people problems" were having on mission success.[93] Other high-risk industries quickly joined in efforts to understand and minimize these "human factors."[94] This study of human error in high-stakes fields flourished in the 1980s[95] as the public increasingly witnessed high-profile catastrophes in aviation,[96] chemical and petrochemical production,[97] nuclear power production,[98] space travel,[99] and urban transportation.[100] These tragedies highlighted the potential for "human errors [to] have adverse effects upon whole continents over several generations."[101]

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93.   James Reason, Professor Emeritus, Univ. of Manchester, Presentation at the Human Factors Seminar, Helsinki: Human Factors: A Personal Perspective (Feb. 13, 2006) [hereinafter Reason, *Human Factors*] (PowerPoint presentation on file with authors).

94.   *Id.*

95.   JAMES REASON, HUMAN ERROR 1 (1990) [hereinafter REASON, HUMAN ERROR] (pointing out that the tragedies mentioned *infra* notes 96–100 were an "obvious impetus" for a "renewed interest" in conducting "studies of errors for their own sake").

96.   The Tenerife runway collision of 1977 was a fatal runway collision that killed 583 people, and the deadliest accident in aviation history. Patrick Smith, *How a Tiny Island Runway Became the Site of the Deadliest Plane Crash Ever*, BUS. INSIDER (Mar. 27, 2014, 11:35 AM), http://www.businessinsider.com/deadliest-plane-crash-in-history-2014-3.

97.   In 1984, a toxic gas leak at a Union Carbide pesticide plant in India killed at least 3,800 people and was, at the time, the worst industrial accident in history. Edward Broughton, *The Bhopal Disaster and its Aftermath: A Review*, 4 ENVTL. HEALTH, no.6, at 1, 1–6 (May 10, 2005). Then, in 1988, the Piper Alpha oil platform explosion killed 167 people, becoming the deadliest oil-rig accident in history. Terry Macalister, *Piper Alpha Disaster: How 167 Oil Rig Workers Died*, GUARDIAN (July 4, 2013, 2:17 PM), http://www.theguardian.com/business/2013/jul/04/piper-alpha-disaster-167-oil-rig.

98.   The Three Mile Island nuclear meltdown of 1979 was the most serious accident in the history of the United States' commercial nuclear power plant industry. *Backgrounder on the Three Mile Island Accident*, U.S. NUCLEAR REG. COMM'N, http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html (last updated Dec. 12, 2014). The 1986 Chernobyl disaster was the largest nuclear accident in world history. *Chernobyl Accident 1986*, WORLD NUCLEAR ASS'N, http://www.world-nuclear.org/info/safety-and-security/safety-of-plants/chernobyl-accident (last updated Apr. 2015).

99.   The 1986 explosion of the space shuttle Challenger killed all seven astronauts on board, and millions of Americans watched the world's worst space disaster on live television. *On This Day: 28 January, 1986: Seven Dead in Space Shuttle Disaster*, BBC, http://news.bbc.co.uk/onthisday/hi/dates/stories/january/28/newsid_2506000/2506161.stm (last visited June 30, 2015).

100For example, in 1987, the capsizing of the *Herald of Free Enterprise*, a Belgian car ferry, killed nearly seventy people. *On This Day: 6 March, 1987: Hundreds Trapped as Car Ferry Capsizes*, BBC, http://news.bbc.co.uk/onthisday/hi/dates/stories/march/6/newsid_2515000/2515923.stm (last visited June 30, 2015). Additionally, the King's Cross London Tube station fire in 1987 killed thirty-one people and injured dozens of others. *On This Day: 18 November, 1987: King's Cross Station Fire "Kills 27,"* BBC, http://news.bbc.co.uk/onthisday/hi/dates/stories/november/18/newsid_2519000/2519675.stm (last visited June 30, 2015).

101.   REASON, HUMAN ERROR, *supra* note 95, at 1.

This interest in human error and its consequences dovetailed with cognitive psychologists' research, which demonstrated that social science could often both predict and explain human error.[102] As scientists, psychologists, and risk managers studied the high-profile tragedies of the 1970s and 1980s, they realized that techniques that only targeted human error could not prevent large-scale disasters.[103] Evidence demonstrated that these human errors stemmed from widespread organizational failures that were endemic to the operational systems of many high-risk industries.[104] So, armed with an understanding of the "covert control processes of human cognition," social scientists began to apply the lessons of engineering and science to human error.[105] The result was a systems approach to risk management that targeted organizational culture and institutional practice rather than individual errors.

Data strongly suggest that the systems approach more accurately captures the true causes of adverse outcomes in complex and high-risk industries.[106] Most negative outcomes have multiple causes; they rarely occur due to a single person's actions.[107] Research further indicates that these multiple causes do not stem from isolated errors or unusual risks; rather they arise due to the convergence of *common* errors and *ordinary* risks.[108]

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102.   *Id.*

103.   *Id.*

104.   *Id.* at 173. *See generally* CHARLES PERROW, NORMAL ACCIDENTS (1999).

105.   REASON, HUMAN ERROR, *supra* note 95, at 248. *See generally* PERROW, *supra* note 104.

106.   *See* Reason, *Models and Management, supra* note 88, at 768 (finding that individuals were "blameless" in more than 90 percent of aviation maintenance errors); Mark R. Chassin & Elise C. Becher, *The Wrong Patient,* 136 ANNALS INTERNAL MED. 826, 826 (2002) (evaluating a "wrong patient" surgical mishap and identifying as many as seventeen "distinct errors" that caused the adverse outcome, "no single one of which could have caused this adverse event by itself," including systemic or organization failures, such as "absent or misused protocols for patient identification and informed consent, systematically faulty exchange of information among caregivers, and poorly functioning teams"); Zane Robinson Wolf & Ronda G. Hughes, *Error Reporting and Disclosure, in* 2 PATIENT SAFETY AND QUALITY: AN EVIDENCE-BASED HANDBOOK FOR NURSES 333, 333–34 (Ronda G. Hughes ed., 2008), http://www.ncbi.nlm.nih.gov/books/NBK2652/ ("Analysis of reported errors have revealed many 'hidden dangers' (near misses, dangerous situations, and deviations or variations) that point to system vulnerabilities, not intentional acts of clinician performance . . . .").

107.   *See, e.g.,* Scott A. Shappell & Douglas A. Wiegmann, *The Human Factors Analysis and Classification System—HFACS,* DEP'T OF TRANSP., FED. AVIATION ADMIN. 1 (2000), https://www.nifc.gov/fireInfo/fireInfo_documents/humanfactors_classAnly.pdf ("[A]viation accidents are the end result of a number of causes . . . .").

108.   Reason, *Models and Management, supra* note 88, at 769 (noting that mishaps are not "random" but "tend to fall into recurrent patterns," and produce negative outcomes when many mishaps "momentarily line up to permit a trajectory of accident opportunity"); *See, e.g.,* Shappell & Wiegmann, *supra* note 107, at 4 (categorizing various unsafe aviation acts).

Nevertheless, the systems approach is often counterintuitive to professionals who work in high-risk fields.[109] Professionals tend to assume a "person approach" to error.[110] The person approach (also known as the "human" or "individual" approach) concentrates on locating the person(s) whose errors are causally linked to an undesired outcome.[111] The person approach views error as the product of "aberrant mental processes such as forgetfulness, inattention, poor motivation, carelessness, negligence, and recklessness."[112] It thus ignores the extent to which institutional practice and culture contribute to errors, and thereby overlooks the vast potential for across-the-board improvements that could otherwise be identified and implemented with a systems approach.[113]

The modern systems approach has been strongly influenced by James Reason's approach to error management. As discussed in Parts I.B and III, we do not advocate an error-focused approach to public defense. Nevertheless, Reason's approach offers useful insights about understanding and reforming organizational culture and operations.

Critical of the way that the "person approach" focused on individual human errors, Reason argues that human errors have multiple causes, and that effective risk management should address *all* of those causes. Reason analogizes the operating system of a high-risk industry to "stacks of slices of Swiss cheese."[114] In Reason's analogy, each slice of cheese represents an individual or institutional layer of defense against risk and error. The

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109.   *See, e.g.,* Doyle *supra* note 2, at 118 (Professionals "view error as a failure of character" that produces "a common reaction by physician[s]: 'How can there be an error without negligence?'" (quoting Lucian L. Leape, *Error in Medicine*, 272 JAMA 1851, 1851 (1994))). *See also* Reason, *supra* note 88, at 768 (As of 2000, the "person approach remain[ed] the dominant tradition in medicine . . . ."); Duke Univ. Med. Ctr., *Definitions of Error*, PATIENT SAFETY—QUALITY IMPROVEMENT: ANATOMY OF AN ERROR, http://patientsafetyed.duhs.duke.edu/module_e/definitions.html (last visited June 30, 2015) (A belief that "the individual should have acted differently, and thus is responsible for the consequences" of his or her conduct "is the basis of the 'shame and blame' culture that has been so common in healthcare.").

110.   *See, e.g., id.* ("'Human error' . . . implies that the individual should have acted differently, and thus us responsible for the consequence of that conduct.").

111.   Reason, *Models and Management, supra* note 88, at 768.

112.   *Id. See also* Duke Univ. Med. Ctr., *supra* note 109.

113.   Reason, *Models and Management, supra* note 88, at 768. As Reason notes, executives and managers often prefer a person approach to error because it "uncouple[s] a person's unsafe acts from any institutional responsibility." *Id.*

114.   James Reason, *The Contribution of Latent Human Failures to the Breakdown of Complex Systems*, 327 PHIL. TRANSACTIONS B 475, 475 (1990). While Reason's Swiss cheese model has been criticized as failing to "account for the detailed interrelationships among causal factors," it remains a central theory of risk management in complex and high-risk professions. James T Luxhøj & Kimberlee Kauffeld, *Evaluating the Effect of Technology Insertion into the National Airspace System*, RUTGERS SCHOLAR (2003), http://rutgersscholar.rutgers.edu/volume05/luxhoj-kauffeld/luxhoj-kauffeld.htm.

holes in each slice of cheese represent deficiencies or mistakes that may allow errors or negative outcomes to occur.[115] While risks or errors might pass through a hole in one slice of cheese, the holes in the other slices would ideally all be in different places.[116] If so, each layer of cheese would block any problem that passed through from a previous layer.[117] However, if the holes in the cheese align, risks and errors pass unimpeded through the entire stack of cheese slices, causing errors and adverse—or even catastrophic—outcomes.[118]

In Reason's model, operator errors or "active errors" are merely the last layer of cheese—the layer in which a human mistake contributed to, or caused, an ultimate error or adverse outcome.[119] Relying on empirical studies and social science, Reason argues that humans who err on the "sharp end" of practice (the end closest to the outcome) are more likely to be the "inheritors than the instigators" of adverse outcomes.[120] Reason identifies three other "slices" of "latent pathogens" that contribute to sharp end errors: latent conditions of risk in the work environment, supervisory failures, and organizational factors.[121] An effective systems approach to practice must address each of these categories.

First, latent conditions of risk create the working environment in which operator errors occur.[122] These latent conditions may include environmental or technological factors, such as the physical environment, or the state of the system's critical technology. For example, an inaccurate weather report might constitute a latent risk for a pilot's landing error, and a miscalibrated pulse oximeter might constitute a latent risk for a doctor's

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115.   JAMES REASON, MANAGING THE RISKS OF ORGANIZATIONAL ACCIDENTS 9 & fig.1.4 (1997) [hereinafter REASON, MANAGING THE RISKS]. *See also* Paul M. Salmon, Michael Regan & Ian Johnston, *Managing Road User Error in Australia: Where Are We Now, Where Are We Going and How Are We Going to Get There?*, *in* MULTIMODAL SAFETY MANAGEMENT AND HUMAN FACTORS: CROSSING THE BORDERS OF MEDICAL, AVIATION, ROAD AND RAIL INDUSTRIES 143, 145–46 (José M. Anca, Jr. ed., 2007).

116.   REASON, MANAGING THE RISKS, *supra* note 115, at 12 fig. 1.5.

117.   *Id.* at 11.

118.   *Id.* at 12 fig. 1.5.

119.   REASON, HUMAN ERROR, *supra* note 95, at 173. These operator errors typically have direct, immediate, and adverse impacts on an outcome and had been a main focus of the person approach. REASON, MANAGING THE RISKS, *supra* note 115, at 10.

120.   Reason, *Human Factors, supra* note 93.

121.   *Id.*; REASON, HUMAN ERROR, *supra* note 95, at 197–99. Other researchers have proposed similar models. *See, e.g.*, Charles Vincent, Sally Taylor-Adams & Nicola Stanhope, *Framework to Analyzing Risk and Safety in Clinical Medicine*, 315 BRIT. MED. J. 1154, 1154 (1998) ("Adverse events usually originate in a variety of systemic features operating at different levels—the task, the team, the work environment, and the organisation.").

122.   REASON, HUMAN ERROR, *supra* note 95, at 205.

treatment error. Latent conditions of risk also encompass the collective and individual working conditions of the people who work within the system.[123] Research demonstrates that working conditions such as fatigue, overwork, stress, illness, and impaired mental states are important—and often remediable—preconditions for professional error.[124]

Second, supervisory failures may contribute to professional errors and negative outcomes.[125] An undesirably high supervisor-to-subordinate ratio may, in itself, constitute a supervisory failure.[126] However, supervisory failures may also reflect substantive errors in professional judgment, such as when a supervisor gives inappropriate or incorrect instructions to her subordinates.[127] Another common supervisory failure occurs when supervisors fail to address known problems or ignore repeated violations of organizational rules and regulations.[128]

Finally, organizational influences can be strong factors in predisposing organizations toward error.[129] Institutional decisions about matters such as resource allocation, optimal workloads, and professional training all shape professionals' working environments. For example, if an organization commits too few resources to a process and expects its employees to work unreasonably long hours under strenuous conditions, the organization has created preconditions that increase the likelihood of human error.[130]

By insisting upon the investigation and analysis of all of these factors, Reason and others developed systems-conscious frameworks for the investigation of industrial accidents and near misses.[131] While these frameworks were initially designed to be retrospective investigative tools, they evolved into proactive tools for the design of "error tolerant

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123. Shappell & Wiegmann, *supra* note 107, at 11. In highly collaborative work, such as surgery, ineffective cooperation among essential members of the professional team may also be a precondition for error.

124. *Id.*; REASON, HUMAN ERROR, *supra* note 95, at 206.

125. REASON, MANAGING THE RISKS, *supra* note 115, at 121.

126. *Id.* at 47.

127. *Id.* at 25.

128. *Id.* at 47.

129. *Id.* at 135.

130. *Id.* at 122; Shappell & Wiegmann, *supra* note 107, at 7.

131. *See, e.g.*, Joanne De Landre, Gerry Gibb & Nicole Walters, *Using Incident Investigation Tools Proactively for Incident Prevention*, AUS. SOC'Y AIR SAFETY INVESTIGATORS 1–12 (2006), http://asasi.org/papers/2006/Payne_Stewart_Learjet_Investigation_De%20Landre_Gibb_Walters_DOC. pdf (describing the Incident Cause Analysis Method ("ICAM"), which is used in aviation to investigate airplane error). ICAM seeks to identify the full range of factors—active and latent, individual and organizational—that contributed to an accident or to a near-miss event. *Id.* at 2–3. At the conclusion of the investigation, analysts issue a report and recommend system changes and improvements that will reduce the likelihood of another similar error or outcome. *Id.*

workplaces" that maximize the likelihood of positive outcomes.[132]

Over the last several decades, many complex, high-risk professions have embraced a systems approach to error management.[133] Some have been so successful that they can be characterized as "high reliability organizations."[134] Industries such as aviation and medicine continue to refine their respective systems approaches to incorporate new data and improve the safety and quality of their industry outcomes.[135]

B. AVIATION AND HEALTHCARE: TWO SUCCESSFUL EXAMPLES OF THE SYSTEMS APPROACH

Aviation and healthcare are two industries that have adopted a systems approach to safety and performance with largely positive results. While beyond the scope of this Article, the decades-long march to a systemic approach to risk, error, operator action, and outcome has transformed those industries.[136] In 2015, a person's chances of having a safe, complication-free flight or undergoing a successful medical procedure are far greater than even thirty years prior in the 1980s. Perhaps even more importantly, we know why those risks have been reduced and can study the data to reduce the risks even further.

Decades of increasingly sophisticated implementation of the systems approach in aviation, medicine, and other high-risk industries have produced a vast literature about what makes the systems approach successful.[137] High-risk professions with successful systems approaches

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132.   *Id.* at 10.
133.   Such error management systems seek to "understand[] the nature and extent of error, chang[e] the conditions that induce error, determin[e] behaviours that prevent or mitigate error, and train[] personnel in their use." Helmreich, *supra* note 39, at 781.
134.   Reason, *Models and Management, supra* note 88, at 768. Reason identifies three high-reliability organizations that use a systems approach to error: "US Navy nuclear aircraft carriers, nuclear power plants, and air traffic control centres." *Id.* at 770.
135.   Anesthesiology, which is widely acknowledged as the medical specialization that has been most successful in implementing systems-based reforms to improve patient outcomes and reduce medical error, based its reforms upon those of the aviation industry. Gaba, *supra* note 39, at 785. Other fields use a systems approach to reporting, analyzing, and mitigating risk, error, and negative outcomes. *See, e.g.,* John Holloway, *A Systems Approach to Error Reduction in Criminal Justice,* QUATTRONE CTR. FOR FAIR ADMIN. JUST. 4 (Feb. 2014), http://scholarship.law.upenn.edu/faculty_scholarship/976/ (engineering and manufacturing); Wilf-Miron et al., *supra* note 88, at 35–36 (nuclear power production and ambulatory care); Barach & Small, *supra* note 39, at 759 (petrochemical processing, space exploration, and steel production). *See also* Reason, *Models and Management, supra* note 88, at 768.
136.   *See generally* Michelle L. Harper & Robert L. Helmreich, *Identifying Barriers to the Success of a Reporting System, in* 3 ADVANCES IN PATIENT SAFETY: FROM RESEARCH TO IMPLEMENTATION 167 (Kerm Henriksen et al. eds., 2008).
137.   *See generally* MICHAEL D. FERGUSON & SEAN NELSON, AVIATION SAFETY: A BALANCED

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tend to:

- Identify and gather data about risks, errors, and outcomes, including data about near misses and consequence-free errors;[138]

- Adopt educational approaches to risk and error so that participants view errors as learning opportunities rather than professional failures;[139]

- Value system reform and improvement over operator discipline and disgrace;[140]

- Implement a strong and constantly evolving data-driven feedback loop through which the organization assesses data, experiments with improvement strategies, evaluates the resultant outcomes, and implements those strategies that demonstrably improve outcomes;[141]

- Engage front-end actors at the "sharp end" of practice with those at the "blunt end" of the practice, in order to enhance the systemic approach to outcome improvement;[142] and

- Address risks, errors, and negative outcomes in a manner that participants perceive as "just."[143]

INDUSTRY APPROACH (2014) (discussing aviation safety); JOHN DAVIES, ALASTAIR ROSS & BRENDAN WALLACE, SAFETY MANAGEMENT: A QUALITATIVE SYSTEMS APPROACH (2003); ERROR REDUCTION IN HEALTH CARE: A SYSTEMS APPROACH TO IMPROVING PATIENT SAFETY (Patrice L. Spath ed., 2000); Megan A. Adams, Joseph Elmunzer & James M. Scheiman, *Effect of a Health System's Medical Error Disclosure Program on Gastroenterology-Related Claims Rates and Costs*, 109 AM. J. GASTROENTEROLOGY 460 (2014); Richard C. Boothman et al., *Nurturing a Culture of Patient Safety and Achieving Lower Malpractice Risk Through Disclosure: Lessons Learned and Future Directions*, 28 FRONTIERS OF HEALTH SERVICES MGMT., Spring 2012, at 13, 13 (2012); R. P. Mahajan, *Critical Incident Reporting and Learning*, 105 BRIT. J. ANAESTHESIA 69, 69–75 (2010); Shappell & Wiegmann, *supra* note 107.

138. Barach & Small, *supra* note 39, at 759.

139. Wilf-Miron et al., *supra* note 88; Barach & Small, *supra* note 39, at 759.

140. Eileen Munro, *Improving Safety in Medicine: A Systems Approach*, 185 BRIT. J. PSYCH. 2, 3 (2004).

141. Barach & Small, *supra* note 39, at 761; Global Aviation Info. Network, *A Roadmap to Just Culture: Enhancing the Safety Environment*, FLIGHT SAFETY FOUND. (2004), http://flightsafety.org/files/just_culture.pdf [hereinafter GAIN, *Roadmap*].

142. In medicine, the "blunt end" is the professional process that occurs away from the patient. Duke Univ. Med. Ctr., *Vocabulary*, PATIENT SAFETY—QUALITY IMPROVEMENT: ANATOMY OF AN ERROR, http://patientsafetyed.duhs.duke.edu/module_e/vocabulary.html (last visited July 14, 2015). *Accord* GAIN, *Roadmap*, *supra* note 141, at 2 (discussing the need to improve communications between pilots and air traffic controllers).

143. Barach & Small, *supra* note 39, at 759, 761. *See infra* note 267 and accompanying text for a discussion of Reason's concept of "just culture."

We believe that, with suitable adjustments, public defenders can emulate these characteristics and apply a data-driven systems approach to the practice of public defense.

C. ADAPTING THE SYSTEMS APPROACH TO PUBLIC DEFENSE PRACTICE

To explore the application of a systems approach to public defense, we compare public defender practices to the complex, high-risk professional practices of aviation and medicine.[144] Both industries provide a useful starting point to assess where the systems approach aptly applies to public defender practice, and where the approach requires modification.

Like pilots and doctors, lawyers confront problems that are both "complicated" and "complex."[145] Atul Gawande's explanation of the difference between "complicated" and "complex" problems is instructive. A problem is "complicated" when it consists of multiple problems and challenges.[146] To resolve a complicated problem, professionals may need to work with teams of experts and support personnel, or experiment with varying techniques or strategies.[147] Complicated problems may produce multiple failures and setbacks. However, once solved, a complicated problem generally remains solved. So, for example, sending a rocket to the moon is a complicated problem, but once you figure out how to send the rocket to the moon, you can "repeat the process with other rockets and perfect it."[148]

In contrast, "complex" problems defy ready solutions. Every complex problem is different. Complex problems, argues Gawande, are like children: a parent can master the complex problem of child rearing, but every child is different. Therefore, parenting remains complex, regardless of how many children one raises.[149]

Pilots, doctors, and lawyers are trained in the skilled resolution of complicated problems: how to land a plane, how to prescribe medication,

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144. To the extent that these professions have succeeded in developing safety cultures that embrace a data-driven systems approach, it can be difficult to differentiate this approach from the profession itself. The safety culture that characterizes the aviation industry is largely indistinguishable from modern aviation culture itself. The medical profession presents a slightly easier comparison, as that safety movement began in the 1990s.

145. *See* ATUL GAWANDE, THE CHECKLIST MANIFESTO: HOW TO GET THINGS RIGHT 48–49 (2009) (noting that there are three different kinds of problems in the world: "the simple, the complicated, and the complex").

146. *Id.*

147. *Id.*

148. *Id.*

149. *Id.*

how to draft a plea agreement. However, there are no rote solutions for the complex situations in which those complicated problems arise.[150] As a result, in complex, high-risk professions like aviation, medicine, and public defense, "threat and error are ubiquitous,"[151] professional practice is highly individuated, and success is always uncertain.[152] In each of these fields, new professionals must be certified or licensed.[153] Thereafter, they are subjected to ongoing professional educational requirements.[154] However, standardized compliance requirements rarely address the wide range of practices and experiences that these professionals face in their daily lives. All remain complex and challenging professions. If pilots and surgeons can learn from, and work within, a data-driven systems approach to professional practice, perhaps public defenders can do the same.

Nevertheless, there are significant differences between piloting an airplane, practicing medicine, and representing poor people charged with crimes. These differences highlight the need for the modification of the systems approach as applied to public defense.

1. Adversarial Practice Discourages, or Precludes, Stakeholders from Sharing Information, Thereby Obscuring Some Causal Risk Factors While Actively Manufacturing New Ones

In fields such as aviation and medicine, all the actors share broad common goals. In aviation, everyone—from the pilot, to the mechanic, to the air traffic controller—wants each plane to land safely. In healthcare, everyone—from the doctor, to the orderly, to the laboratory technician, to the insurance company—wants medical examination or treatment to make each patient as healthy as possible. Of course, aviation professionals confront the vagaries of weather and face the risks of hijackers and terrorists. Notwithstanding aviation's best efforts to develop weather radar detection and high-tech security systems, aviation can never fully eliminate these risks. However, the risks are mitigated by the cooperative nature of the aviation industry: mechanics, air traffic controllers, pilots, flight crews, and ground crews work cooperatively to accomplish a common goal: the

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150. *See id.* at 50 (explaining that there "is no straightforward recipe" for the resolution of complex problems such as critical patient care).

151. Helmreich, *supra* note 39, at 782.

152. GAWANDE, *supra* note 145, at 49.

153. *See, e.g., Licenses & Certificates*, FED. AVIATION ADMIN., http://www.faa.gov/licenses_certificates/ (last modified Nov. 4, 2014) (listing licensing, certification and continuing education requirements for aircraft crews, pilots, and mechanics); AM. MED. ASS'N, STATE MEDICAL LICENSURE REQUIREMENTS AND STATISTICS (2014).

154. *See* sources cited *supra* note 153.

safe landing of every plane. Similarly, doctors, nurses, orderlies, insurance companies, and healthcare administrators share the common goals of promoting health, preventing illness, curing disease, and alleviating pain.[155] Thus, while different stakeholders may have different views about how to prioritize various aspects of the larger goal, they share a common vision.[156] As a result, in both industries, a broad range of stakeholders work collaboratively to implement a data-driven systems approach to error reduction and risk management.

In contrast, the criminal justice system is deliberately and vigorously adversarial.[157] In criminal justice, the relevant stakeholders largely have different interests. Public defenders see acquittal, dismissal, or the lowest possible sanction, while police and prosecutors actively pursue conviction and punishment.[158]

While there are several prominent collaborative criminal justice efforts to improve system outcomes, these efforts are confined to addressing the few outcomes that all criminal justice stakeholders deplore—primarily, wrongful convictions.[159] These collaborative approaches depend heavily upon stakeholders sharing information. These efforts prioritize accurate outcomes and describe "preserving public safety" as the "core" mission of "criminal justice practitioners."[160] While accuracy and public safety may be the core missions of police, prosecutors, judges, and probation officers, they are *not* the core missions of public defenders.

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155. Of course, both fields have experience with destructive insiders, who either want to cause airline crashes or injure patients. However, the existence of individuals who deviate from the industry-wide norm does not undermine the industry's institutional commitment to a common goal. *See generally* JEFFREY PRICE & JEFFREY FORREST, PRACTICAL AVIATION SECURITY: PREDICTING AND PREVENTING FUTURE THREATS 423 (2d ed. 2012) (discussing various threats to the aviation community).

156. For example, the doctor may want a patient to take a name-brand medication, while the insurance company may insist that she prescribe the generic version. While the insurance company acts in a price-conscious way, it also insists that the generic drug is equally efficacious, and therefore, the company's price consciousness does not undermine its commitment to maximizing healthcare outcomes.

157. Smith, *Too Much Heart*, *supra* note 79, at 1208–09 ("[D]efenders are civil libertarians, protecting the rights of criminal defendants and the rest of us through the adversarial system.").

158. United States v. Wade, 388 U.S. 218, 256–58 (1967) ("[D]efense counsel has no . . . obligation to ascertain or present the truth . . . . If he can confuse a witness, even a truthful one, or make him appear at a disadvantage, unsure or indecisive, that will be his normal course. Our interest in not convicting the innocent permits counsel to put the State to its proof, to put the State's case in the worst possible light, regardless of what he thinks or knows to be the truth.").

159. *See generally* Holloway, *supra* note 135 (highlighting the main points discussed in the University of Pennsylvania Law School Quattrone Center's November 2013 Dialogue, which focused on the need for reduction of wrongful convictions).

160. *Id.* at 7.

Indeed, those goals are often incompatible with an outcome-optimizing systems approach to public defense.

Our proposal for a data-driven systems approach to public defense is both narrower (focusing only on indigent defense) and broader (targeting a wider range of issues, errors, and risks) than the collaborative investigation of wrongful convictions. A systems approach to public defense must reflect the defense attorney's unique function as a partisan advocate for her clients' success. Within applicable ethical and legal constraints, a systems approach to public defense must seek outcomes that serve the clients' best interests, regardless of whether those outcomes increase accuracy or promote public safety.

This means that, unlike pilots and doctors, public defenders must develop their systems approach in a data "silo." They must treat other participants in the system as "hostile enemies," even though their policies and practices also impact client outcomes.[161] Using the tools of adversarial litigation, prosecutors are legally allowed—or even encouraged—to magnify the risks faced by people charged with crimes. Prosecutors and police, both powerful criminal justice stakeholders, actively work to convict or increase the sentences of indigent defendants. As commentators have amply detailed, sweeping prosecutorial discretion over charging decisions, sentencing enhancements, and sentencing departures has distorted the criminal justice system.[162]

In cooperative industries, organizations that use a systems approach can work "backwards" with collaborative stakeholders, exploring all stakeholder contributions to a negative outcome in order to identify its multiple causes. For example, in the highly circumscribed but institutionally cooperative field of aviation, there is a limited pool of risks and a limited range of causal factors that produce certain outcomes. Investigators can generally trace accidents or near misses back to even previously unidentified causal factors.

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161.   *Id.* at 8 (describing the adversary system as a challenge to information-sharing about errors and "near misses").

162.   HUMAN RIGHTS WATCH, AN OFFER YOU CAN'T REFUSE: HOW US PROSECUTORS FORCE DRUG DEFENDANTS TO PLEAD GUILTY (2013), http://www.hrw.org/reports/ 2013/12/05/offer-you-can-t-refuse. In some ways, the difficulties that prosecutorial misconduct and discretion pose to defenders are like the risks that pilots face. For instance, like harsh weather conditions, bad facts, aggressive charging policies, erroneous decisions about *Brady* obligations, sharp adversarial practices, and police and prosecutorial errors will always exist. Like security threats, some unethical prosecutorial and dishonest police officers will always try to slip past the "security systems" established by the Constitution and monitored by judges.

In contrast, other criminal justice stakeholders will rarely agree with public defenders about whether a particular case outcome is negative. As a result, those stakeholders have no institutional incentive to share information about causal risk factors, and the adversary system ensures that public defenders have no legal right to discover that information.[163] In fact, certain stakeholders might have an incentive to hide those risk factors if that would result in higher conviction rates. Defenders can be alert for these risks and can develop early-warning systems to try to detect them. Ultimately, however, many of these risks will contribute to client outcomes but will remain entirely hidden from defenders' view. A systems approach to public defense must grapple with these hidden causal factors.

Moreover, even if public defenders had perfect information about other stakeholders' policies and practices, weighing the relative importance of those causal factors would still present a challenge for a systems approach to public defense. As the human complexity of a problem increases, it becomes increasingly difficult to identify—much less weigh—the multiple causal factors that contribute to outcomes.[164]

Doctors and lawyers take their patients and clients—and their respective problems—as they find them. Doctors provide healthcare for patients who have undisclosed pre-existing conditions or who withhold crucial healthcare information. This means that doctors with imperfect knowledge must treat complicated problems that afflict complex, and ultimately mortal, patients. Risk factors are everywhere.[165]

Similarly, public defenders represent clients with unique backgrounds, disabilities, and challenges. Moreover, like patients in a high-volume public hospital, public defender clients share a common risk factor: poverty.[166] Many also confront risks associated with their race, gender-identity, sexual orientation, ethnicity, national origin, language, or

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163. *See* Tracey L. Meares, *Rewards for Good Behavior: Influencing Prosecutorial Discretion and Conduct with Financial Incentives*, 64 FORDHAM L. REV. 851, 862–63 (1995) ("The prosecutor's decision to charge an accused is largely subject to the prosecutor's discretion. The prosecutor's charging discretion is, for the most part, unreviewable."); Brandon L. Garrett, *Structural Reform Prosecution*, 93 VA. L. REV. 853, 905 (2007) ("Prosecutorial exercise of discretion is generally unreviewable if the prosecutor had probable cause, unless prosecutors rely on invidious characteristics like race or religion.").

164. *See supra* Part II.C.1 for a discussion of how a systems approach to public defense should collect and analyze data about causal risks.

165. Pia Maria Jonsson, Göran Tomson & Lars Räf, *Letter: No Fault Compensation Protects Patients in Nordic Countries*, 321 BRIT. MED. J. 506, 506 (2000) ("Clinical decision making is complicated and often includes an element of 'normal' risk taking.").

166. Poverty increases a criminal defendant's likelihood of conviction. By definition and statutory mandate, public defenders are appointed to represent the poor.

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religion.[167] They are more likely to be illiterate,[168] mentally ill,[169] or suffering from developmental disabilities.[170] As a result, it can be quite difficult to isolate the risks associated with an adverse outcome. Was it a client's disability that undermined her credibility or impacted her testimony? Did implicit biases based on race, gender, or age impact the result?[171] Did miscommunication based on language difficulties or lack of cultural competency affect the outcome? At the intersection of race, class, and otherness, these considerations can distort the proper assessment of risk.

2. The Complex and Adversarial Nature of Criminal Practice Makes It Difficult for Public Defenders to Define "Successful" or "Unsuccessful" Case Outcomes

In aviation and, to a lesser degree, in medicine, there is general agreement about what constitutes a negative outcome. Every plane crash is, by definition, a catastrophic outcome. Every time a patient leaves the operating table with a sponge sewn inside him, there has been a medical failure.[172] These clearly negative outcomes are easy to quantify. Often, they are high-profile tragedies that prompt strong public demand for answers. For example, catastrophic aviation events produce immediate and

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167. Terry Brooks & Shubhangi Deoras, *New Frontiers in Public Defense*, 17 CRIM. JUST., Spring 2002, at 51, 51 (recognizing that "clients need to address underlying problems such as poverty, addiction, mental illness, inadequate education, lack of access to social support services, and severe family conflict").

168. Alexandra Natapoff, *Speechless: The Silencing of Criminal Defendants*, 80 N.Y.U. L. REV. 1449, 1474 (2005) (citing DAVID COLE, NO EQUAL JUSTICE: RACE AND CLASS IN THE AMERICAN CRIMINAL JUSTICE SYSTEM 4 (1999) (pointing out that 40 percent of state prisoners are illiterate)).

169. Amanda C. Pustilnik, *Prisons of the Mind: Social Value and Economic Inefficiency in the Criminal Justice Response to Mental Illness*, 96 J. CRIM. L. & CRIMINOLOGY 217, 226–27 (2005) ("Nationwide, there are far more severely mentally ill individuals confined in prisons and jails than treated in all mental health facilities collectively. Annually, over 300,000 adults and children with mental illnesses—many of whom have committed only a public order infraction or no offense at all—are confined in state and federal prisons, jails, and juvenile corrections facilities.").

170. Andrew Guthrie Ferguson, *The Dialogue Approach to* Miranda *Warnings and Waiver*, 49 AM. CRIM. L. REV. 1437, 1459 (2012) ("[S]ome estimates have determined that there are approximately 200,000 intellectually disabled people imprisoned in the United States.").

171. *See, e.g.*, Andrew Taslitz, *Police Are People Too: Cognitive Obstacles to, and Opportunities for, Police Getting the Individualized Suspicion Judgment Right*, 8 OHIO ST. J. CRIM. L. 7, 15–16 (2010); L. Song Richardson, *Police Efficiency and the Fourth Amendment*, 87 IND. L.J. 1143, 1147 (2010).

172. Steven H. Woolf et al., *A String of Mistakes: The Importance of Cascade Analysis in Describing, Counting and Preventing Medical Errors*, 2 ANNALS FAMILY MED. 317, 317 (2004) (identifying "adverse drug events" and "surgical mishaps" as the "medical errors that are easiest to recognize").

"exhaustive investigation into causal factors."[173] Medical tragedies create million dollar liabilities and policy changes.[174] These, in turn, generate both "public reports . . . and remedial action[s]" that are rapidly implemented across the industry.[175]

Wrongful convictions are the most widely studied catastrophic outcomes in public defense.[176] However, reported wrongful convictions are few and far between; thus, they comprise an inadequate volume of data for a meaningful systems approach.[177] Unlike plane crashes, wrongful convictions are often discovered decades after they occur. During those decades, criminal law and public defender practices may have changed dramatically. This means that, despite aggressive retrospective analysis, wrongful convictions may produce limited data that are still relevant to contemporary public defender practice. Moreover, there is little accountability for the lawyers involved in those cases; many will have long since left criminal practice or retired from law altogether.[178] So, defining success by the factual accuracy of a conviction would do little to advance public defenders' understanding of how to improve outcomes.

More importantly, defining success based on the accuracy of verdicts fundamentally misunderstands the public defender's role as a partisan advocate and underestimates the extent to which sentences—rather than

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173. Helmreich, *supra* note 39, at 781.

174. Joanna C. Schwartz, *A Dose of Reality for Medical Malpractice Reform*, 88 N.Y.U. L. REV. 1224, 1267 (2013) (describing how lawsuits provide information about hospital practices and procedures).

175. Helmreich, *supra* note 39, at 781.

176. Aviation has relatively few catastrophic incidents, but has nevertheless developed a rich dataset that supports a strong systems approach to error. That dataset is drawn from the study of both near-miss and successful aviation events. For a discussion of how public defenders can develop data on these types of events, see *infra* Part III.B.

177. Charles Lanier & James Acker, *Capital Punishment, the Moratorium Movement, and Empirical Questions: Looking Beyond Innocence, Race, and Bad Lawyering in Death Penalty Cases*, 10 PSYCHOL. PUB. POL'Y & L. 577, 593 (2004) (citing Hugo Adam Bedau & Michael Radelet, *Miscarriages of Justice in Potentially Capital Cases*, 40 STAN. L. REV. 21, 25–27 (1987)).

178. *See supra* notes 176–177 and accompanying text for a discussion about the challenges in using wrongful convictions as a dataset for building a systems approach to error. In misdemeanor and low-level felony cases, wrongfully convicted defendants often accept their convictions as another "collateral" consequence of their confrontation with state power. And, defendants in low-level felony and misdemeanor cases who want to litigate their innocence often proceed pro se in their appeals, and almost inevitably proceed pro se in post-conviction proceedings. Since the available wrongful conviction datasets are limited to capital and high-level felonies, they offer little information about developing data-driven approaches to practice in misdemeanor and low-level felony practices. Moreover, the dataset on wrongful convictions is made up of cases in which clients are represented by public defenders, contract attorneys, and private counsel. *See generally* Anderson & Heaton, *supra* note 3 (conducting a study in Philadelphia comparing outcomes in murder cases when defendants were assigned to public defenders versus appointed counsel).

verdicts—are defenders' practice targets. Furthermore, by virtue of a defender's ethical duty to challenge the government's case with the utmost zeal, "inaccurate" acquittals count as positive outcomes for defenders, just as "accurate" convictions are still negative outcomes. As any trial lawyer will tell you, winning a case you should lose is the ultimate badge of honor, while losing a case you should lose is still a loss.

Perhaps more practically, a focus on the accuracy of verdicts also fails to account for the fact that over 95 percent of cases are now resolved by plea bargains.[179] Defining success as a positive verdict misses the larger systemic issues affecting outcomes for the vast majority of participants in the criminal justice system.[180]

As in much of medicine, criminal defense outcomes are inherently uncertain. Those uncertainties are exacerbated by the wide variability of cases with similar charges. Two men arrested with the same amount of cocaine might face different charging decisions and receive different outcomes depending on the circumstances of their arrests, prior criminal histories, gang affiliations, or other contextual factors. Doctors face similar challenges in establishing benchmarks to define success. Despite an ever-evolving understanding of disease, illness, and the human body, medical knowledge remains imperfect. From the common cold to cancer, the profession is still learning about widespread health problems. The riskiness and uncertainty of medical science mean that doctors do not always know how to define success or failure. How long should it have taken a patient to recover from illness? How much mobility should surgery have restored to a patient's arm? Did chemotherapy beneficially prolong a patient's life, or did it merely prolong the patient's suffering?

Even in cases presenting similar facts and charges, public defenders represent high-risk clients whose individual situations increase the wide variability of likely outcomes. Just as surgeons generally treat people who are already sick, public defenders generally represent people who are already in crisis. Further, many of those clients have lengthy criminal histories that, like a disease, weaken the person's ability to overcome their legal challenges. Legal outcomes are always uncertain, and if success is defined by acquittal or dismissal, the odds are staggeringly stacked against public defenders succeeding. Public defenders often work to mitigate the

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179. Missouri v. Frye, 132 S. Ct. 1399, 1407 (2012) ("Ninety-seven percent of federal convictions and ninety-four percent of state convictions are the result of guilty pleas.").

180. *See* Beeman, *Using Data, supra* note 2, at 5 ("[C]ertain metrics have no value, such as tracking offices 'successes' when success is defined only as acquittal.").

harmful effect of the "disease" rather than to cure it.[181] And, overwhelmingly, criminal defendants are likely to be convicted of some crime, even if it is not the crime for which they were arrested. Amidst these high-risk conditions, it is difficult for public defenders to qualify or quantify successful outcomes.

For all of these reasons, adapting the systems approach to public defense requires that the approach target outcome improvement rather than error avoidance. Ultimately, an emphasis on outcome improvement will reveal sources of risk, target positive outcomes, and provide the data necessary to improve the public defense delivery system. In order to target outcome improvement, we propose that defenders collect and analyze data about a wide range of risks and about the full range of defender actions— "correct" and "erroneous"—that contribute to case outcomes. We believe that these data can reveal which aspects of professional performance correlates with improved outcomes and which aspects with negative outcomes. It can also help highlight correlative factors influenced by external stakeholders. As discussed below, this type of data collection and analysis offers multiple opportunities for outcome improvement.

III. A DATA-DRIVEN SYSTEMS APPROACH TO THE DELIVERY OF PUBLIC DEFENSE SERVICES

This part sets out to develop a data-driven systems approach to public defender services. This part first constructs the goals and terminology of the framework, and then addresses how to build a learning culture that embraces such a data-driven vision. Finally, it offers a few concrete suggestions on how to design the system.

A. THE GOALS OF A SYSTEMS APPROACH TO PUBLIC DEFENSE

The goal of a systems approach to public defense should be to optimize outcomes for indigent criminal defendants by (1) collecting, assessing, and analyzing data about the relationship between risks, defender practices, and case outcomes; and (2) using those data to implement, measure, and refine practices that simultaneously maximize the use of defender resources and optimize case outcomes.[182]

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181.   As discussed *supra* Part I.A, in the data-less world of public defense, it is difficult to know whether, and to what extent, public defenders could "cure" rather than "mitigate" criminal charges facing their clients.

182.   *See,   e.g.,   Risk   Reduction   Program,*   FED.   RAILROAD   ADMIN., http://www.fra.dot.gov/Page/P0049 (last visited July 3, 2015) (providing an overview of the Federal Railroad Administration's risk reduction mission).

Specifically, public defender systems committed to a data-driven systems approach to public defense must:

- Identify, collect, and analyze case data that will isolate risks and performance factors that correlate with negative and positive outcomes;[183]

- Generate best practices that target remediable risks and generate practice norms that improve case outcomes;

- Monitor and, as necessary, modify the implementation of these best practices and the resultant measure outcomes;

- Develop pilot programs that test strategies designed to mitigate or eliminate the identified risks and promote outcome enhancing performance; and

- Maintain a feedback loop between ongoing data collection, pilot program case outcomes, and best practices implementation.[184]

B. THE TYPOLOGY OF A DATA-DRIVEN SYSTEMS APPROACH TO PUBLIC DEFENDER OUTCOME IMPROVEMENT

Below, we undertake a preliminary taxonomy of outcomes, risks, and actions that might constitute the core data collection elements of a data-driven systems approach to public defense. We believe that this typology will help illustrate the full potential of a data-driven systems approach. As appropriate, we draw comparisons and analogies to the terminology used in other high-risk industries' error management systems. As we offer these suggestions, we recognize that to guarantee uniform data collection across a wide range of practitioners and cases, a data collection system would require even far greater definitional precision than this preliminary typology. Our intent here is simply to establish a common framework with which to showcase our proposals. To that end, we also offer practical examples of how the collection and analysis of each category of data could produce system changes that improve case outcomes.

1. Outcomes

Measuring outcomes is critical to any data-driven systems project. Outcome measurement establishes the benchmarks by which an organization assesses whether system-driven reforms produce tangible

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183. *See* Beeman, *Using Data, supra* note 2, at 7; *Risk Reduction Program, supra* note 182.
184. *See, e.g., id.* (listing the Federal Railroad Administration's various risk reduction objectives).

improvements. We may think that a well-funded public defender system does better than a poorly funded system, but we cannot prove it without data-based measurements of outcomes.

Under our framework, an "outcome" is a quantifiable case or client result measured at the conclusion of an identified trial-level proceeding, without regard to pending appellate litigation or appellate outcomes.[185] Examples of outcomes might include suppression of evidence (outcome of a motions hearing), conviction (outcome of a trial), or five years of incarceration (outcome of a sentencing).[186]

In a data collection system, each outcome would be recorded separately. Over time, each outcome would be measured against the outcomes of other public defender clients. As discussed above, links between pretrial release and ultimate sentencing dispositions could be isolated and studied to show the correlation. In addition, other catastrophic outcomes and adverse outcomes could be studied.

a. Catastrophic Outcomes

A catastrophic outcome is a *final* trial-level outcome that is (1) adverse to the client's interest; and (2) either factually erroneous or contrary to well-established law.[187] Examples of catastrophic outcomes include wrongful convictions,[188] sentences in excess of the legal maximum,

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185. While one could also assess outcomes at the end of the appellate process (or even at the conclusion of post-conviction relief proceedings), such a delayed assessment of outcomes poses a powerful obstacle to the timely data feedback loop necessary for a successful systems approach. For further discussion of the disadvantages of the delayed feedback loop in cases assessed after length post-conviction proceedings, see *infra* Part IV.C, discussing the relative weakness of wrongful conviction cases as the data pool for a systems approach to criminal justice.

186. Choosing what data to collect about case outcomes is itself a value-rich decision. As we explain *infra* Part IV.A, we strongly urge the development of standardized national reporting protocols so that defender analysts can engage in meaningful comparative analysis. We leave for another day the precise taxonomy of any standardized project.

187. As noted *supra* notes 159–160, collaborative error reduction projects seek objectively accurate case outcomes. In contrast, a public defender error reduction project seeks the best outcome for defender clients, regardless of the accuracy of that outcome. So, a system-wide error reduction project might identify the acquittal of a guilty person as an error that should be avoided. A defender error-reduction project would identify the acquittal of a client as a success, regardless of the client's legal or factual guilt.

188. The acquittal of a guilty client is *not* a catastrophic outcome because that outcome is not adverse to the client's interest. This highlights an important distinction between a defender-centric systems approach to indigent defense and a collaborative systems approach to criminal justice. Collaborative error-reduction projects seek objectively accurate case outcomes and would generally define the acquittal of a guilty person as a catastrophic outcome that should be avoided. *See* Doyle, *supra* note 2, at 110; Holloway, *supra* note 135, at 6, 10.

and convictions obtained in violation of the statute of limitations.[189]

In the wider criminal justice community, there is an assumption that catastrophic outcomes are relatively rare. However, we suspect that there may be widespread but unknown catastrophic outcomes that permeate indigent defense, precisely because defenders lack a data-based lens with which to identify them. Here, we do not refer to wrongful convictions, although we believe that the wrongful conviction dataset is grossly misleading given its disproportionate focus on capital and high-level felony convictions.[190] Rather, we refer to the possibility that, in the data-less world of overworked and under-resourced defenders, defendants may experience—and defenders may not notice—more "routine" catastrophes, such as illegal sentences or detention beyond the mandatory release date. By adopting our broad definition of catastrophic outcomes, we hope to facilitate the identification and resolution of these major injustices.

b. Adverse Outcomes

An adverse outcome is an outcome to the client's detriment that compares unfavorably with the target outcomes established by the public defender office. Adverse outcomes may be based upon assessments at the conclusion of a specified trial-level proceeding (such as bail or motion practice) or at the time that a judgment becomes final.[191]

Of course, in order to evaluate an adverse outcome, defender organizations will need either to track outcome progress across time or to develop target outcomes. A target outcome is a benchmark goal that determines, for data collection purposes, whether an outcome is adverse. A *normative target outcome* establishes an outcome goal that tracks the mean outcome for similar cases. An *aspirational target outcome* establishes an outcome goal that (1) exceeds the mean outcome of similar cases; and (2) is demonstrably achievable based on legal restrictions and upon data about similar cases.[192] Office policy and institutional priorities will determine

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189. As discussed *infra* Part III.B.3, catastrophic legal outcomes constitute an extant dataset that is too small—and spread across too lengthy a timeframe—to create a meaningful data feedback loop.

190. Experts assert that wrongful convictions occur far more frequently than we know. In serious felony cases, wrongfully convicted defendants languish in jail for decades while cases wind their way through the appellate and post-conviction processes. In misdemeanor and low-level felony cases, defendants plead guilty to avoid or reduce their jail time and accept their wrongful convictions as another "collateral" consequence of their confrontation with state power.

191. For reasons explained *supra* Part II, transparency about the nature of a target outcome is an important part of accomplishing defender buy-in of a data-driven systems approach to public defense.

192. *See generally* Ronda G. Hughes, *Tools and Strategies for Quality Improvement and Patient Safety in* 3 PATIENT SAFETY AND QUALITY: AN EVIDENCE-BASED HANDBOOK FOR NURSES, *supra* note 106, at 1.

whether the office uses *normative* or *aspirational* outcomes, or a combination of the two.[193]

c. Practical Example

Suppose a jurisdiction imposes a six-month mandatory minimum sentence of incarceration for first-time, non-violent felons. Data within the defender office demonstrate a mean sentence of one year of incarceration for a first-time, non-violent felon who pleads guilty. In order to measure outcomes, the defender office might track outcomes in those cases, seeking correlative or causal factors. In addition, the public defender office might establish a *normative target outcome* of one year of incarceration. The office might then collect and analyze data to determine what risk factors and attorney actions correlate with outcomes that meet or exceed the normative target outcome.

On the other hand, perhaps the defenders' data suggest a correlation between significant sentencing advocacy and sentences of less than one year.[194] Acting on that data, the public defender office could establish an *aspirational target outcome*. Because of the six-month mandatory minimum, any target for a first-time, non-violent felon who pleads guilty, would have to be between six months and one year. Moreover, the aspirational target outcome should be demonstrably achievable, as indicated by the available data on similar cases.

A strong data feedback loop would help each office set appropriate aspirational target outcomes. If data indicated that a nine-month sentence was an unrealistic target, the office might set a target of eleven months. Or the office might use data feedback from identified risk factors and performance variables to determine that a nine-month sentence is an achievable target for defendants on pretrial release, but not for incarcerated defendants. In that case, the office might establish target outcomes based on the client's pretrial release status; the office might also shift its practice focus to target pretrial release strategies.

2. Risk Factors

Central to the goal of improving outcomes is an understanding of the risk factors that correlate to outcomes or outcome trends. A *risk factor* is a

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193. Robust data will be essential to public defenders' ability to define normative and aspirational target outcomes.

194. As discussed *infra* Part III.B.3, tracking the relationship between defender actions and case outcomes is essential for defender offices to develop empirical evidence about what practices generate outcome improvement.

fact or circumstance that has a demonstrably high correlation with (1) failed or erroneous defender actions;[195] or (2) catastrophic or adverse outcomes.[196] Risks may be internal or external to the public defender organization. Some risks will be routine and predictable; others will be extraordinary and unpredictable. Regardless, defenders must collect and analyze data about risks so that they can identify and vigorously combat them.

a. Internal and External Risks

Internal risks are factors created by, or intrinsic to, the public defender practice (for example, high caseloads or fatigued lawyers). If defender offices correlate internal risks with negative outcomes, they can regulate those risks accordingly.[197]

External risks are factors beyond the control of the public defender organization. Some external risks are societal or environmental factors.[198] Other external risks are factors created or controlled by national, statewide, or local criminal justice stakeholders. Examples of such external risks might include a state's mandatory minimum sentencing legislation, a police precinct's policy of making custodial arrests (rather than issuing a summons), a prosecutor's practice of vigorously prosecuting crimes committed in wealthy residential areas, or a judge's preference for detaining unemployed defendants. By documenting the relationship between stakeholder-generated risks and negative case outcomes, public defenders can persuasively advocate for stakeholders to change their policies or practices.

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195.   *See infra* Part III.B.3.

196.   *See supra* Part III.B.1.

197.   In many instances, overwork may reflect attorney efforts to manage unreasonably high caseloads. In such a case, the internal risk of "overwork" could also be characterized as an internal risk of "unregulated caseloads" or an external risk of "underfunding." In other cases, overwork may reflect a "workaholic" culture.

198.   For example, since data demonstrate that, as compared with similarly-situated white defendants, defendants of color experience higher rates of conviction and more severe sentences, a defendant's race may constitute a factor that increases the risk of harsher charging, bargaining, and sentencing outcomes. *See, e.g.,* Casey Reynolds, *Implicit Bias and the Problem of Certainty in the Criminal Standard of Proof,* 37 LAW & PSYCHOL. REV. 229, 241 (2013) ("Studies of jurors in recent years have revealed differences in rates of convictions based on race, gender, and even weight."). *See also* Samuel R. Sommers & Phoebe C. Ellsworth, *White Juror Bias: An Investigation of Prejudice Against Black Defendants in the American Courtroom,* 7 PSYCHOL. PUB. POL'Y & L. 201, 216 (2001); Celesta A. Albonetti & Robert D. Baller, *Sentencing in Federal Drug Trafficking/Manufacturing Cases: A Multilevel Analysis of Extra-Legal Defendant Characteristics, Guidelines Departures, and Continuity of Culture,* 14 J. GENDER RACE & JUST. 41, 43 n.4 (2010) (listing studies researching the effects of race on sentencing severity). So, if police and prosecutors identify a defendant as African-American, that race-categorization is an external risk factor for a negative outcome in the defendant's case.

b. Latent Risks

A latent risk is an undiscovered condition or practice that operates in the "background" of indigent defense systems. Latent risks can be internal or external; in either instance, they are hidden, unseen, and unidentified factors that contribute to negative outcomes. Latent risks can be external (for example, an undisclosed jail release procedure that discharges mentally ill offenders before they have taken their medications) or internal (a public defender case management system that fails to track release dates).

Absent a data-driven systems approach to practice, latent risks tend to remain undiscovered until the investigation of a catastrophic outcome. A vigorous data-driven systems approach to defense practice has the potential to accelerate the discovery of latent risks by highlighting previously unnoticed correlations between these background factors and case outcomes. This is the same insight that many big data companies highlight—that data reveal all sorts of unseen patterns that can improve efficiency and services.[199]

c. Cascading Risks

An effective data-driven system must connect the "cascade" of multiple risks and events that are causally connected to each negative outcome.[200] While lawyers (and appellate courts) are used to thinking about legal decisions as a series of discrete decisions independent in time and unconnected to others, in truth, past decisions affect future decisions. A single failure to obtain a single fact (for example, a client's immigration status) might have a significant impact on decisions further along in the criminal case. Ignoring this cascade can produce inaccurate data about cause and effect and can spread misinformation about the best practices for outcome improvement.[201] This, in turn, "misplaces blame" and diverts outcome improving resources away from the full range of institutional structures that contribute to the negative outcomes.[202] An insistence upon assigning a single cause to a case outcome masks the complexities of practice in high-risk enterprises.[203]

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199. *See* Jonas Lerman, *Big Data and Its Exclusions*, 66 STAN. L. REV. ONLINE 55, 57 (2013) ("Big data, for all its technical complexity, springs from a simple idea: gather enough details about the past, apply the right analytical tools, and you can find unexpected connections and correlations, which can help you make unusually accurate predictions about the future—how shoppers decide between products, how terrorists operate, how diseases spread.").

200. Woolf et al., *supra* note 172, at 317.

201. *See id.* at 318 (discussing the consequences of ignoring cascading risks).

202. *Id.*

203. *Id.* at 317. For example, say that a patient's medical record contained the incorrect body

d. Practical Example

Perhaps a defender office notices that workdays in excess of twelve hours strongly correlate with negative outcomes. The defender office might launch a pilot project that restricts attorneys to an eight-hour workday. If that policy improves outcomes, the office may institutionalize it. If that policy does not affect outcomes, the office might abandon the policy or explore alternative reasons for the correlation between long workdays and negative outcomes.

In many instances, overwork may reflect attorney efforts to manage unreasonably high caseloads. In that case, overwork could also be characterized as an internal risk of "unregulated caseloads" or an external risk of "underfunding." In other cases, overwork may reflect a "workaholic" culture. (Notice that defenders must track and analyze a particular risk factor in order to develop the corresponding risk minimization policy.)

While the identification of risk factors is an evolving process, statistical criminal justice literature points to known risks that defenders can use to initiate a data-driven systems approach to outcome improvement. For example, pretrial detention correlates with higher rates of conviction,[204] higher rates of custodial sentences,[205] and longer sentences.[206] Moreover, people of color face a higher risk of being held in pretrial detention.[207] Accordingly, an African American who is detained before trial confronts a cascade of risks that disproportionately increases the likelihood of an adverse verdict and sentence.

Armed with that knowledge, a defender office might focus on improving pretrial release rates. To do that, it would conduct further analysis about what factors create a high risk for detention in its

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weight or that a laboratory report was missing from the record. *Id.* In those instances, the physician might prescribe a correspondingly incorrect dosage of medication. If "counted as a single error and given a single name, such as a prescribing error," then the data would suggest that the resulting adverse event was caused by the physician's error in prescribing the incorrect dosage. *Id.* Such an oversimplified analysis of the situation would fail both to consider and document other factors that may have contributed to the prescribing error, such as overworked staff or disorganized laboratory procedures. A more nuanced system, however, would accurately assess whether preceding risks and errors were the cause of, or contributed to, the physician's ultimate prescribing error. *Id.*

   204.   Douglas Colbert, Ray Paternoster & Shawn Bushway, *Do Attorneys Really Matter—The Empirical and Legal Case for the Right of Counsel at Bail*, 23 CARDOZO L. REV. 1719, 1720 (2002).
   205.   *Id.*
   206.   *Id.*
   207.   *Id.* at 1745–46.

jurisdiction. These risk factors might be external (for example, the nature of the charge, the identity of the presiding judge, or the defendant's race) or internal (bond reduction motions filed without full investigation). Based on its analysis, the defender office might establish a more aggressive bond reduction practice in specific categories of cases, develop investigation norms for bond reductions motions, or create a special category of investigators who focus on bond issues. The defender office might also educate the judiciary about the risk in order to encourage more openness about pretrial release.

In the alternative, a defender office might focus on improving final outcomes for detained defendants. If the office tracks weighted caseloads, the office might assign a case weight multiplier for detained defendants. This would rebalance lawyers' caseloads to reflect the additional work of representing a detained defendant. Or the defender office might educate prosecutors and judges about the relationship between detention and outcomes as a strategy for negotiating better plea bargains and advocating for better sentences.

We anticipate that many risks will be beyond defenders' capacity to manage or mitigate. However, early warnings about those risks will alert defenders about potential "hot spots" in their practice. Defender offices can change their internal practices or work with other criminal justice stakeholders to reduce risks. Ultimately, by attending to the relationship between risks and outcomes, defenders can design institutional and individual practice strategies to neutralize or minimize their effect on case outcomes.

3. Defender Actions

A *defender action* is any action or omission by a public defender or public defender staff[208] made in connection with an individual case. We have deliberately chosen to focus on actions rather than errors because of the unique challenges of public defender practice.

Industrial safety experts define an error as "an occurrence in which a planned sequence of mental or physical activities fails to achieve its intended outcome."[209] This concept of error may be useful in industries

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208. While public defender systems may involve fewer independent actors than an aviation incident or the death of a hospitalized patient, defender delivery systems can, and should, embrace non-lawyer staff as important resources in the improvement of outcomes and the appropriate actions that contribute to optimal outcomes.

209. David G. Newman, *Medical Team Resource Management and Error Prevention Training, in* MULTIMODAL SAFETY MANAGEMENT AND HUMAN FACTORS: CROSSING THE BORDERS OF MEDICAL,

where the "in-house" participants control some or all of the other factors that produce the intended outcome. However, in public defense, it makes little sense to characterize attorney conduct as erroneous simply because it fails to achieve its intended outcome.[210] The strong influence of external criminal justice stakeholders means that a public defender might flawlessly "execute a planned sequence of mental or physical activities" and nevertheless fail to achieve her intended outcome.[211] Jury verdicts, judicial rulings, and prosecutorial exercises of discretion can thwart even the most brilliant strategy or technically expert cross-examination.[212] Accordingly, the terminology of error is neither useful nor accurate in describing many defender actions that contribute to case outcomes.

For similar reasons, we do not advocate developing a systems approach that seeks to implement the "best practice" protocols already established by defender organizations.[213] *Best practices* are those defender practices that routinely enhance outcomes either across the board or in discrete types of cases. While we have a strong subjective sense that many existing "best practice" protocols may routinely improve outcomes, our goal is to collect and analyze data that *demonstrate* which actions produce the best outcomes. Only with empirical proof of a causal or correlative relationship between a particular practice and enhanced case outcomes should public defenders institutionalize any lawyering protocol as a "best practice" to be replicated in a systems approach. Until defenders assemble and collect data about inputs and outcomes, defenders cannot truly identify best practices.

While we cannot generate data-free lists of best practices or errors, we do offer a typology of the actions that public defenders should track.

a. Violations

A *violation* occurs when a member of the public defender organization consciously fails to follow established procedures and protocols.[214] For example, a public defender knows that her office requires documentation of each client call, but refuses to document "very quick" phone calls

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AVIATION, ROAD AND RAIL INDUSTRIES, *supra* note 115, at 271, 271 .

210.   Salmon, Regan & Johnston, *supra* note 115, at 144.

211.   *Id.*

212.   As discussed *infra* Part IV, this explains, in part, why our proposal eschews a focus on performance and error and adopts instead a systemic inquiry about the relationship between risks, actions, and outcomes.

213.   *See, e.g., Standards for Attorney Performance*, NAT'L LEGAL AID & DEFENDER ASS'N, http://www.mynlada.org/defender/DOJ/standardsv2/welcome.html (last visited July 3, 2015).

214.   *See* Helmreich, *supra* note 39, at 782.

reminding clients of their next court appearance. Violations may reflect a cultural resistance to a systems approach to defending. In other high-risk professions, violations "stem from a culture of non-compliance" or from professionals' "perceptions of invulnerability."[215]

b. Slips

A *slip* occurs when a member of the public defender organization follows established procedures but executes those procedures imperfectly or incorrectly, and the imperfection is observable.[216] For example, if an administrator made a visible error in a mandatory computer entry, that error would be a slip. Slips may reflect ordinary human fallibility, or they may signal that the organization has established "inadequate procedures" that should be improved.[217] In collecting and analyzing defender actions, slips should be distinguished from lapses.

c. Lapses

A *lapse* occurs when a member of the public defender organization follows established procedures but executes those procedures imperfectly or incorrectly, and the imperfection is undetectable absent a post-outcome investigation.[218] Lapses can thus be considered a latent form of slips.

d. Deficiency

A *deficiency* occurs when a member of the defender organization acts without the knowledge, skill, or judgment ordinarily expected of someone in that position.[219] When a lawyer misunderstands a core legal principle and as a result fails to preserve an important objection, that action represents a deficiency. In that instance, the defender's legal knowledge— or lack thereof—is the characteristic that distinguishes the deficiency from a slip or a lapse. Slips and lapses reflect ordinary human fallibility; knowledgeable professionals execute the appropriate steps, but make

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215. *Id. See also* Shappell & Wiegmann, *supra* note 107, at 3 ("Violations . . . refer to the willful disregard for the rules and regulations that govern the safety of flight."). Shappell and Weigmann distinguish between "routine" and "exceptional" violations. Routine violations "tend to be habitual . . . and often tolerated by governing authority." In contrast, "exceptional violations appear as isolated departures from authority, not necessarily indicative of individual's typical behavior pattern nor condoned by management." *Id.*

216. *See* REASON, HUMAN ERROR, *supra* note 95, at 9.

217. Helmreich, *supra* note 39, at 782.

218. *See* REASON, HUMAN ERROR, *supra* note 95, at 9. Professor Helmreich categorizes both slips and lapses as procedural errors, regardless of their visibility. Helmreich, *supra* note 39, at 782.

219. *Cf.* Helmreich, *supra* note 39, at 782. In aviation, these are referred to as skill-based errors; in the Human Factors Analysis Classification System, skill-based errors include errors due to inattention, memory failure, or improper technique. Shappell & Wiegmann, *supra* note 107, at 3–4.

ordinary human mistakes in their execution. Deficiencies reflect unexpected professional ignorance: the professional simply does not know what actions to take or how to correctly complete them.

Deficiencies also arise when "intentional behavior . . . proceeds as intended, yet the plan proves inadequate . . . for the situation."[220] These deficiencies reflect well-intentioned acts of poor judgment by defenders who "either did not have the appropriate knowledge or just simply chose poorly" among the available courses of action.[221] For example, a lawyer demonstrates a deficiency if, for example, he either sets a court date of April 15 for a client accused of tax evasion, or brings a client to meet with an identification witness when attempting to establish a misidentification defense.

e. Miscommunications

Miscommunications involve the exchange of incomplete or incorrect information. Miscommunications can occur within the public defender organization, in attorney-client communications, or in defender communications with witnesses, members of the community, or other criminal justice stakeholders. Misinterpretations of language, law, or cultural barriers can create miscommunications.[222] Imagine, for example, a lawyer who tells her client to come to court on a particular date but does not communicate the time. The client arrives at noon for a 9:00 a.m. hearing, by which point the judge has already entered a bench warrant for the client's arrest.

f. Near Miss and Recovery Events

In aviation, catastrophic outcomes constitute a dataset too small to provide meaningful information about systemic practices.[223] So, risk management systems in aviation—and, to a lesser degree, in healthcare— collect and analyze data about near misses[224] and related recovery actions in an effort to learn more about how to repair errors and improve outcomes.[225] Near misses and negative outcomes share common causes,[226] so near misses are important resources for learning about, and preventing,

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220.   Shappell & Wiegmann, *supra* note 107, at 4.

221.   *Id.*

222.   Helmreich, *supra* note 39, at 782.

223.   Weingart et al., *supra* note 39, at 774 (High profile medical catastrophes may "spotlight the problem of medical error but provide little insight into its nature or magnitude.").

224.   A near miss is an event that could produce a negative outcome but does not.

225.   Barach & Small, *supra* note 39, at 759; Helmreich, *supra* note 39, at 784.

226.   Barach & Small, *supra* note 39, at 759 ("[T]he same patterns of causes of failure and their relations precede both adverse events and near misses.").

negative outcomes.[227]

In public defense, demonstrably wrongful convictions and other self-evident catastrophic outcomes are similarly rare. Studying defenders' near misses is an essential way to increase the pool of data available for study.[228] The burgeoning analysis of wrongful conviction data could provide a useful dataset for comparison of near miss and recovery events.[229] Successful identification and study of near misses will prevent defenders from "underestimat[ing] the magnitude of risk and the extent of harm" posed by their daily practices.[230]

While developing precise data points is beyond the scope of this Article, certain common actions and omissions can be tracked along with outcomes. Correlating these actions or omissions with near misses will allow for the development of a more robust understanding of how to avoid repeating those actions in the future. Accurately identifying which types of actions fall into which types of categories is the initial step to develop a larger assessment tool to improve public defense.

C. DEVELOPING A SHARED LEARNING CULTURE THAT SUPPORTS THE DATA-DRIVEN SYSTEMS APPROACH TO PUBLIC DEFENSE

As explained in Part I, there are significant obstacles to engaging public defenders in such an ambitious program for data collection and analysis. Thus, the first step must be persuading public defenders that this data collection and analysis is an essential institutional priority. To succeed in this endeavor, public defender offices will need to create an organizational policy and culture that:

- Obligates and empowers all defender employees—regardless of their status—to identify and collect data concerning risks,

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227.   *Id.*

228.   *Id.* Barach and Small explain that the reporting and analysis of near miss events has "been institutionalised in aviation, nuclear power technology, petrochemical processing, steel production, military operations, and air transportation." *Id.* (footnotes omitted). The "[c]omparison of near misses with adverse outcomes offers advantages: (a) near misses occur 3–300 times more often than adverse events, enabling quantitative analysis; (b) fewer barriers to data collection exist, allowing analysis of interrelations of small failures; (c) recovery strategies can be studied to enhance proactive interventions and to de-emphasise the culture of blame; and (d) hindsight bias is more effectively reduced." *Id.* at 760–61 (footnotes omitted).

229.   *See, e.g.,* Gould, Carrano, Leo & Young, *supra* note 9.

230.   *See* Weingart et al., *supra* note 39 (High profile medical catastrophes may "spotlight the problem of medical error but provide little insight into its nature or magnitude."). *See also supra* Part III.B, discussing the implementation benefits of studying near misses rather than catastrophic or adverse outcomes.

outcomes, and performance errors or omissions;

- Encourages data disclosure by focusing on systemic causes and reforms, rather than the discipline or disgrace of individual defenders, and by making the development of outcome-improving protocols part of the defender's professional identity; and

- Identifies and encourages stakeholders who are necessary to implement a systems-based approach.

Developing shared goals and a shared terminology are important, but ultimately insufficient without also developing a shared learning culture to support a data-driven systems approach. Such a learning culture must be embraced by all of the key stakeholders in the public defense delivery system—defenders, clients, and the community.

Successful systems for risk reduction and outcome improvement depend upon stakeholders' cooperation with, and commitment to, the data-driven systems approach. Indeed, viewing "the continual improvement of quality as intrinsic to the work itself" is a cultural characteristic common to professions that embrace data-driven risk-reduction practices.[231] However, creating a data-driven culture of improvement requires that participants embrace data collection, error reporting, and an evidence-based feedback loop for outcome-improving reforms. This Section examines how key stakeholders in public defense can learn to benefit from a data-driven system.

1. Defenders as Stakeholders

As noted in Part I, defenders resist data-driven systems. To change this mindset, and thus the defender culture, defenders must understand, value, and embrace the benefits of a data-driven systems approach. This requires a cognitive shift toward systems-directed evaluation. The system—not the lawyer or the lawyer's error—must be the focus. With a systems approach, lawyers and supervisors will be more willing to identify, report, and learn from their violations, slips, lapses, deficiencies and miscommunications. Lawyers must trust that disclosures of these types of actions will be used as meaningful opportunities to improve institutional and organizational systems, rather than as narrow investigations intended to blame-and-shame hard-working, but fallible, human beings.

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231. Doyle, *supra* note 2, at 110 (quoting CHARLES KENNEY, THE BEST PRACTICE: HOW THE NEW QUALITY MOVEMENT IS TRANSFORMING MEDICINE 30 (2008)).

As a parallel example, prior to the medical safety movement, there were few consistent "[m]easurement[s] of performance in medicine ... because no one saw it as personally advantageous to be measured."[232] This anti-data approach was magnified by active use of a person approach to error in traditional medical safety programs.[233] Accordingly, doctors maintained a "narrow focus on individual performance to the exclusion of contributory team and larger social issues."[234] For doctors, data collection and error reporting were "inextricably associated ... with a system of surveillance and post hoc inspection, which had blaming as its sole purpose and public ignominy as its only outcome."[235] Successful implementation of a systems approach required medicine to eliminate a culture in which people were afraid to admit errors and replace it with one in which people understood that "every defect is a treasure" in the hunt for improved outcomes and reduction of error.[236] Thus, a demonstrable institutional focus on "system error" rather than "human error" is an important factor in creating a culture of error reporting.[237]

In aviation, this same concern required assuring pilots and their crews that safety experts wanted to differentiate between "unacceptable behavior and blameless unsafe acts" because the blameless unsafe acts far exceeded the incidents of unacceptable behavior.[238] Aviation safety experts gathered data suggesting that only 10 percent of operator actions were "culpable" actions or errors and shared that data widely with pilots and flight crews.[239] This concrete information helped operators trust that "the large majority of unsafe acts can be reported without fear of sanction."[240]

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232. *Id.* at 120.
233. Barach & Small, *supra* note 39, at 761. Through morbidity and mortality conferences, grand rounds, and peer review of controversial techniques and practices, medical professional reviewed adverse medical outcomes to explore ways to improve future outcomes. However, until the 1990s, assessment procedures tended to "search for errors as opposed to the myriad causes of error induction." *Id.*
234. Doctors widely perceived each morbidity and mortality conference as a "dreaded ceremonial warning that perfection was the requirement and individual responsibility for perfection was indivisible and indispensable." Doyle, *supra* note 2, at 120. Although these conferences were intended to formalize a system of learning-from-error, they "might as well have been designed to reinforce a determination to treat every error as an operator error and every operator error as evidence of moral or professional failing in the operator." *Id. See also* Barach & Small, *supra* note 39, at 761.
235. Doyle, *supra* note 2, at 120.
236. *Id.* at 121 (quoting Donald Berwick, *Sounding Board: Continuous Improvement as an Ideal in Healthcare*, 320 NEW ENGL. J. MED. 53, 54 (1989)).
237. Doyle, *supra* note 2, at 109 (quoting PERROW, *supra* note 104, at 9).
238. GAIN, *Roadmap, supra* note 141, at vi.
239. *Id.*
240. *Id.*

To facilitate a culture of disclosure, some industries, like aviation, have successfully lobbied for legal structures that encourage—or even require—error reporting.[241] Other industries have incentivized voluntary reporting by providing guarantees of confidentiality or immunity from professional discipline and civil or regulatory consequences.[242] For example, in the aviation industry, the FAA conducts Line Operations Safety Audits ("LOSA") for commercial aircraft. While the goal is to intensively search for potential errors, the results of the audits are strictly confidential; the FAA views this "non-jeopardy assurance for pilots [as] fundamental to the process."[243] In addition, the FAA offers immunity to people who report to the Aviation Safety Reporting System ("ASRS").[244] "The effectiveness of this program in improving safety depends on the free, unrestricted flow of information from the users."[245] Even more importantly, if a person promptly reports an inadvertent error to the ASRS, the FAA will waive all applicable civil penalties, fees, and certificate suspensions.[246]

These promises of confidentiality, anonymity, and immunity are not blank checks for error. Rather, they foster what James Reason calls a "just culture," which creates "an atmosphere of trust in which people are encouraged (even rewarded) for providing essential safety-related information, but . . . are also clear about where the line must be drawn between acceptable and unacceptable behaviour."[247]

Administrators overseeing defender offices should borrow this "just culture" approach to seeking accountability without personal blame to improve the overall quality of defending. Recognizing that systemic errors will occur, administrators and supervisors should see this as an opportunity to fix these errors rather than to fix the trial lawyers. Information channels should be designed to encourage confidential feedback about errors. Reporters of the errors should be protected from retaliation or exposure. By

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241.   *Id.* at 15.

242.   Barach & Small, *supra* note 39, at 762.

243.   FED. AVIATION ADMIN., ADVISORY CIRCULAR 120–90, LINE OPERATIONS SAFETY AUDITS (Apr. 27, 2006), http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_120-90.pdf [hereinafter FAA ADVISORY CIRCULAR 120-90].

244.   FED. AVIATION ADMIN., ADVISORY CIRCULAR 00–46E, AVIATION SAFETY REPORTING SYSTEM (Dec. 2011), http://asrs.arc.nasa.gov/docs/AC%2000-46E.pdf. The ASRS website reports that "[m]ore than one million reports have been submitted to date and no reporter's identity has ever been breached by the ASRS." *Confidentiality and Incentives to Report*, AVIATION SAFETY REPORTING SYSTEM, http://asrs.arc.nasa.gov/overview/confidentiality.html (last visited July 3, 2015).

245.   *Confidentiality and Incentives to Report*, *supra* note 244.

246.   *Id.* NASA has a report documentation procedure that allows otherwise anonymous reporters to retain proof of the date, time, and contents of their report.

247.   GAIN, *Roadmap*, *supra* note 141, at 4.

creating an inclusive reporting system, certain risks and inefficiencies will be exposed. For administrators, the data may also reveal solutions to those problems.

Defenders themselves may also see advantages in this data-driven, systems-focused approach. These benefits range from the professional to the personal. Recognizing these benefits is important because for any system to work, the end user (in our case, the defender) must buy into the system.

First, the process of setting up a data collection system provides some needed transparency to defenders about what they should be doing in their cases. In order to collect data on defender actions, defender offices will have to think through what lawyers do in different types of cases. As one example of a data-driven approach to defending, the San Francisco Public Defender's Office ("SFPDO") is pioneering an error prevention model of practice. Funded by a federal grant, the office is developing practitioner checklists to guide defenders through the best practices for defending particular types of cases. The project seeks to create locally and nationally applicable guides for defending criminal cases.[248] As of February 2014, the SFPDO has created forty checklists for representing clients charged with various crimes.[249] This checklist methodology is primarily an error reduction approach to defending. However, the SFPDO also seeks to generate data about the use of specific standards (inputs) in order to study "actual criminal case outcomes, during periods of time immediately preceding and following the implementation of checklists."[250] This evaluation of the relationships between inputs and case outcomes will provide very valuable information for future data-driven projects.

Second, an outcome-oriented approach allows defenders to set realistic expectations.[251] In a world without benchmarks, it can be hard to

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248. Pamela MacLean, *To Do Lists for Lawyers*, CAL. LAWYER (Feb. 2014), https://www.callawyer.com/clstory.cfm?eid=933203.

249. *Id.*

250. S.F. Pub. Def. Off., *Checklists for Defense: A Training Strategy for Public Defenders— Solicitation for Encouraging Innovation: Field-Initiated Programs*, BUREAU JUST. ASSISTANCE 13 (2013), https://www.bja.gov/Funding/Field-San_Francisco_Public_Defenders_Office.pdf.

251. Mark H. Moore, *Alternative Strategies for Public Defenders and Assigned Counsel*, 29 N.Y.U. REV. L. & SOC. CHANGE 83, 92 (2004) (discussing the issue of professional pride and self-respect that is compromised because of inadequate resources); Rodney Thaxton & Lida Rodriguez-Taseff, *Professionalism and Life in the Trenches: The Case of the Public Defender*, 8 ST. THOMAS L. REV. 185, 186 (1995) ("Because resources are so meager for public defenders . . . living up to the profession's expectations and standards is a constant and frequently futile struggle."). *See also Analytical Support for Risk Reduction Programs*, FED. RAILROAD ADMIN., http://www.fra.dot.gov/eLib/Details/L03202 (last visited July 3, 2015).

know whether you are succeeding or failing. One of the constant stressors on defenders is the contingency of individual client outcomes. Seen individually, these case outcomes may be devastating or unfair. Seen systemically, these case outcomes may be quite normal. Such a process may reduce attorney burnout rates and minimize the internal anguish of not being able to do everything for every client.[252] Turnover rates in defender offices are notoriously high,[253] leaving many defender offices primarily staffed by younger, less-experienced attorneys.[254] Changing expectations may encourage defenders to stay longer and develop their craft.[255]

Third, data can establish performance indicators that are targeted to

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252. *See* Rodney Uphoff, *Foreword*, 75 MO. L. REV. 667, 673 (2010) ("[E]ven in the face of these extremely trying circumstances, most of the defense lawyers handling indigent defense cases are striving to do their best for their clients. Not surprisingly, frustrations mount as defenders struggle to cope with oppressive caseloads and the burnout that often follows. Nor is it surprising that burnout produced by these high caseloads leads to high turnover rates in many underfunded indigent defender systems."); Charles J. Ogletree, Jr. & Yoav Sapir, *Keeping Gideon's Promise: A Comparison of the American and Israeli Public Defender Experiences*, 29 N.Y.U. REV. L. & SOC. CHANGE 203, 214–15 (2004) ("Largely due to the lack of financial resources, the public defense system lacks a sufficient number of lawyers. The understaffing and lack of funding result in a situation in which the small number of attorneys who are willing to do the work are burdened with high caseloads, tremendous responsibility and pressure, a widely held presumption that public defenders are overworked and unqualified, a sense of isolation, and the frustration of doing work that includes a large bureaucratic, non-legal component. These factors lead many public defenders to burn out, and at the same time make it difficult to recruit new lawyers to the field.").

253. Peter A. Joy, *Ensuring the Ethical Representation of Clients in the Face of Excessive Caseloads*, 75 MO. L. REV. 771, 785–86 (2010) (discussing the "individual public defender's personal knowledge that she is failing to provide clients with the quality of representation they are entitled to receive. Without the support of supervising and managing attorneys, there is an extraordinary high turnover of line public defenders who seek other work rather than violate their professional obligations to clients on a daily basis."). *See, e.g.,* Aaron Bailey, *High Turnover Plagues Public Defenders: Increasing Caseloads, Student Loan Debt Put Some Missouri Lawyers in a Bind*, ST. JOSEPH NEWS-PRESS, July 9, 2007 (20 percent turnover rate); Susannah A. Nesmith, *Dade Public Defender: Caseload Is Untenable*, MIAMI HERALD, July 31, 2008, at B1; Jan Pudlow, *PD-11 Grapples with Increased Caseloads and High Rate of Public Defender Turnover*, FLA. BAR NEWS, Nov. 15, 2008, at 1 ("[I]f PD-11 continues to lose between four and five attorneys each month . . . our turnover rate could be almost double the 18-to-20 percent it has been for the last five years.").

254. Ogletree, *supra* note 78, at 1294 ("[P]ublic defenders—who are engaged in work we all regard as necessary to a just legal system—often burn out after a few years, leaving indigent defendants with a largely young and inexperienced group of attorneys."); Smith, *Too Much Heart, supra* note 79, at 1238–40 (describing potential problems when staffing offices with "short-term defenders"); Jo Anna Chancellor Parker, *What a Poor Defense! Exploring the Ineffectiveness of Counsel for the Poor and Searching for a Solution*, 7 T.G. JONES L. REV. 63, 78 (2003) ("In a nationwide survey, sixty percent of the directors of public defender offices indicated that the heavy caseload made it difficult to recruit attorneys, and seventy-seven percent of defenders noted that "burn-out" was a common problem." (citing Douglas W. Vick, *Poorhouse Justice: Underfunded Indigent Defense Services and Arbitrary Death Sentences*, 43 BUFF. L. REV. 329, 405 (1995))).

255. *See* Smith, *Too Much Heart, supra* note 79, at 1251–59 (discussing "craft" as a motivating force to sustain a long career as a public defender).

distinguish between units and case types.[256] Sexual assaults and gun cases are both felonies for caseload purposes, but require vastly different time and energy to defend. Comparisons can be made at a much more granular level and thus can be quite useful not only to help manage caseloads, but also the quality of lawyering in each case.

Fourth, such an approach allows for improved feedback without negative professional consequences.[257] In a system that values the opportunity to assess the relationship between action and outcome, errors—like successes—become learning opportunities, not firing offenses.

Finally, such an approach may encourage lawyers to take full advantage of the therapeutic benefits of reporting.[258] For any defender who has woken up at 3:00 a.m. remembering the things he did not do in trial, or the things he should have said in court, reporting can "bring closure" to the ongoing stress and guilt of perceived personal failure. Again, this therapeutic approach can help reduce burnout and stress among defenders.[259]

2. Clients as Stakeholders

Defenders work for clients. Thus, if the system does not benefit clients, it should justifiably be resisted by defenders. Risk management and outcome improvement obviously are important to clients because the clients are themselves subject to those risks and dependent on those outcomes. Thus, at least in terms of buying into the systemic focus, clients should be supportive.

Clients may be unaware of (and uninterested in) the data collection process. However, defenders must not overlook the information that clients can provide about risks, defender actions, and outcomes. As the medical profession learned, "[i]f patients are educated about the course of their treatment and their medications ... patients can also be effective at identifying errors."[260] Any data-driven approach to public defense should

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256.   *See, e.g., Analytical Support for Risk Reduction Programs, supra* note 251.

257.   Barach & Small, *supra* note 39, at 762.

258.   *Id.*

259.   Thaxton & Rodriguez-Taseff, *supra* note 251, at 187 ("As a public defender, you have a substantial number of cases. As a result, you are under huge time pressures to deal with each case expeditiously. With the large number of cases, you have the pull of one client versus another placing demands on your time. How does one lawyer who has hundreds of clients provide the services as advisor, advocate, and negotiator for each individual client? The answer is that the lawyer simply cannot.").

260.   Thomas W. Nolan, *System Changes to Improve Patient Safety*, 316 BRIT. MED. J. 771, 771 (1998).

include client viewpoints. For example, in addition to tracking data about traditional lawyering outcomes, defenders may choose to track data about less-traditional measures of success, such as client satisfaction.[261]

Finally, of course, collected data might be very useful for clients to understand the quality of services that they will receive from defender offices. Just as individuals choose to fly with airplane companies with reputations for safety and choose to visit doctors with reputations for competence, so too should indigent clients (and their families) have information about the data behind the delivery of legal services. If those data demonstrate a quality product, then clients and communities may have more faith in the public defense system. On the other hand, if the data suggest areas of improvement, communities will have the data to demand change.

3. Community Stakeholders

Defenders work within a larger criminal justice system. Our argument is that a defender culture that embraces the pervasive collection of data benefits both the reporting individuals and the clients and community they serve. While this Article focuses on public defenders, defender data can also benefit the entire criminal justice system.

For example, North Carolina has adopted a statewide, outcome-oriented data project that systematically evaluates indigent defense services.[262] Tasked with improving the provision of legal representation to indigent defendants in North Carolina, the Office of Indigent Defense Services ("IDS") began a comprehensive data-driven evaluation project on defender services.[263] As set out in its 2012 evaluation report, the North Carolina Systems Evaluation Project ("NCSEP") was established to create data-driven evaluation tools to improve the delivery of defense services.[264] Based on systems analyses from other industries, the NCSEP established goals, objectives, and assessment mechanisms to assess whether IDS was providing quality indigent defense services.[265] The project "presents a set of metrics to quantify system and client outcomes for indigent defense employing the same methodology the nation uses to assess the country's

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261.   Gressens & Atkinson, *supra* note 67, at 50; Janet Moore, Marla Sandys & Raj Jayadev, *Make Them Hear You: Participatory Defense and the Struggle for Criminal Justice Reform*, 78 ALB. L. REV. 1281, 1309–15 (2015).

262.   *IDS Commission Information*, N.C. OFF. INDIGENT DEF. SERVICES, http://www.ncids.org/IDS%20Commission/CommissionLinksPage.htm?c=IDS%20Commission (last visited July 13, 2015).

263.   N.C. OFF. INDIGENT DEF. SERVICES, http://www.ncids.org/ (last visited July 13, 2015).

264.   Gressens & Atkinson, *supra* note 67, at 1.

265.   *Id.*

economic health, or public health agencies use to measure community heath."[266] The key to this assessment measure is the creation and monitoring of "performance measures/indicators," so broad goals like timely "access to attorney[s]" can be measured qualitatively through (1) the number of days between arrest and appointment of counsel, and (2) the number of days between arrest and the first client interview with the attorney (including the type of contact, whether it occurs in person or by video conference or telephone).[267] While the NCSEP is addressing broad criminal justice system issues, rather than specific defender tasks, the focus on data, measurement, and outcome assessment demonstrates the possibilities of how to analyze indigent defense. Our approach, as stated, adopts similar analytical tools but applies them with an understanding of the specific role of the public defender.

Of course, even a community that reports data and discloses error may not embrace the resultant evidence-based reform ideas that emerge from the data. In order to create meaningful system reform that maximizes outcomes, defender organizations must have both an institutional commitment to and an operational appreciation of the benefits of this approach. This includes public defender administrators, the courts, and the local political infrastructure. Systemic change requires resources and political will.

In aviation, data quickly demonstrated that the "latent failures" of managers and of organizational structures and policies were significant contributing factors toward negative outcomes.[268] Once field operators realized that the data-driven systems approach could hold upper level management accountable for policies that causally contributed to error, they were more fully committed to a data-driven systems approach. In addition, federal agencies and consumers were willing to respond to failures with calls for change to improve flight safety.

Criminal justice systems have not always been so responsive to remedying failure when it comes to providing resources to indigent defender services. This reality may have as much to do with the political powerlessness of marginalized populations as a lack of data. But, as has been demonstrated in other professions, data matters. If defenders can show the community the concrete benefits of data collection and analysis, it

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266. *Id.* at 2.

267. *Id.* at 8.

268. Shappell & Wiegmann, *supra* note 107, at 11 ("Generally speaking, the most elusive of latent failures revolve around issues related to resource management, organizational climate, and operational processes.").

becomes easier to ask for additional funding, support, and attention.[269] Again, North Carolina—and all of its various stakeholders—has recognized this approach, and has received significant support from the Department of Justice and national defender organizations.[270]

IV. SUGGESTIONS FOR CREATING A DATA-DRIVEN SYSTEMS APPROACH TO PUBLIC DEFENSE

This Article has set out to defend a data-driven systems approach to public defense. In a future article, we hope to detail the specific data collection points that would launch such an approach. In the interim, we offer suggestions about common first steps that should guide the implementation of such a system. Borrowing from medicine and aviation, we argue that accuracy, integrity, and incrementalism must be central components of the implementation of any defender data system.

A. ACCURACY IN DESIGN

First, data-driven systems are only effective if the data remain accurate, current, and complete. Aviation's successful risk-management efforts depend heavily upon data taken from multiple sources.[271] Flight crews and pilots participate in confidential surveys about team members' technical performance, work ethics, teamwork, and leadership.[272] The United States and other countries have well-established and non-punitive mandatory national reporting systems that gather data about negative outcomes and near misses.[273] In addition, aviation has established a wide range of voluntary data collection systems.[274]

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269.   Interview with Andrew Davies, Director of Research, New York State Office of Indigent Legal Services (July 10, 2014).

270.   *See, e.g.*, Leff & Clark, *supra* note 18, at 7 ("Over the past four years, among the steps that Attorney General Eric H. Holder Jr. has recognized as key to addressing the indigent defense crisis are making model standards for public defense systems a reality; collecting better data, and increasing the evidence base, in order to deepen understanding of the barriers that defendants commonly face in securing effective representation."). *See also* Meg Ledyard & Mark Erwin, *NCSEP Case Outcomes Study: Travis County, TX Pilot Site*, N.C. SYS. EVALUATION PROJECT (Sept. 25, 2014), http://www.ncids.org/systems%20evaluation%20project/caseoutcome/intro/TravisCountyTX.pdf.

271.   Helmreich, *supra* note 39, at 782; Barach & Small, *supra* note 39, at 762.

272.   Helmreich, *supra* note 39, at 782. These surveys include questions about participants' approach to error and error management; participant confidence in the confidentiality and anonymity of these surveys is essential. As discussed *supra* Part II.A, building organizational trust in promises of confidentiality or anonymity is a key aspect of creating a culture that embraces the systems approach.

273.   Helmreich, *supra* note 39, at 782. *See supra* Part II.B for a discussion of how aviation and medicine have established participant trust in these reporting systems.

274.   Helmreich, *supra* note 39, at 782. Some of these systems are required by law, others are "encouraged" by insurance providers, shareholders, and consumer advocacy groups.

Any data-driven defender error reduction system needs to develop channels to collect data from many sources (defenders, supervisors, administrators, clients, investigators, analysts). This system design requires the establishment of clear reporting standards and definitions of error. The need for accurate and complete data makes it essential that public defender offices adopt data collection systems that are both easy to use and offer defenders visible benefits rather than merely increased work.[275]

In practical terms, this means that defender data systems should be designed with the job of the defender in mind. Those risks, actions, and outcomes that are to be measured must be made manageable and clear.[276] When appropriate, systems should be automated and include mandatory functions that prevent defenders from continuing with the task at hand, without inputting the necessary data. Standardized processes that reduce reliance on memory should be implemented. Checklists should be created and filled out. Redundancies should be built into the system as double checks.[277] Ideally, defender offices across the nation would collaborate— perhaps through an organization similar to NLADA, the National Association of Criminal Defense Lawyers, the National Association of Public Defense, or the Standing Committee on Legal Aid and Indigent Defense[278]—to develop standardized reporting norms.[279] These might be as simple as developing a standard definition for measuring caseloads or determining how to define "a case" for workload assessment.[280] Finally, all of the stakeholders should be encouraged to report and contribute to the data collection.

In the future, as technology develops, some of these steps will not only be automated, but also observed by passive data systems.[281] Computers can record which client matter a defender is working on and to whom she is speaking.[282] RFID chips can be embedded in documents and

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275.   Beeman, *Using Data, supra* note 2, at 9.

276.   DOYLE, MENDING JUSTICE, *supra* note 4, at 3–5; Beeman, *Basic Data Toolkit, supra* note 4, at 5–7.

277.   *See* Duke Univ. Med. Ctr., *Systems to Reduce Errors*, PATIENT SAFETY—QUALITY IMPROVEMENT: ANATOMY OF AN ERROR, http://patientsafetyed.duhs.duke.edu/module_e/ reduce_errors.html (last visited July 14, 2015) (describing the medical field's approach to error reduction).

278.   These organizations are all national leaders of defender improvement.

279.   *See supra* note 57 (addressing the challenges posed by the healthcare industry's lack of standardized research protocols).

280.   Beeman, *Using Data, supra* note 2, at 10–11.

281.   Don Peck, *They're Watching You at Work*, ATLANTIC (Dec. 2013), http://www.theatlantic.com/magazine/archive/2013/12/theyre-watching-you-at-work/354681/.

282.   *Id. See also* Steve Lohr, *Unblinking Eyes Track Employees: Workplace Surveillance Sees

court motions to track output connected to individual clients.[283] Locational tracking can even measure the lawyer's efficient use of time in court, investigation, or jail.[284] While obviously invasive to personal and professional privacy, these technologies will provide insight about the type of work a lawyer is doing for each client.

B. INTEGRITY IN DESIGN

The integrity of a data-driven system cannot rest entirely on defenders alone. External checks to audit the data must also be created. As mentioned earlier, similar audits exist in aviation. The FAA works with commercial airlines to gather data about "normal" flight operations through the LOSA program.[285] LOSA uses a live peer observation process to collect data about flight crew performance. The FAA analogizes a LOSA audit to a patient's annual medical checkup:

> People have comprehensive checkups in the hope of detecting serious health issues before they become consequential. A set of diagnostic measures, such as blood pressure, cholesterol, and liver function, flag potential health concerns, which in turn suggest needed changes to the patient's current lifestyle. A LOSA is built upon the same proactive notion. It provides a diagnostic snapshot of strengths and weaknesses that an airline can use to bolster the "health" of its safety margins and prevent degradation.[286]

In a LOSA audit, experts sit in the cockpit and observe routine flights, collect data about ordinary risks and errors, and note instances of non-compliance with established protocols.[287] LOSA data helps quantify daily practice in non-emergent situations, with the goal of developing systemic ways to manage and minimize the risks and errors that arise in the "normal" course of business.[288]

Similarly, medical safety systems now collect data from patient charts, clinicians, computer modeling, malpractice claims, patient and practitioner

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Good and Bad, N.Y. TIMES (June 24, 2014), http://www.nytimes.com/2014/06/22/technology/workplace-surveillance-sees-good-and-bad.html; Rachel Emma Silverman, *Tracking Sensors Invade the Workplace: Devices on Workers, Furniture Offer Clues for Boosting Productivity*, WALL ST. J. (Mar. 7, 2013, 11:42 AM), http://online.wsj.com/news/articles/SB10001424127887324034804578344303429080678.

283. Silverman, *supra* note 282.

284. *Id.*

285. FAA ADVISORY CIRCULAR 120-90, *supra* note 243. LOSA is a voluntary safety program; airlines choose whether to share their LOSA results with the FAA.

286. *Id.*

287. *Id.*; Helmreich, *supra* note 39, at 782.

288. FAA ADVISORY CIRCULAR 120-90, *supra* note 243.

interviews, anonymous incident reports, and autopsy reports.[289] Medical risk reduction systems also conduct real world observations (by in-person observers and by direct and by video).[290] Observation audits, similar to the LOSA audits used in aviation, have also produced important data about medical risks, errors, and outcomes.[291] As in aviation, these multiple sources of data are important accuracy enhancers.[292]

To ensure integrity, defender audits may need to be instituted. Similar to accreditation visits, such data audits will be very important to ensuring that both system design and compliance are at optimal levels. These audits will also provide the best evidence to compare risks, actions, and outcomes across jurisdictions. Over time, the data collected may provide real answers to the elusive question of what constitutes best practices.

Integrity also includes securing the data collected in the databases. The information collected about clients, cases, and the larger system will be valuable to others outside the defender organization. Establishing security protocols to protect the data from external attacks or internal leaks will be very important. Even within defender organizations, the temptation to access the database to assist one client's case at the expense of another client's privacy will need to be addressed. Tracking mechanisms for who has accessed information will need to be created. In addition, encryption software will need to be developed so the information can travel to the defender's mobile electronic devices (in court, at the jail, etc.). Finally, new rules about the scope of attorney-client privilege and third-party databases will need to be formally adopted to ensure that traditional protections also apply to shared institutional data systems.

C. INCREMENTAL IN DESIGN

While the framework proposed in this Article urges a comprehensive data-driven approach to public defender services, financial constraints and cultural concerns counsel in favor of advancing that goal with modest

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289. Phillipe Michel, *Strengths and Weaknesses of Available Methods for Assessing the Nature and Scale of Harm Caused by the Health System: Literature Review*, WORLD HEALTH ORG. 3 (Dec. 2003), http://www.who.int/patientsafety/research/P_Michel_Report_Final_version.pdf.

290. Gaba, *supra* note 39, at 785.

291. Weingart et al., *supra* note 39, at 774.

292. For example, a 1984 Harvard medical study that was long considered a "benchmark for estimating the extent of medical injuries occurring in hospitals" demonstrated a 0.7 percent incidence of adverse drug events among over 30,000 patients admitted to hospitals in New York in 1984. *Id.* However, that study looked only at patient charts. Subsequent similar studies used computer modeling and clinician reports to identify adverse drug events; those studies documented much higher incidences of adverse drug events. *Id.*

approaches. Defender organizations might begin by collecting and analyzing data about discrete phases of the criminal justice process or about discrete types of cases. Pilot projects could focus on one sub-area in one jurisdiction.

In aviation and medicine, the earliest efforts at error reduction targeted "low-hanging fruit" such as catastrophic plane crashes, dangerous "near misses," and dramatic surgical errors.[293] For example, medicine's earliest efforts at a systems approach targeted "[a]dverse drug events . . . because they [were] prevalent and preventable."[294] Data soon demonstrated that most medication errors were caused by mistakes in ordering and administering medications.[295]

However, in public defense, the "low-hanging fruit" approach may have significant drawbacks. In public defense, the obvious low-hanging fruit is the catastrophic error of wrongful conviction. One almost unavoidable problem of starting with the most catastrophic errors is that, in a data-less environment, there is no way to know whether those errors are the most prevalent or even the most damaging.

Moreover, in aviation and medicine, a focus on catastrophic error offers both a strong motivational buy-in and a relatively contemporaneous opportunity to analyze the causes of the error. To the extent that focusing on wrongful convictions would offer public defenders similar motivational advantages, those advantages are strongly counterbalanced by the lengthy delays between catastrophic outcome and correction in criminal justice.[296] Because of that delay, systemic practices that contributed to the wrongful conviction may no longer exist, or new legal regimes may have mooted the significance of those practices.[297]

But "low hanging fruit" can also be more manageable projects that pervade the criminal justice system. Despite a very broad mandate, the

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293.   Woolf et al., *supra* note 172.

294.   Weingart et al., *supra* note 39, at 775.

295.   *Id.*

296.   Furthermore, in the intervening time between the wrongful conviction and exoneration, there may have been significant changes in prosecution policies, defender practices, forensic techniques, and constitutional criminal procedure standards.

297.   *See supra* notes 259–264 and accompanying text. Moreover, the dataset of exonerations is extraordinarily small. It is limited to the cases in which lawyers and judges are willing to invest substantial post-conviction resources. Typically, those are capital cases, or cases involving life sentences. They often rest on the use of DNA evidence to establish the error. Thus, the dataset is very limited and, as many defenders suspect, wildly under-representative of the true number of wrongful convictions.

NCSEP has only targeted a few specific areas for initial study.[298] Because of the complex nature of data systems, this step-by-step approach may make sense. We encourage selecting smaller pilot studies that use data—and develop conclusions—with the potential for iterative reuse in later studies.

CONCLUSION

This Article urges a cultural shift in public defense delivery systems. The move to a data-driven systems approach may reveal, as matters of cold, hard fact, the root causes of the crisis in indigent defense. Defenders need to prove best practices by looking at real outcomes. Defenders need to study outcomes by looking at the risks faced and actions taken by practicing lawyers. Simply put, defenders need to see data as a teacher, not a scold.

This Article ends by challenging national criminal defense and public defense organizations to test its proposals on a national stage. A committed national organization can create standards to begin the data collection project across jurisdictions. As in other professions, this will require an evolving commitment to shared language, goals, culture, and data points. On a national level, defenders must begin to isolate, identify, and study the things defenders are already doing and their relationship to case outcomes. National data studies, probably funded by federal dollars, could begin with pilot projects in certain cities. Those studies would necessarily require a standardized national terminology modeled along the lines of medicine's CPT codes.

Like an unpopular criminal defendant, the data-driven systems approach deserves a fair hearing. There are many good reasons why defenders have not embraced data-driven approaches to public defense. There are equally compelling reasons why medicine and aviation are imperfect models for data-driven systems of public defense. However, the current public defender system is client-rich but resource-poor. By embracing data, public defenders can do more to maximize their scarce resources and optimize their clients' outcomes. A systemic improvement of public defender services must begin with defending data.

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298. These include case outcomes (as measured by client satisfaction), access to counsel, and pretrial release. Gressens & Atkinson, *supra* note 67, at 1.