

The Exclusionary Rule in the Age of Blue Data

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In Herring v. United States, Chief Justice John Roberts reframed the Supreme Court’s understanding of the exclusionary rule: “As laid out in our cases, the exclusionary rule serves to deter deliberate, reckless, or grossly negligent conduct, or in some circumstances recurring or systemic negligence.” The open question remains: How can defendants demonstrate sufficient recurring or systemic negligence to warrant exclusion? The Supreme Court has never answered the question, although the absence of systemic or recurring problems has figured prominently in two recent exclusionary rule decisions. Without the ability to document recurring failures or patterns of police misconduct, courts can dismiss individual constitutional violations merely as examples of “isolated negligence.”

But what if new data-driven surveillance technologies could track police-citizen interactions and uncover recurring or systemic problems? What if stops and arrests could be data mined to reveal systemic racial bias? What if new surveillance technologies could record police-citizen stops to monitor patterns of unconstitutional practices? What if predictive analytics could identify at-risk officers in order to predict future misconduct?

This Article looks to invert the big data surveillance gaze from the citizen to the police. It asks whether the same big data policing technologies built to track movements, actions, and patterns of criminal activity could be redesigned to foster data-driven police accountability. Tracking this “blue data” and studying the systemic

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errors offers concrete answers to the open questions surrounding the Supreme Court's new exclusionary rule.

Unquestionably, the use of data mining, surveillance, and predictive analytics to target police negligence will face resistance. Police officers, administrators, and unions will likely protest the invasion of personal and professional privacy it threatens. Yet, any resistance is itself revealing and worth studying. This resistance offers a provocative thought experiment: How could police objections to new forms of surveillance inform community resistance to similar mass surveillance technologies? This Article examines how police, courts, and litigants will resist a push to police surveillance and what that resistance means for current mass surveillance practices, law, and policy.

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INTRODUCTION

Digital technologies are transforming the daily practice of policing.¹ Big data surveillance technologies and predictive analytics offer new methods for police to visualize otherwise hidden patterns of criminal activity.² Data mining assists law enforcement in gathering intelligence.³ Predictive policing guides patrols.⁴ Pervasive surveillance monitors the streets.⁵ Yet, in adopting this data-focused, quantified approach to law enforcement, police have inadvertently created equally revealing data-driven methods of police accountability. The same surveillance technologies that can watch the citizenry can also watch the police, and patterns of police misconduct can be predicted and analyzed.

This technological change now holds significant constitutional import because of how the Supreme Court has refashioned the exclusionary rule, the suppression remedy for police wrongdoing.⁶ In *Herring v. United States*, Chief Justice John Roberts reframed the Supreme Court’s understanding of the exclusionary rule: “As laid out in our cases, the exclusionary rule serves to deter deliberate, reckless, or grossly negligent conduct, *or in some circumstances recurring or*

1. ANDREW GUTHRIE FERGUSON, *THE RISE OF BIG DATA POLICING: SURVEILLANCE, RACE, AND THE FUTURE OF LAW ENFORCEMENT* 4 (2017) (detailing how big data surveillance technologies will change the “who,” “where,” “when,” and “how” of the way in which law enforcement addresses criminal risk).

2. See Andrew Guthrie Ferguson, *Big Data and Predictive Reasonable Suspicion*, 163 U. PA. L. REV. 327, 329 (2015); Elizabeth E. Joh, *Policing by Numbers: Big Data and the Fourth Amendment*, 89 WASH. L. REV. 35, 36 (2014).

3. See Tal Z. Zarsky, *Governmental Data Mining and Its Alternatives*, 116 PENN. ST. L. REV. 285, 287 (2011) (“[L]aw enforcement has shifted to ‘Intelligence Led Policing’ Rather than merely reacting to events and investigating them, law enforcement is trying to preempt crime. It does so by gathering intelligence, which includes personal information, closely analyzing it, and allocating police resources accordingly . . .”).

4. Andrew Guthrie Ferguson, *Predictive Policing and Reasonable Suspicion*, 62 EMORY L.J. 259, 268–69 (2012) (describing the rise of place-based predictive policing).

5. Christopher Slobogin, *Rehnquist and Panvasive Searches*, 82 MISS. L.J. 307, 307–08 (2013) (describing panvasive searches arising from new technology).

6. See *Illinois v. Gates*, 462 U.S. 213, 254 (1983) (“The exclusionary rule is a remedy adopted by this Court to effectuate the Fourth Amendment right of citizens ‘to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures’”); *Mapp v. Ohio*, 367 U.S. 643, 654–56 (1961) (“We hold that all evidence obtained by searches and seizures in violation of the Constitution is, by that same authority, inadmissible in a state court.”).

systemic negligence.”⁷ Yet, despite the significance of “recurring or systematic” problems in two recent Supreme Court cases,⁸ the Justices did not explain how this could be proven. Equally limiting, the ordinary practice of holding relatively brief suppression hearings practically forecloses the ability to introduce evidence of systemic or recurring policing problems.⁹ Without the ability to document recurring patterns of police misconduct, courts can dismiss individual constitutional violations merely as examples of “isolated negligence.”¹⁰

This Article looks to invert the big data surveillance gaze from the citizen to the police. It asks whether the same law enforcement technologies built to track movements, actions, and patterns of criminal activity could also be repurposed to foster data-driven police accountability. For example, what if stops and arrests could be data mined to reveal systemic racial bias?¹¹ What if predictive analytics could identify at-risk officers or police units most likely to be involved in recurring, future misconduct?¹² What if new surveillance technologies could record patterns of police-citizen stops to monitor recurring unconstitutional practices?¹³ What if the entire architecture of surveillance designed by law enforcement to surveil citizens could be repurposed to identify recurring or systemic problems of police violence, racial bias, and unconstitutional actions? Tracking this “blue data”¹⁴ offers concrete answers to the open questions surrounding the Supreme Court’s new application of the exclusionary rule.

Such futuristic surveillance technology already exists. Police routinely search large datasets of biometric, geolocational, and consumer information looking for patterns of recurring criminality.¹⁵ Communications, movements, or financial transactions can be monitored to observe patterns of suspicious activities.¹⁶ In Los Angeles, police track “chronic offenders” using social network analysis

7. 555 U.S. 135, 144 (2009) (emphasis added).

8. *Id.*; see also *Utah v. Strieff*, 136 S. Ct. 2056, 2063 (2016).

9. Andrew Guthrie Ferguson, *Constitutional Culpability: Questioning the New Exclusionary Rules*, 66 FLA. L. REV. 623, 683 (2014) (discussing the resource constraints in implementing a two-tiered suppression hearing after *Herring*).

10. The question of recurring violations also impacts private citizens’ ability to file civil rights actions under 42 U.S.C. § 1983 (2012) and the federal government’s ability to investigate patterns and practices of police abuse under 42 U.S.C. § 14141 (2012).

11. See *infra* Section II.A.2.

12. See *infra* Section II.B.2.

13. See *infra* Section II.C.2.

14. See FERGUSON, *supra* note 1, at 143–66 (detailing the concept of “blue data”).

15. See e.g., Wayne A. Logan, *Policing Identity*, 92 B.U. L. REV. 1561, 1575–78 (2012) (describing biometric collection and searches).

16. Zarsky, *supra* note 3, at 287.

technologies originally used to track international terrorists.¹⁷ These growing social network systems link criminal associates in digital webs of information that can be mined for investigatory clues.¹⁸ Patterns of criminal activities emerge from scraps of data, allowing police to search through it to respond to community needs.

Video surveillance expands police capabilities to monitor wrongdoing. In New York City, approximately nine thousand police video cameras digitally record the streets in real time.¹⁹ Pattern recognition software can automatically alert a central police command center to a suspiciously placed bag or track all men wearing blue sweatshirts.²⁰ A single search query of the Domain Awareness System—the New York City Police Department’s central command center—can find all such blue sweatshirts in all locations recorded over the last month.²¹ The city of Los Angeles has added facial recognition software to a few police cameras, allowing those who pass by to be matched with a database of active warrants.²² In both New York City and Los Angeles, thousands of Automated License Plate Readers (“ALPR”) record car licenses, marking location, time, and direction of travel—all linked to details of the owner.²³ Millions of license plates are recorded every year and are included in local,

17. Sarah Brayne, *Big Data Surveillance: The Case of Policing*, 82 AM. SOC. REV. 977, 986–87 (2017); Mark Harris, *How Peter Thiel’s Secretive Data Company Pushed into Policing*, WIRED (Aug. 9, 2017), <https://www.wired.com/story/how-peter-thiels-secretive-data-company-pushed-into-policing> [<https://perma.cc/B686-QS2E>].

18. See Harris, *supra* note 17.

19. Thomas H. Davenport, *How Big Data is Helping NYPD Solve Crimes Faster*, FORTUNE (July 16, 2016), <http://fortune.com/2016/07/17/big-data-nypd-situational-awareness> [<https://perma.cc/TJA5-JMK5>].

20. See TalkPolitix, *New York City - Domain Awareness*, YOUTUBE (June 7, 2013), <https://www.youtube.com/watch?v=ozUHOHAAhzg> [<https://perma.cc/N9ZP-SQB4>]; see also Michael L. Rich, *Machine Learning, Automated Suspicion Algorithms, and the Fourth Amendment*, 164 U. PA. L. REV. 871, 896–901 (2016) (describing the capabilities of automated search algorithms).

21. TalkPolitix, *supra* note 20.

22. CLARE GARVIE ET AL., THE PERPETUAL LINE-UP: UNREGULATED POLICE FACIAL RECOGNITION IN AMERICA (Oct. 18, 2016), [https://www.perpetuallineup.org/sites/default/files/2016-12/The Perpetual Line-Up - Center on Privacy and Technology at Georgetown Law - 121616.pdf](https://www.perpetuallineup.org/sites/default/files/2016-12/The%20Perpetual%20Line-Up%20-%20Center%20on%20Privacy%20and%20Technology%20at%20Georgetown%20Law%20-%20121616.pdf) [<https://perma.cc/5EZX-BPVW>] [hereinafter PERPETUAL LINE-UP]; Clare Garvie & Jonathan Frankle, *Facial-Recognition Software Might Have a Racial Bias Problem*, ATLANTIC (Apr. 7, 2016), <https://www.theatlantic.com/technology/archive/2016/04/the-underlying-bias-of-facial-recognition-systems/476991> [<https://perma.cc/QVR5-2B7A>].

23. See Joh, *supra* note 2, at 48 (“The N.Y.P.D., for instance, has a database of 16 million license plates captured from its license plate readers, along with the locations of where the plates were photographed.”); Steven D. Seybold, *Somebody’s Watching Me: Civilian Oversight of Data-Collection Technologies*, 93 TEX. L. REV. 1029, 1034 (2015) (“ALPR systems can photograph up to 1,800 license plates per minute, and approximately 10-12 million per day.”).

searchable databases.²⁴ Citizens augment government surveillance capabilities by carrying around trackable “smart” devices.²⁵ GPS-enabled cars record where we drive.²⁶ Geotagging in photographs, videos, and WiFi connections reveal where we have been (and what we were doing there).²⁷ Public social media accounts can be scraped and studied to find patterns of movement and communications.²⁸ Add in the digital trails resulting from medical devices, financial applications, and fitness trackers, and it is clear that a thick web of trackable self-surveillance data exists.²⁹

Predictive targeting allows police to narrow their surveillance to specific individuals.³⁰ Police in Chicago use an algorithm to identify at-risk individuals in order to predict who might be the victim or perpetrator of violence.³¹ In Manhattan, prosecutors and police developed a data-driven “Moneyball” approach to incapacitate

24. Linda Merola & Cynthia Lum, *Emerging Surveillance Technologies: Privacy and the Case of License Plate Recognition (LPR) Technology*, 96 JUDICATURE 119, 119–21 (2012).

25. Andrew Guthrie Ferguson, *The Internet of Things and the Fourth Amendment of Effects*, 104 CALIF. L. REV. 805, 818–23 (2016); Andrew Guthrie Ferguson, *The “Smart” Fourth Amendment*, 102 CORNELL L. REV. 547, 548, 551 (2017); see also Scott R. Peppet, *Regulating the Internet of Things: First Steps Toward Managing Discrimination, Privacy, Security, and Consent*, 93 TEX. L. REV. 85, 114–17 (2014) (discussing the varied capabilities of smartphone sensors).

26. Alex Hern, *Florida Woman Arrested for Hit-and-Run After Her Car Calls Police*, GUARDIAN (Dec. 7, 2015), <http://www.theguardian.com/technology/2015/dec/07/florida-woman-arrested-hit-and-run-car-calls-police> [<https://perma.cc/MH8U-LF7Z>]; Ned Potter, *Privacy Battles: OnStar Says GM Can Record Car’s Use, Even if You Cancel Service*, ABC NEWS (Sept. 26, 2011), <https://abcnews.go.com/Technology/onstar-gm-privacy-terms-company-record-car-information/story?id=14581571> [<https://perma.cc/G4JQ-FZCC>].

27. Rodolfo Ramirez et al., *Location! Location! Location! Data Technologies and the Fourth Amendment*, CRIM. JUST., Winter 2016, at 19.

28. Aaron Cantú, *#Followed: How Police Across the Country Are Employing Social Media Surveillance*, MUCKROCK (May 18, 2016), <https://www.muckrock.com/news/archives/2016/may/18/followed> [<https://perma.cc/KDX7-E3AR>]; Matt Stroud, *#Gunfire: Can Twitter Really Help Cops Find Crime?*, VERGE (Nov. 15, 2013), <https://www.theverge.com/2013/11/15/5108058/gunfire-cantwitter-really-help-cops-find-crime> [<https://perma.cc/RDV6-W4AR>].

29. See Tony Danova, *Morgan Stanley: 75 Billion Devices Will Be Connected to the Internet of Things by 2020*, BUS. INSIDER (Oct. 2, 2013), <https://www.businessinsider.com/75-billion-devices-will-be-connected-to-the-internet-by-2020-2013-10> [<https://perma.cc/7RJF-SF8K>] (describing the sheer volume of devices that are, or in the future will be, connected to the internet).

30. Andrew Guthrie Ferguson, *Predictive Prosecution*, 51 WAKE FOREST L. REV. 705, 724 (2016).

31. Monica Davey, *Chicago Police Try to Predict Who May Shoot or Be Shot*, N.Y. TIMES (May 23, 2016), <https://www.nytimes.com/2016/05/24/us/armed-with-data-chicago-police-try-to-predict-who-may-shoot-or-be-shot.html> [<https://perma.cc/TR5H-9YN7>]; Josh Kaplan, *Predictive Policing and the Long Road to Transparency*, SOUTHSIDE WKLY. (July 12, 2017), <https://southsideweekly.com/predictive-policing-long-road-transparency> [<https://perma.cc/53L8-27H2>]; Nissa Rhee, *Can Police Big Data Stop Chicago’s Spike in Crime?*, CHRISTIAN SCI. MONITOR (June 2, 2016), <https://www.csmonitor.com/USA/Justice/2016/0602/Can-police-big-data-stop-Chicago-s-spike-in-crime> [<https://perma.cc/RCV7-3F6F>].

“primary targets” in particularized blocks or housing units.³² Police in Los Angeles, Seattle, Miami, Atlanta, and dozens of other big cities utilize predictive policing software to target forecasted high-crime areas.³³ Police patrol these predicted areas for additional physical surveillance.³⁴ These new data-driven technologies offer a blueprint for a new type of policing. While not yet universally adopted, the designs exist and have been growing in many cities.

This surveillance architecture unquestionably poses significant liberty and privacy concerns. As I and others have written, these new technologies undermine and distort traditional First and Fourth Amendment freedoms in ways we are only just beginning to imagine.³⁵ But these same technologies also offer a potential solution to the current exclusionary rule puzzle. New data surveillance systems built

32. Chip Brown, *The Data D.A.*, N.Y. TIMES, Dec. 6, 2014, at 22, 24–25; *To Stem Gun Crime, ‘Moneyball,’* ST. LOUIS POST-DISPATCH, June 28, 2015, at A20; Heather Mac Donald, *Prosecution Gets Smart*, CITY J. (Aug. 14, 2014), <https://www.city-journal.org/html/prosecution-gets-smart-13663.html> [<https://perma.cc/LL55-W276>].

33. Ellen Huet, *Server And Protect: Predictive Policing Firm PredPol Promises to Map Crime Before It Happens*, FORBES (Mar. 2, 2015), <https://www.forbes.com/sites/ellenhuet/2015/02/11/predpol-predictive-policing> [<https://perma.cc/TU4D-LT95>]; Mara Hvistendahl, *Can “Predictive Policing” Prevent Crime Before It Happens?*, SCIENCE (Sept. 28, 2016), <http://www.sciencemag.org/news/2016/09/can-predictive-policing-prevent-crime-it-happens> [<https://perma.cc/66TH-TU4J>]; David Robinson & Logan Koepke, *Stuck in a Pattern: Early Evidence on “Predictive Policing” and Civil Rights*, UPTURN (Aug. 2016), <https://www.upturn.org/reports/2016/stuck-in-a-pattern/> [<https://perma.cc/T456-5BLL>].

34. Ferguson, *supra* note 4, at 267–69.

35. See sources cited *supra* notes 1–2, 4; see also, e.g., CHRISTOPHER SLOBOGIN, *PRIVACY AT RISK: THE NEW GOVERNMENT SURVEILLANCE AND THE FOURTH AMENDMENT* 205 (2007) (“[S]urveillance that is not regulated is unreasonable under the Constitution.”); Marc Jonathan Blitz et al., *Regulating Drones Under the First and Fourth Amendment*, 57 WM. & MARY L. REV. 49, 60 (2015) (“It is clear . . . now is the time to understand the Fourth Amendment restrictions of government flight, the First Amendment protections for private flight, and the interdependency of between the two.”); Marc Jonathan Blitz, *Video Surveillance and the Constitution of Public Space: Fitting the Fourth Amendment to a World that Tracks Image and Identity*, 82 TEX. L. REV. 1349, 1383 (2004) (“It is not only the expansion of video surveillance itself that poses a challenge to the viability of the *Katz* test but also the dramatic changes occurring in technologies that supplement and enhance such surveillance.”); David Gray & Danielle Citron, *The Right to Quantitative Privacy*, 98 MINN. L. REV. 62, 66 (2013) (highlighting certain surveillance technologies in use across the country); Stephen Henderson, *Fourth Amendment Time Machines (and What They Might Say About Police Body Cameras)*, 18 U. PA. J. CONST. L. 933, 936 (2016) (asking, given the advancements in surveillance technology, how our constitutional jurisprudence should respond to bulk capture of information via technology); Elizabeth E. Joh, *Privacy Protests: Surveillance Evasion and Fourth Amendment Suspicion*, 55 ARIZ. L. REV. 997, 1002 (2013) (discussing “privacy protects,” defined as “actions individuals may take to block or thwart surveillance . . . for reasons unrelated to criminal wrongdoing”); Neil Richards, *The Dangers of Surveillance*, 126 HARV. L. REV. 1934, 1953 (2013) (“Even in democratic societies, the blackmail threat of surveillance is a real one.”); Steven D. Seybold, Note, *Somebody’s Watching Me: Civilian Oversight of Data-Collection Technologies*, 93 TEX. L. REV. 1029, 1034 (2015) (“Combining surveillance technologies not only allows for more information to be collected but also allows for powerful inferences to be drawn from that information; inferences that may not have been readily apparent from each individual piece of information by itself.”).

by the police can also be used to monitor systemic and recurring police practices. In every Big Brother–esque example discussed above, technology also captures police-citizen interactions in new and revealing ways that can help expose existing police abuses. The great irony of the modern surveillance state is that law enforcement accidentally designed a system that can monitor the police better than its citizens.

The need to reimagine police accountability is a contested national issue. The open secret of minority distrust and fear of police has loudly revealed itself in a series of self-reinforcing, cascading scandals and events.³⁶ The protests arising from the deaths of unarmed African American men at the hands of police sparked an ongoing national debate over inadequate police accountability.³⁷ Black lives, made visible by a pattern of Black deaths, turned police reform into a national movement.³⁸ This movement exposed a lack of police accountability, made worse by the parallel judicial weakening of deterrence-based remedies like the exclusionary rule.³⁹ More immediately, the need to reimagine accountability has grown stronger still, as the Department of Justice (“DOJ”) Civil Rights Division has backed away from prioritizing police accountability investigations under its new leadership.⁴⁰

36. Monica Davey & Julie Bosman, *Protests Flare After Ferguson Police Officer Is Not Indicted*, N.Y. TIMES (Nov. 24, 2014), <https://www.nytimes.com/2014/11/25/us/ferguson-darren-wilson-shooting-michael-brown-grand-jury.html> [<https://perma.cc/YG3N-CT9K>]; Dana Ford et al., *Protests Erupt in Wake of Chokehold Death Decision*, CNN (Dec. 8, 2014, 8:14 PM), <http://www.cnn.com/2014/12/04/justice/new-york-grand-jury-chokehold> [<https://perma.cc/H2WV-AGJ5>]; see also MICHELLE ALEXANDER, *THE NEW JIM CROW: MASS INCARCERATION IN THE AGE OF COLORBLINDNESS* (2010); PAUL BUTLER, *LET'S GET FREE: A HIP-HOP THEORY OF JUSTICE* (2009); DAVID COLE, *NO EQUAL JUSTICE: RACE AND CLASS IN THE AMERICAN CRIMINAL JUSTICE SYSTEM* (1999).

37. Alan Blinder, *Walter Scott Shooting Seen as Opening for Civil Suits Against North Charleston's Police Dept.*, N.Y. TIMES (Apr. 13, 2015), <https://www.nytimes.com/2015/04/14/us/walter-scott-shooting-turns-michael-slager-into-litigant-as-north-charleston-braces-for-suits.html> [<https://perma.cc/4BEZ-ZBPQ>]; Shaila Dewan & Richard A. Oppel, Jr., *In Tamir Rice Case, Many Errors by Cleveland Police, Then a Fatal One*, N.Y. TIMES (Jan. 22, 2015), <https://www.nytimes.com/2015/01/23/us/in-tamir-rice-shooting-in-cleveland-many-errors-by-police-then-a-fatal-one.html> [<https://perma.cc/439U-7HPE>]; Roger Parloff, *Two Deaths: The Crucial Difference Between Eric Garner's Case and Michael Brown's*, FORTUNE (Dec. 5, 2014), <http://fortune.com/2014/12/05/two-deaths-the-crucial-difference-between-eric-garners-case-and-michael-browns/> [<https://perma.cc/C5YR-M69H>].

38. *Ferguson Unrest: From Shooting to Nationwide Protests*, BBC NEWS (Aug. 10, 2015), <https://www.bbc.com/news/world-us-canada-30193354> [<https://perma.cc/JX87-YGUK>].

39. See *infra* Section I.A.

40. Eric Lichtblau, *Sessions Indicates Justice Department Will Stop Monitoring Troubled Police Agencies*, N.Y. TIMES (Feb. 28, 2017), <https://www.nytimes.com/2017/02/28/us/politics/jeff-sessions-crime.html> [<https://perma.cc/6X89-82EZ>]; Sheryl Gay Stolberg & Eric Lichtblau, *Sweeping Federal Review Could Affect Consent Decrees Nationwide*, N.Y. TIMES (Apr. 3, 2017),

The time has come to examine new data-driven forms of accountability, as law enforcement is beginning to embrace a mass surveillance mindset.⁴¹ Technology has made it temptingly easy to monitor and target citizens. But the current technological capabilities have also outpaced citizen awareness, providing a moment to stop and reflect on the potential impacts before ubiquitous adoption. Serious examination of the dual nature of surveillance—on the public and police—may help frame a more cautious approach to big data policing in the future.

Part I of this Article examines the question left open by the Supreme Court's recent exclusionary rule cases, *Herring v. United States*⁴² and *Utah v. Strieff*.⁴³ Namely, how can defendants demonstrate recurring or systemic police negligence? The short answer is that under traditional Fourth Amendment law and practice, litigants cannot (and in practice do not) regularly meet this burden.⁴⁴ Building a record of systemic violations is time-consuming, expensive, and taxes the abilities of both lawyers and courts and thus has not been a focus of suppression litigation. Yet systemic and recurring problems exist in many police forces.⁴⁵ As seen in media reports, scholarly articles, lawsuits, and federal investigations, the problem of police violence, racial bias, and constitutional violations must be remedied.⁴⁶

Part II of the Article examines how big data surveillance tools can be redesigned to develop a record of police accountability useful for this new exclusionary rule regime. This is the promise of "blue data."⁴⁷ The rise of new technologies to mine data and analyze criminal activity can also identify patterns of constitutional violations or police misconduct. Additionally, new video and audio surveillance technologies can not only monitor the streets but also monitor police activities. Finally, new predictive analytics can flag at-risk criminals and at-risk police officers with equal ease. By quantifying police activities, litigants can begin to visualize patterns of systemic and

<https://www.nytimes.com/2017/04/03/us/justice-department-jeff-sessions-baltimore-police.html>
[<https://perma.cc/3QXD-U5UJ>].

41. See Stephen Rushin, *The Judicial Response to Mass Surveillance*, 2011 U. ILL. J.L. TECH. & POL'Y 281, 285–86 (“[M]any departments across the country are using [certain technologies] not just for observational comparison, but also for *indiscriminate data collection*.”).

42. 555 U.S. 135 (2009).

43. 136 S. Ct. 2056 (2016).

44. See *infra* Section I.C.

45. See *infra* Section I.B.2.

46. See *infra* Section I.B.

47. See Ferguson, *supra* note 1, at 143–66 (detailing the concept of “blue data”).

recurring issues and introduce them in Fourth Amendment suppression hearings.

Part III examines the revealing nature of police resistance to blue data collection. Obviously, new surveillance technologies will be resisted by police officers and administrators concerned about how they might impact professional autonomy and criminal investigations. These arguments offer a provocative thought experiment: How could police objections to new forms of surveillance inform citizen and community resistance to similar surveillance technology? It might be the case that police resistance to self-surveillance informs citizen resistance to mass surveillance. This Part examines how police, courts, and litigants will resist a push to police surveillance and what that resistance says about current practice, law, and policy priorities.

In redirecting the target of surveillance from the citizen to the police, this Article explores how to meet the Supreme Court's new burden for exclusion. These "blue data" systems—already in development—offer a solution to the long-standing problem of police accountability. They offer new ways to visualize the recurring and systemic gaps in the existing policing system and thus to close the widening gap between the Supreme Court's standards for exclusion and the ability to offer proof to meet those standards.

I. THE LIMITS OF THE EXCLUSIONARY RULE AND POLICE REFORM

Since its creation, the exclusionary rule has been criticized by judges and scholars.⁴⁸ The remedy of suppressing evidence recovered as a result of a constitutional violation has divided the Supreme Court for decades.⁴⁹ In recent years, a conservative majority has limited the

48. See *Herring v. United States*, 555 U.S. 135, 151 (2009) (Ginsburg, J., dissenting) (recognizing "a more majestic conception" of the Fourth Amendment (quoting *Arizona v. Evans*, 514 U.S. 1, 18 (1995)); *People v. Defore*, 150 N.E. 585, 587–89 (N.Y. 1926) (highlighting the scrutiny surrounding the doctrine by some courts and pondering why the criminal should "go free because the constable has blundered"); Henry J. Friendly, *The Bill of Rights as a Code of Criminal Procedure*, 53 CALIF. L. REV. 929, 951 (1965) ("Another imperative which in my view has been too quickly assumed is that the Constitution demands that convictions be automatically set aside in every instance in which material evidence obtained in violation of some 'specific' of the Bill of Rights was received."); see also Craig M. Bradley, *The "Good Faith Exception" Cases: Reasonable Exercise in Futility*, 60 IND. L.J. 287 (1985); John M. Burkoff, *Bad Faith Searches*, 57 N.Y.U. L. REV. 70 (1982); Tracey Maclin, *When the Cure for the Fourth Amendment is Worse than the Disease*, 68 S. CAL. L. REV. 1, 49–50 (1994); Carol S. Steiker, *Second Thoughts About First Principles*, 107 HARV. L. REV. 820, 847–52 (1994); Silas Wasserstrom & William J. Mertens, *The Exclusionary Rule on the Scaffold: But Was It a Fair Trial?*, 22 AM. CRIM. L. REV. 85 (1984).

49. *Fourth Amendment—Exclusionary Rule—Deterrence Costs and Benefits—Utah v. Strieff—Leading Case*, 130 HARV. L. REV. 337 (2016) [hereinafter *Utah v. Strieff—Leading Case*] ("Over the next forty years, the Court stripped away the exclusionary rule's justification either as an individual right or as a means of ensuring judicial integrity.").

availability of the remedy, first through the creation of a patchwork of exceptions,⁵⁰ and later by reconceptualizing the purpose of the exclusionary rule as only to deter police misconduct.⁵¹ In a series of cases—*Hudson v. Michigan*,⁵² *Herring v. United States*,⁵³ *Davis v. United States*,⁵⁴ and *Utah v. Strieff*⁵⁵—the Court created a new framework with two primary considerations: first, whether the officer’s actions were deliberate, reckless, grossly negligent, or the result of systemic or recurring negligence,⁵⁶ and second, whether the actions were attenuated from the original constitutional harm.⁵⁷

Scholars have ably critiqued the Court’s reasoning, challenging the logic, interpretation, and even constitutional theory underpinning these decisions.⁵⁸ In a prior article, I addressed the complexities of taking seriously the terms “deliberate,” “reckless,” and “gross

50. See, e.g., *Murray v. United States*, 487 U.S. 533, 542 (1988) (“independent source” doctrine); *United States v. Leon*, 468 U.S. 897, 920–21 (1984) (good faith exception); *Nix v. Williams*, 467 U.S. 431, 444 (1984) (inevitable discovery doctrine); *Wong Sun v. United States*, 371 U.S. 471, 491 (1963) (attenuation or causation exception); see also Tonja Jacobi, *The Law and Economics of the Exclusionary Rule*, 87 NOTRE DAME L. REV. 585, 656 (2011) (“For advocates of the exclusionary rule, the great tragedy of recent jurisprudence has been the erosion of the strength of the rule: courts have developed numerous exceptions, a process which has arguably steadily eroded Fourth Amendment protections over time.”).

51. *Utah v. Strieff*, 136 S. Ct. 2056, 2059 (2016) (“[E]ven when there is a Fourth Amendment violation, this exclusionary rule does not apply when the costs of exclusion outweigh its deterrent benefits.”); *id.* at 2071 (Kagan, J., dissenting) (“The exclusionary rule serves a crucial function—to deter unconstitutional police conduct. By barring the use of illegally obtained evidence, courts reduce the temptation for police officers to skirt the Fourth Amendment’s requirements.”); *Utah v. Strieff—Leading Case*, *supra* note 49, at 343 (“Over the next forty years, the Court stripped away the exclusionary rule’s justification either as an individual right or as a means of ensuring judicial integrity.”).

52. 547 U.S. 586 (2006).

53. 555 U.S. 135.

54. 131 S. Ct. 2419 (2011).

55. 136 S. Ct. 2056.

56. See *Herring*, 555 U.S. at 137 (noting that arrests based on incorrect beliefs or negligence can still constitute Fourth Amendment violations).

57. *Utah v. Strieff—Leading Case*, *supra* note 49, at 338.

58. See, e.g., Albert W. Alschuler, *Herring v. United States: A Minnow or a Shark?*, 7 OHIO ST. J. CRIM. L. 463, 501–07, 510–11 (2009) (describing history of the exclusionary rule beginning before the Revolutionary War); Jeffrey Fagan, *Terry’s Original Sin*, 2016 U. CHI. LEGAL F. 43, 66 (“[T]he attenuation doctrine applied by the *Strieff* Court essentially scrubs out reasonableness from the *Terry* formula.”); Wayne R. LaFave, *The Smell of Herring: A Critique of the Supreme Court’s Latest Assault on the Exclusionary Rule*, 99 J. CRIM. L. & CRIMINOLOGY 757, 758 (2009) (critiquing the Court’s decision in *Herring* for complicating Fourth Amendment analyses); David Alan Sklansky, *Is the Exclusionary Rule Obsolete?*, 5 OHIO ST. J. CRIM. L. 567, 578 (2008) (discussing ongoing informal reforms in police departments); Steiker, *supra* note 48, at 848 (arguing for a modernized interpretation of what constitutes reasonableness under the Fourth Amendment); James J. Tomkovicz, *Hudson v. Michigan and the Future of Fourth Amendment Exclusion*, 93 IOWA L. REV. 1819, 1832–33, 1848–49, 1880–81 (2008) (describing the variety of interpretations lower courts can make in response to the Court’s ruling in *Hudson*); Craig M. Bradley, *Red Herring or the Death of the Exclusionary Rule?*, TRIAL, Apr. 2009, at 53 (noting the difficulty in applying *Herring* to a broad collection of cases).

negligence” when it comes to litigating suppression issues.⁵⁹ But the latter part of that test was left unexamined—the problem of proving systemic and recurring negligence.⁶⁰

This Part proceeds in three steps. First, it examines two recent cases involving unlitigated, but arguably controlling, examples of systemic or recurring police errors. In *Herring v. United States*, the Court relied heavily on the fact that no evidence of systemic database errors had been included in the trial record.⁶¹ In *Utah v. Strieff*, the Court dismissed Strieff’s claim, in part, because no recurring pattern of misconduct had been demonstrated.⁶² In these cases, the Supreme Court provided a new framework for exclusion, but little guidance on how to prove that patterns of misconduct exist. Second, this Part situates the Supreme Court’s focus on systemic or recurring problems within a larger national conversation about police reform in America. The problem of police reform and deterring police misconduct, including unconstitutional stops, racial bias, and excessive force, has been demonstrated through a growing collection of investigations, court decisions, and media reports.⁶³ Finally, this Part examines why proof of systemic and recurring violations rarely makes it into ordinary Fourth Amendment suppression hearings. Both law and practice conspire to limit the trial record, minimizing the opportunity to develop proof of systemic problems. This Part lays out a framework for why a new, data-driven, surveillance-oriented approach may better respond to the challenge of the modern exclusionary rule doctrine.

A. *Roberts’ Rules of Exclusion*

This Section briefly examines two recent Supreme Court cases which suggest that systemic negligence or recurring violations could

59. Ferguson, *supra* note 9, at 683.

60. Jennifer E. Laurin, *Trawling for Herring: Lessons in Doctrinal Borrowing and Convergence*, 111 COLUM. L. REV. 670, 684 (2011):

A second innovation of *Herring*, and a corollary to its culpability focus, was its adoption of an exclusionary rule test expressly aimed at institutional, in addition to individual, misconduct. The Court allowed that even in the face of apparently blameless action by a law enforcement officer, evidence of “systemic error” or, phrased differently, “systemic negligence,” would justify application of the exclusionary rule. Beyond incantation of these apparent terms of art, virtually no explanation is provided as to their meaning. Nor, despite the Court’s allusion to precedent, can the meaning of these phrases be discerned from prior exclusionary rule decisions, since no case prior to *Herring* had held that systemic Fourth Amendment misconduct could provide the basis for a motion to suppress.

61. See *infra* Section I.A.1.

62. See *infra* Section I.A.2.

63. See *infra* Section I.A.2.

be a trigger for exclusion. While neither case directly involved systemic or recurring problems, the Court acknowledged that proof of such a pattern could alter the analysis and thus the outcome of the suppression argument.

1. The Question of Systemic Negligence: *Herring v. United States*

Herring v. United States involved a police-database error which resulted in the unconstitutional stop and search of Bennie Dean Herring.⁶⁴ Mr. Herring, it appears, had gotten on the wrong side of investigator Mark Anderson by informing the local district attorney that Anderson had been involved in a recent murder.⁶⁵ When Herring was visiting the Coffee County Sheriff's Department's impound lot, Anderson decided to determine whether Herring had any open arrest warrants.⁶⁶ First, Anderson asked the Coffee County warrant clerk to see if any open warrants existed.⁶⁷ When none were found, he asked the clerk to check with the neighboring Dale County Sheriff's Department.⁶⁸ The Dale County computer database erroneously reported that Herring had an open arrest warrant.⁶⁹ Apparently, the warrant had been recalled, but the computer did not record this fact.⁷⁰ Based on that mistaken information, Anderson stopped and searched Herring.⁷¹ Methamphetamine and a handgun were recovered and Herring was arrested.⁷²

In the subsequent criminal prosecution, Herring moved to suppress the evidence, arguing that his Fourth Amendment rights had been violated since he had been arrested without a valid arrest warrant. Factually, at the time of his stop, there had been no valid warrant, and so, as a legal matter, Herring had been arrested without justification. On appeal to the Supreme Court, the parties agreed that a Fourth Amendment violation had occurred, but focused on whether investigator Anderson's good faith reliance on the Dale County database required suppression of the evidence.⁷³

64. *Herring v. United States*, 555 U.S. 135, 137 (2009).

65. *Id.* at 149 (Ginsburg, J., dissenting).

66. *Id.*

67. *Id.*

68. *Id.*

69. *Id.*

70. *Id.*

71. *Id.* at 150.

72. *Id.* at 137 (majority opinion).

73. *Id.* at 139 (“[W]e accept the parties’ assumption that there was a Fourth Amendment violation.”).

In a sweeping opinion, Chief Justice John Roberts used *Herring* to reinterpret the rationale for the exclusionary rule. Writing for the majority, Chief Justice Roberts canvassed the history of the exclusionary rule, examining its utility in exposing flagrant or purposeful police violations. He explained that exclusion should not be considered an automatic remedy for a constitutional violation:⁷⁴ “We have repeatedly rejected the argument that exclusion is a necessary consequence of a Fourth Amendment violation. Instead we have focused on the efficacy of the rule in deterring Fourth Amendment violations in the future.”⁷⁵ The key to determining whether the exclusionary rule applies, according to Chief Justice Roberts, is to ask whether the exclusion will deter future misconduct.⁷⁶ To further that deterrent focus, the Court established a new test:

To trigger the exclusionary rule, police conduct must be sufficiently deliberate that exclusion can meaningfully deter it, and sufficiently culpable that such deterrence is worth the price paid by the justice system. As laid out in our cases, the exclusionary rule serves to deter deliberate, reckless, or grossly negligent conduct, or in some circumstances recurring or systemic negligence.⁷⁷

Because the database error in the case appeared to be an isolated mistake, the Court found no need to suppress the evidence recovered on *Herring*.⁷⁸

Critical to the Court’s decision in *Herring* was the lack of demonstrated systemic error in the database.⁷⁹ In fact, the Court made this point explicit, stating that it might be reckless to rely on an unreliable warrant system if systematic errors were shown.⁸⁰

This concern with systemic error animated Justice Ginsburg’s dissent. As she explained, the fact that the erroneous warrant existed for five months without correction, and that there was “no routine practice of checking the database for accuracy,” undermined the

74. *Id.* at 137 (pointing out that “suppression is not an automatic consequence of a Fourth Amendment violation”).

75. *Id.* at 141 (citations omitted).

76. *Id.* at 137.

77. *Id.* at 144.

78. *Id.* at 137 (holding that “the error was the result of isolated negligence attenuated from the arrest”).

79. *Id.* at 147:

But there is no evidence that errors in Dale County’s system are routine or widespread. Officer Anderson testified that he had never had reason to question information about a Dale County warrant, . . . and both Sandy Pope and Sharon Morgan testified that they could remember no similar miscommunication ever happening on their watch

80. *Id.* at 146 (“If the police have been shown to be reckless in maintaining a warrant system, or to have knowingly made false entries to lay the groundwork for future false arrests, exclusion would certainly be justified under our cases should such misconduct cause a Fourth Amendment violation.”).

isolated nature of the error.⁸¹ More importantly, Justice Ginsburg argued that proven errors in arrest databases across the nation required the Court to address systemic threats to the Fourth Amendment:

Inaccuracies in expansive, interconnected collections of electronic information raise grave concerns for individual liberty. The offense to the dignity of the citizen who is arrested, handcuffed, and searched on a public street simply because some bureaucrat has failed to maintain an accurate computer data base is evocative of the use of general warrants that so outraged the authors of our Bill of Rights.⁸²

Broadly focusing on the grave consequences of law enforcement's recordkeeping errors,⁸³ Justice Ginsburg concluded that these databases pose a considerable risk because they are frequently out of date or filled with mistakes.⁸⁴

Finally, Justice Ginsburg pointed out the practical problem with defendants—mostly indigent—litigating these issues. As she wrote, “even when deliberate or reckless conduct is afoot, the Court's assurance will often be an empty promise: How is an impecunious defendant to make the required showing?”⁸⁵ Justice Ginsburg noted that discovery would place a substantial administrative burden on both the court and law enforcement, and might even include an audit of police databases.⁸⁶ Discovery or any required police-database audit would have to be carried out in ordinary, trial court level suppression hearings because only in such hearings could defendants evaluate the extent of systemic or recurring problems under a negligence theory.

In addition, there is a more fundamental question at the heart of this new requirement. Chief Justice Roberts did not explain what the Court meant by the term “negligence” in the context of the exclusionary rule, and there has been little judicial commentary on the subject.⁸⁷ Oddly, for such a seemingly sweeping doctrinal change,

81. *Id.* at 154 (Ginsburg, J., dissenting).

82. *Id.* at 155–56 (internal quotation marks omitted) (quoting *Arizona v. Evans*, 514 U.S. 1, 23 (1995) (Stevens, J., dissenting)).

83. *See id.* at 150 (referring to the gravity of recordkeeping errors in law enforcement).

84. *Id.* at 155 (“Herring’s *amici* warn that law enforcement databases are insufficiently monitored and often out of date. Government reports describe, for example, flaws in [National Criminal Information Center (“NCIC”)] databases, terrorist watchlist databases, and databases associated with the Federal Government’s employment eligibility verification system.” (citation and footnotes omitted)). *See generally* Wayne A. Logan & Andrew Guthrie Ferguson, *Policing Criminal Justice Data*, 101 MINN. L. REV. 541, 542–43 (2016) (detailing how there are “significant quality problems with criminal justice databases” and a “blasé acceptance of data error and its negative consequences for individuals”).

85. *Herring*, 555 U.S. at 157 (Ginsburg, J., dissenting).

86. *Id.*

87. Kit Kinports, *Culpability, Deterrence, and the Exclusionary Rule*, 21 WM. & MARY BILL RTS. J. 821, 836 (2013) (detailing the flawed conception of negligence revealed in Supreme Court exclusionary rule cases). A few clues can be divined from *Herring* itself. Examining the language

the Supreme Court did not provide much detail directing lawyers how to actually implement the standard.⁸⁸

2. A Lack of Recurring Violations: *Utah v. Strieff*

Recurring constitutional violations also played a role in *Utah v. Strieff*.⁸⁹ At issue was the “normal” or apparently “common practice” of Salt Lake City police officers to detain pedestrians without reasonable suspicion in order to run warrant checks.⁹⁰ This unconstitutional (if routine) practice played out with the stop and search of Edward Joseph Strieff.

chosen shows that Chief Justice Roberts used both the term “grossly negligent” and “negligence” in the same sentence, the former being understood to be a higher standard than mere negligence. *Herring*, 555 U.S. at 144. In addition, in characterizing the error in *Herring*, the Court used the term “isolated negligence” as a different and seemingly lesser standard than the other terms of art (i.e., “deliberate,” “reckless,” and “grossly negligent”). *Id.* at 137. Using the traditional methods of interpretation, courts could borrow from civil negligence precedents or criminal negligence cases, with each standard possibly resulting in a different outcome. *See* Ferguson, *supra* note 9, at 653 (outlining different definitions of criminal negligence from California courts and the Model Penal Code); Ronen Perry, *Re-Torts*, 59 ALA. L. REV. 987, 989 (2008):

Section 3 of the Third Restatement defines “negligence” in cost-benefit terms. The initial clause provides that a person acts negligently if he or she does not exercise reasonable care under all the circumstances. The next clause stipulates that “[p]rimary factors to consider in ascertaining whether the person’s conduct lacks reasonable care are the foreseeable likelihood that the person’s conduct will result in harm, the foreseeable severity of any harm that may ensue, and the burden of precautions to eliminate or reduce the risk of harm.

(alteration in original) (footnotes omitted).

88. For example, with any negligence standard, courts must define a duty of care, and in other contexts courts have been quite protective of police in limiting these duties. Police do not ordinarily have an affirmative duty to protect individual citizens on the streets. *See* *Town of Castle Rock v. Gonzalez*, 545 U.S. 748, 768 (2005) (finding no police liability for failing to enforce a restraining order that resulted in violence); *DeShaney v. Winnebago Cty. Dep’t of Soc. Servs.*, 489 U.S. 189, 196–202 (1989) (requiring a special relationship before finding a constitutional right to government protection in the social services protection context). Yet, the Supreme Court also seems to acknowledge that police do have a duty to not violate constitutional rights. This is, after all, the theory behind Section 1983 litigation where an individual must show a deprivation of constitutional rights. *See* 42 U.S.C. § 1983 (2012). Further, in *Herring*, the Court implied that ignoring systemic negligence would be reckless and open police up to the exclusionary rule remedy. Is there a duty of care not to stop or frisk a suspect without adequate legal justification? At least at a systemic level, would such violations be sufficient to find negligence? This conclusion would create a measure of symmetry with the pattern and practice violations under 42 U.S.C. § 14141 (2012) and municipal liability under 42 U.S.C. § 1983.

89. 136 S. Ct. 2056 (2016).

90. *Id.* at 2068 (Sotomayor, J., dissenting) (“The Utah Supreme Court described as ‘“routine procedure” or “common practice”’ the decision of Salt Lake City police officers to run warrant checks on pedestrians they detained without reasonable suspicion.” (quoting *State v. Topanotes*, 2003 UT 30, ¶ 2, 76 P.3d 1159, 1160)); *see id.* at 2073 (Kagan, J., dissenting) (“As Fackrell testified, checking for outstanding warrants during a stop is the ‘normal’ practice of South Salt Lake City police.”).

In December 2006, narcotics detective Douglas Fackrell received an anonymous tip that a particular house was the source of drug dealing.⁹¹ Fackrell monitored the house over the course of a week.⁹² Fackrell's observations confirmed his suspicion of illegal behavior, and he subsequently stopped Edward Joseph Strieff as he left the house.⁹³ At the time of the stop, Fackrell did not know Strieff, did not know how long Strieff had been at the targeted house, and had no suspicion of Strieff personally.⁹⁴ After seizing Strieff pursuant to Salt Lake City's common practice of detaining people in order to search for open warrants, Fackrell had a police dispatcher run Strieff's name through a database and found he had an existing arrest warrant for a traffic violation.⁹⁵ Fackrell arrested Strieff and in a search incident to that arrest recovered methamphetamine and drug paraphernalia.⁹⁶

Strieff moved to suppress the drug evidence, arguing that Fackrell seized him without reasonable suspicion.⁹⁷ On appeal, the State of Utah conceded that Fackrell did not have adequate reasonable suspicion to stop Strieff.⁹⁸ The United States Supreme Court assumed without deciding that Strieff was stopped in violation of the Fourth Amendment and instead focused on the appropriateness of the suppression remedy.⁹⁹ In an opinion written by Justice Clarence Thomas, the Court held that the existence of a valid arrest warrant served to attenuate the constitutional violation from the subsequent recovery of the drugs.¹⁰⁰ In other words, the preexisting lawful warrant severed the connection between the constitutional violation

91. *Id.* at 2059 (majority opinion).

92. *Id.*

93. *Id.* at 2060.

94. *See id.* (explaining how Fackrell needed to identify himself to Strieff when Fackrell made the stop).

95. *Id.*

96. *Id.*

97. *Id.*

98. *Id.* at 2060.

99. *Id.* at 2062 (assuming without deciding that "Fackrell lacked reasonable suspicion to initially stop Strieff"); *see id.* at 2072 (Kagan, J., dissenting):

At the suppression hearing, Fackrell acknowledged that the stop was designed for investigatory purposes—*i.e.*, to "find out what was going on [in] the house" he had been watching, and to figure out "what [Strieff] was doing there." . . . And Fackrell frankly admitted that he had no basis for his action except that Strieff "was coming out of the house."

100. *Id.* at 2064 (majority opinion) ("We hold that the evidence Officer Fackrell seized as part of his search incident to arrest is admissible because his discovery of the arrest warrant attenuated the connection between the unlawful stop and the evidence seized from Strieff incident to arrest.").

and the remedy of excluding evidence.¹⁰¹ Applying an attenuation analysis first developed in *Brown v. Illinois*, the Court held that the evidence should not be suppressed.¹⁰²

Underlying the Court's ultimate attenuation theory were two arguments. First, that detective Fackrell's constitutional error was at worst only negligent.¹⁰³ Second, that the error was not part of any recurring pattern of police misconduct.¹⁰⁴ This framing tracked the logic in *Herring*—without purposeful error or recurring negligence, suppression would not deter future misconduct, and thus the exclusionary rule should not apply.¹⁰⁵

As explained by the majority, detective Fackrell made a good faith mistake.¹⁰⁶ While he had no particularized or individualized suspicion of Strieff, the existing—fortuitous—arrest warrant cleansed his constitutional error.¹⁰⁷ But critical to this reasoning was the absence of evidence of any recurring unconstitutional practice. Justice Thomas emphasized that the stop was merely an “isolated incident of negligence” stemming from a legitimate investigation, rather than

101. *Id.* at 2061 (“Evidence is admissible when the connection between unconstitutional police conduct and the evidence is remote or has been interrupted by some intervening circumstance, so that ‘the interest protected by the constitutional guarantee that has been violated would not be served by suppression of the evidence obtained.’” (quoting *Hudson v. Michigan*, 547 U.S. 586, 593 (2006))).

102. *Id.* at 2061–64 (“First, we look to the ‘temporal proximity’ between the unconstitutional conduct and the discovery of evidence to determine how closely the discovery of evidence followed the unconstitutional search. Second, we consider ‘the presence of intervening circumstances.’ Third, . . . we examine ‘the purpose and flagrancy of the official misconduct.’” (citations omitted) (quoting *Brown v. Illinois*, 422 U.S. 590, 603–04 (1975))).

103. *Id.* at 2063 (“Officer Fackrell was at most negligent.”). *But see id.* at 2068 (Sotomayor, J., dissenting) (“[T]he Fourth Amendment does not tolerate an officer’s unreasonable searches and seizures just because he did not know any better. Even officers prone to negligence can learn from courts that exclude illegally obtained evidence.”).

104. *Id.* at 2063 (majority opinion) (“Moreover, there is no indication that this unlawful stop was part of any systemic or recurrent police misconduct.”).

105. *See Herring*, 555 U.S. at 147 (explaining that no evidence of widespread errors existed in the warrant database).

106. “Good faith” here is a term of art borrowed from *United States v. Leon*, 468 U.S. 897 (1984), which borrowed the term from civil Section 1983 cases. *See, e.g., Davis v. United States*, 564 U.S. 229, 238–39 (2011) (describing the use of good faith in the Supreme Court’s exclusionary rule cases); *see also Laurin, supra* note 60, at 739–42 (discussing the concept of constitutional borrowing in the context of the exclusionary rule’s adoption of civil tort terminology).

107. *Strieff*, 136 S. Ct. at 2063:

In stopping Strieff, Officer Fackrell made two good-faith mistakes. First, he had not observed what time Strieff entered the suspected drug house, so he did not know how long Strieff had been there. Officer Fackrell thus lacked a sufficient basis to conclude that Strieff was a short-term visitor who may have been consummating a drug transaction. Second, because he lacked confirmation that Strieff was a short-term visitor, Officer Fackrell should have asked Strieff whether he would speak with him, instead of demanding that Strieff do so.

part of a systematic problem.¹⁰⁸ Justice Thomas’s statement implicitly recognized that had there been a systemic or recurring pattern of police misconduct, the result might have been different.¹⁰⁹

In dissent, Justice Sotomayor made this focus on recurring practices explicit. Challenging the majority’s interpretation of the evidence and narrow frame of analysis, she asserted that the incident was not isolated at all.¹¹⁰ To support the argument that Fackrell’s actions were both part of a local practice of unconstitutional stops¹¹¹ and part of a national practice of exploiting low-level arrest warrants,¹¹² Justice Sotomayor broadened the focus to look at the national context detailing recurring and systemic problems of unconstitutional stops:

I do not doubt that most officers act in “good faith” and do not set out to break the law. That does not mean these stops are “isolated instance[s] of negligence,” however. Many are the product of institutionalized training procedures. The New York City Police Department long trained officers to, in the words of a District Judge, “stop and question first, develop reasonable suspicion later.”¹¹³

Equally important, Justice Sotomayor faulted the majority for failing to articulate how any indigent litigant like Strieff could prove a

108. *Id.*

109. *Id.* at 2064:

Strieff argues that, because of the prevalence of outstanding arrest warrants in many jurisdictions, police will engage in dragnet searches if the exclusionary rule is not applied. We think that this outcome is unlikely. Such wanton conduct would expose police to civil liability. And in any event, the *Brown* factors take account of the purpose and flagrancy of police misconduct. Were evidence of a dragnet search presented here, the application of the *Brown* factors could be different. But there is no evidence that the concerns that Strieff raises with the criminal justice system are present in South Salt Lake City, Utah.

(citations omitted).

110. *See id.* at 2068 (Sotomayor, J., dissenting) (highlighting the prevalence of outstanding warrants across the United States).

111. *See id.* at 2069.

112. *Id.* at 2068 (“Justice Department investigations across the country have illustrated how these astounding numbers of warrants can be used by police to stop people without cause.”).

113. *Id.* at 2069 (Sotomayor, J., dissenting) (citation omitted) (quoting *Ligon v. City of New York*, 925 F. Supp. 2d 478, 537–38 (S.D.N.Y. 2013), *stay granted on other grounds*, 736 F.3d 118 (2d Cir. 2013)); *see also id.* at 2068:

The States and Federal Government maintain databases with over 7.8 million outstanding warrants, the vast majority of which appear to be for minor offenses. . . . The county in this case has had a “backlog” of such warrants. . . . Justice Department investigations across the country have illustrated how these astounding numbers of warrants can be used by police to stop people without cause.

(citations omitted); *id.* at 2073 (Kagan, J., dissenting) (“In other words, the department’s standard detention procedures—stop, ask for identification, run a check—are partly designed to find outstanding warrants. And find them they will, given the staggering number of such warrants on the books.”).

systemic problem.¹¹⁴ She pointed out that there were “countless other examples” of situations like Strieff’s, and yet the majority insisted it was an isolated incident.¹¹⁵ “Surely,” she asserted, “it should not take a federal investigation of Salt Lake County before the Court would protect someone in Strieff’s position.”¹¹⁶ Echoing Justice Ginsburg’s concern in *Herring* that traditional Fourth Amendment motions practice makes proving repeated error too difficult, Justice Sotomayor questioned how anyone could prove a systemic violation without outside assistance.¹¹⁷

While clearly diverging in result and reasoning, both the majority and dissent appear to recognize that systemic or recurring unconstitutional violations would make exclusion more likely. In cases of proven recurring police misconduct, exclusion would be an appropriate remedy. In fact, even without a deliberate, reckless, or grossly negligent act, if a systemic or recurring problem is proven, all subsequent negligent unconstitutional actions will warrant exclusion.¹¹⁸

B. The Reality of Recurring Problems

The Supreme Court’s openness to considering systemic and recurring police negligence can be understood, in part, as a response to a developing national awareness about police misconduct. During oral argument in *Strieff*, the Justices explicitly brought up facts from the Department of Justice Civil Rights Division’s Ferguson Report exposing the pattern and practice of unconstitutional policing practices in Ferguson, Missouri.¹¹⁹ In dissent, Justice Sotomayor specifically referenced the federal litigation declaring the New York

114. *Id.* at 2069 (Sotomayor, J., dissenting).

115. *Id.*

116. *Id.*

117. Justice Sotomayor’s dissent concluded with impassioned language citing W.E.B. DuBois, James Baldwin, Michelle Alexander, Ta’nehi Coates, Lani Guinier, and Gerald Torres that this absence of police accountability will further racial discrimination and justify unconstitutional practices. *Id.* at 2069–71:

We must not pretend that the countless people who are routinely targeted by police are “isolated.” They are the canaries in the coal mine whose deaths, civil and literal, warn us that no one can breathe in this atmosphere. They are the ones who recognize that unlawful police stops corrode all our civil liberties and threaten all our lives. Until their voices matter too, our justice system will continue to be anything but.

(citation omitted) (citing LANI GUINIER & GERALD TORRES, *THE MINER’S CANARY* 274–83 (2002)).

118. See Laurin, *supra* note 60, at 687 (detailing how the exclusionary rule serves to deter recurring or systemic negligence in some circumstances).

119. Transcript of Oral Argument at 6, *Strieff*, 136 S. Ct. 2056 (No. 14-1373) (discussing the fact that approximately eighty percent of the minority population in Ferguson had an outstanding municipal warrant, making the stop-and-identify practice quite tempting).

Police Department's stop and frisk policy unconstitutional.¹²⁰ In *Herring*, Justice Ginsberg raised the growing problem of systemic data error.¹²¹ Obviously, these national issues and well-publicized investigations involved particular police departments at particular moments in time, but the documented problems of unconstitutional stops, racial bias, and excessive use of force suggest a reason for concern.¹²²

Much has been written on police reform in the last few years.¹²³ This Section briefly examines two related but opposing problems with police accountability: first, a lack of data about policing in general¹²⁴ and, second, the repeated findings of systemic and recurring problems in specific investigations into particular police departments.¹²⁵ Both

120. *Strieff*, 136 S. Ct. at 2069 (Sotomayor, J., dissenting) (citing *Ligon v. City of New York*, 925 F. Supp. 2d 478, 537–38 (S.D.N.Y. 2013)).

121. See *Herring v. United States*, 555 U.S. 135, 155 (2009) (Ginsburg, J., dissenting) (“Herring’s amici warn that law enforcement databases are insufficiently monitored and often out of date.”).

122. See generally Kami Chavis Simmons, *Cooperative Federalism and Police Reform: Using Congressional Spending Power to Promote Police Accountability*, 62 ALA. L. REV. 351, 357 (2011) (“Despite the many efforts to reform local police departments and to increase police accountability, police misconduct and corruption persist in the United States.”); Samuel Walker, *Institutionalizing Police Accountability Reforms: The Problem of Making Police Reforms Endure*, 32 ST. LOUIS U. PUB. L. REV. 57, 76–77 (2012) (discussing early intervention (“EI”) systems, which provide data to identify officers with performance problems, as emerging as a powerful police accountability tool).

123. See, e.g., Bernard E. Harcourt & Jens Ludwig, *Broken Windows: New Evidence from New York City and a Five-City Social Experiment*, 73 U. CHI. L. REV. 271, 272–73 (2006) (discussing empirical studies of broken window policing); Tracey L. Meares, *The Law and Social Science of Stop and Frisk*, 10 ANN. REV. L. & SOC. SCI. 335, 341 (2014) (concluding that police stops in New York City correlated more to racial composition of a neighborhood than crime rate); Kami Chavis Simmons, *The Politics of Policing: Ensuring Stakeholder Collaboration in the Federal Reform of Local Law Enforcement Agencies*, 98 J. CRIM. L. & CRIMINOLOGY 489, 496 (2008) (arguing that police violence in the United States is a systematic problem); David Alan Sklansky, *Not Your Father’s Police Department: Making Sense of the New Demographics of Law Enforcement*, 96 J. CRIM. L. & CRIMINOLOGY 1209, 1213–15 (2006) (discussing how racial minorities compose a significantly increased share of urban police forces since the 1960s); David Alan Sklansky, *Police and Democracy*, 103 MICH. L. REV. 1699, 1742 (2005) [hereinafter Sklansky, *Police and Democracy*] (providing a history of police reform); Samuel Walker, *Governing the American Police: Wrestling with the Problems of Democracy*, 2016 U. CHI. LEGAL F. 615, 618 (detailing how law enforcement is organized in the United States).

124. See, e.g., Rachel Harmon, *Why Do We (Still) Lack Data on Policing?*, 96 MARQ. L. REV. 1119, 1121 (2013) (arguing that “today we still lack enough information about what the police do to shape their conduct effectively”).

125. See CIVIL RIGHTS DIV., U.S. DEP’T OF JUSTICE, INVESTIGATION OF THE FERGUSON POLICE DEPARTMENT 2–3 (Mar. 15, 2015), https://www.justice.gov/sites/default/files/opa/press-releases/attachments/2015/03/04/ferguson_police_department_report.pdf [https://perma.cc/W7NS-9CSB] [hereinafter DOJ FERGUSON REPORT] (finding the Ferguson Police Department’s policy to have been geared toward aggressive enforcement, with officers demanding compliance when they lack legal authority); CIVIL RIGHTS DIV., U.S. DEP’T OF JUSTICE, INVESTIGATION OF THE BALTIMORE CITY POLICE DEPARTMENT 24 (Aug. 10, 2016), <https://www.justice.gov/crt/file/883296/download> [https://perma.cc/U4CT-49ZN] [hereinafter DOJ BALTIMORE REPORT] (finding that the Baltimore

this general lack of knowledge and the specific concern about recurring problems inspire this Article's attempt to find new technological ways to expose, identify, and monitor police misconduct, which is the subject of Part II.

1. The Fragmented Nature of Police Data

As a constitutional matter, policing is studied in fragments. We know what detective Fackrell did when he stopped Edward Strieff, but not what he did before, or after, or any other day of his career. The record established facts without context about routine practice, training, or comparative circumstances.¹²⁶ This fragmented moment of time is further split by the localized nature of policing. There are approximately eighteen thousand separate police forces in the United States, each with different protocols, rules, and cultures.¹²⁷ What one detective does in Salt Lake City may not be done in Miami, or Minneapolis, or Missoula.

If courts cannot track what police do on the streets, one might think that governments might systemically monitor police practices. But federal and state efforts to collect data have been similarly fragmented. Professor Rachel Harmon has expressed dismay at the lack of state and federal data on police.¹²⁸ Particularly in the states, which extensively regulate police, one might expect more information about police actions. But that is not the case. Even federal data is far too limited to provide any meaningful assistance to the government in its oversight of police activity.¹²⁹ Police leaders do not always encourage transparency,¹³⁰ and police unions¹³¹ and other employment

Police Department (“BPD”) “engages in a pattern or practice of making stops, searches, and arrests in violation of the Fourth and Fourteenth Amendments and Section 14141”).

126. This myopic approach has been exposed by scholars who understand policing as a product of systemic choices and strategies and not isolated incidents. See Tracey L. Meares, *Programming Errors: Understanding the Constitutionality of Stop-and-Frisk as a Program, Not an Incident*, 82 U. CHI. L. REV. 159, 162 (2015) (“[W]hile the Court in *Terry* authorized police intervention in an individual incident when a police officer possesses less than probable cause to believe that an armed individual is involved in a crime, in reality stop-and-frisk is more typically carried out by a police force en masse as a *program*.”).

127. Barry Friedman & Maria Ponomarenko, *Democratic Policing*, 90 N.Y.U. L. REV. 1827, 1843 (2015) (“Policing in the United States is a diffuse business. . . . [M]uch of policing occurs at the local level. There are just under 18,000 separate police forces in the United States, and some 765,000 sworn officers.”).

128. Harmon, *supra* note 124, at 1129.

129. See *id.* at 1122, 1132–33 (“[W]hile existing federal law and agency efforts provide for some data collection about policing, those efforts are flawed, stymied by institutional and legal limitations.”).

130. *Id.* at 1129:

In practice, police chiefs and other local government actors often limit rather than promote information availability. Cities and police departments sometimes actively

or privacy laws further restrict access to information regarding alleged officer misconduct.¹³² Municipalities that suffer the financial liability for police misconduct remain unenthused about collecting data as it could be used against them in court.¹³³ And even when certain jurisdictions do collect data, or better yet, restructure their police force to focus on data collection and analysis,¹³⁴ this data is not integrated or compared nationally to other police departments.¹³⁵

In the context of addressing allegations of racial profiling, a few data collection systems have been imposed by court order.¹³⁶ In terms of systemic abuse of unconstitutional stops and frisks, some data has been revealed through civil rights lawsuits.¹³⁷ Regarding structural

inhibit the collection of information about police by, for example, requiring secrecy when they settle civil suits for police misconduct or discouraging citizens from filing complaints about officer conduct.

131. Stephen Rushin, *Using Data to Reduce Police Violence*, 57 B.C. L. REV. 117, 153 (2016) (“[C]ollective bargaining and civil service protections inadvertently discourage police management from responding forcefully to misconduct.”); Walker, *supra* note 122, at 72:

Collective bargaining agreements, for example, contain provisions related to the investigation of alleged officer misconduct (whether on the basis of a citizen complaint or an internally generated complaint) that impede a timely and thorough investigation. Officer appeals of discipline, meanwhile, may involve procedures that tend to increase the likelihood of disciplinary sanctions being mitigated or overturned.

(footnote omitted).

132. Harmon, *supra* note 124, at 1133 (2013) (“[S]tates not only do little to encourage police departments to produce information about policing that does exist, they also often restrict public access to it through privacy laws and exemptions from open records statutes.”).

133. See Myriam E. Gilles, *Breaking the Code of Silence: Rediscovering “Custom” in Section 1983 Municipal Liability*, 80 B.U. L. REV. 17, 31 (2000) (“Municipalities generally write off the misconduct of an individual officer to the ‘bad apple theory,’ under which municipal governments or their agencies attribute misconduct to aberrant behavior by a single ‘bad apple,’ thereby deflecting attention from systemic and institutional factors contributing to recurring constitutional deprivations.”); Joanna C. Schwartz, *Myths and Mechanics of Deterrence: The Role of Lawsuits in Law Enforcement Decisionmaking*, 57 UCLA L. REV. 1023, 1063–64 (2010) (explaining that in many jurisdictions police departments will suspend internal review of citizen complaints if the department is sued).

134. See James J. Willis et al., *Making Sense of COMPSTAT: A Theory-Based Analysis of Organizational Change in Three Police Departments*, 41 LAW & SOC’Y REV. 147, 148 (2007) (introducing a data collection tool employed by the New York City Police Department to reduce crime by keeping officers accountable for crime reduction).

135. Harmon, *supra* note 124, at 1129 (“Even when departments collect information, they may do so in ways that make it impossible to aggregate the records or compare them with data from other departments. Departments often, for example, keep only paper files and use anomalous report forms and categories . . .”).

136. Mary D. Fan, *Panopticism for Police: Structural Reform Bargaining and Police Regulation by Data-Driven Surveillance*, 87 WASH. L. REV. 93, 127 (2012) (“Many of the reforms in cases involving recurrent problems such as excessive force or racial targeting call for police to report uses of force, demographic information, and bases for investigative stops and searches. The methods of regulation and remedies are shifting to information and data-driven surveillance of police practices.” (footnotes omitted)).

137. *Bailey v. City of Philadelphia*, No. 10-5952 (E.D. Pa. June 21, 2011) (order approving settlement agreement, class certification, and consent decree), <https://www.aclupa.org/download>

change and consent degrees, the data collection piece has been imposed by federal sanction.¹³⁸ Even when it comes to law enforcement's ultimate power—use of deadly force—no national system exists to track police use of force or killings.¹³⁹ This absence forced the United States Attorney General¹⁴⁰ and the Director of the FBI¹⁴¹ to separately admit embarrassment at not being able to provide the statistics to interested parties.¹⁴² Instead, the stories of police violence—both tragic and justified—become part of an anecdotal and fragmented policing landscape.¹⁴³

[_file/view_inline/744/198 \[https://perma.cc/8Q5S-VZ55\]](https://perma.cc/8Q5S-VZ55); Plaintiffs' First Report to Court and Master on Stop and Frisk Practices at 7, *Bailey*, No. 10-5952 (Nov. 4, 2010), [https://www.law.columbia.edu/sites/default/files/microsites/contract-economic-organization/files/Bailey First Report_final version.docx](https://www.law.columbia.edu/sites/default/files/microsites/contract-economic-organization/files/Bailey%20First%20Report_final%20version.docx) [https://perma.cc/T4HB-XQR7]; David A. Harris, *Across the Hudson: Taking the Stop and Frisk Debate Beyond New York City*, 16 N.Y.U. J. LEGIS. & PUB. POL'Y 853, 865 (2013):

But in point of fact, data collection on stops and frisks in the U.S. has been relatively rare. . . . All in all, in most police departments there has been virtually no systematic, organized effort to collect information on the practice in a way that gives big-picture insight into what police are doing.

138. Fan, *supra* note 136, at 127–28 (2012); Stephen Rushin, *Structural Reform Litigation in American Police Departments*, 99 MINN. L. REV. 1343, 1347 (2015) (“[T]he federal government can now use equitable relief to force problematic police agencies to adopt significant structural, procedural, and policy reforms aimed at curbing misconduct.”).

139. Matthew J. Hickman, Alex R. Piquero & Joel H. Garner, *Toward a National Estimate of Police Use of Nonlethal Force*, 7 CRIMINOLOGY & PUB. POL'Y 563, 565 (2008) (“[L]ocal, state, and federal governments actually collect and report very little information about police use of force, much less than about police behavior in general.”); Rob Barry & Coulter Jones, *Hundreds of Police Killings Are Uncounted in Federal Stats*, WALL STREET J. (Dec. 3, 2014, 11:26 AM), <http://www.wsj.com/articles/hundreds-of-police-killings-are-uncounted-in-federal-statistics-1417577504> [https://perma.cc/PLB2-E9AM]; Wesley Lowery, *How Many Police Shootings a Year? No One Knows*, WASH. POST (Sept. 8, 2014), <http://www.washingtonpost.com/news/post-nation/wp/2014/09/08/how-many-police-shootings-a-year-no-one-knows> [https://perma.cc/4439-C492].

140. Jon Swaine, *Eric Holder Calls Failure to Collect Reliable Data on Police Killings Unacceptable*, GUARDIAN (Jan. 15, 2015), <http://www.theguardian.com/us-news/2015/jan/15/eric-holder-no-reliable-fbi-data-police-related-killings> [http://perma.cc/3YUB-CFFP] (reporting Eric Holder as stating that “[t]he troubling reality is that we lack the ability right now to comprehensively track the number of incidents of either uses of force directed at police officers or uses of force by police,” and saying “[t]his strikes many – including me – as unacceptable”).

141. Michael S. Schmidt, *F.B.I. Director Speaks Out on Race and Police Bias*, N.Y. TIMES (Feb. 12, 2015), <http://www.nytimes.com/2015/02/13/us/politics/fbi-director-comes-frankly-about-police-view-of-blacks.html> [https://perma.cc/HJ5T-6BVQ] (quoting James Comey as saying, “It’s ridiculous that I can’t tell you how many people were shot by the police last week, last month, last year.”).

142. Rushin, *supra* note 131, at 126 (“It seems incongruent for the federal government to keep detailed records on the number of law enforcement officers killed or assaulted in the line of duty, but not keep comparable records on citizens killed or assaulted by law enforcement.” (footnote omitted)).

143. Editorial Board, *One Thing the U.S. Government Doesn't Count: How Often Police Kill Civilians*, L.A. TIMES (Dec. 16, 2014), <http://www.latimes.com/opinion/editorials/la-ed-police-statistics-20141217-story.html> [http://perma.cc/9W9R-4LTC] (“But one thing the government doesn’t count, as was spotlighted this summer amid the fallout from Michael Brown’s shooting death in Ferguson, Mo., is how often police kill civilians.”); *The Counted: People Killed by Police*

2. Evidence of Recurring Problems

In the absence of good data about policing practices, one could hope that recurring patterns of police misconduct would not be prevalent. Yet evidence indicates otherwise.¹⁴⁴ For example, in civil rights lawsuits challenging unconstitutional stops in New York City and Philadelphia, repeated Fourth Amendment violations were documented.¹⁴⁵

Rather famously, Judge Shira Scheindlin declared the New York City Police Department's ("NYPD") stop and frisk practice unconstitutional, finding that New York City was liable for violating plaintiffs' Fourth and Fourteenth Amendment rights.¹⁴⁶ The court found that the City acted with deliberate indifference toward the NYPD's practice of making unconstitutional stops and conducting unconstitutional frisks.¹⁴⁷ At trial, police data became key to establishing the racially discriminatory caste of constitutional violations. The trial record showed that the NYPD "made 4.4 million stops between January 2004 and June 2012. Over 80% of these 4.4 million stops were of blacks or Hispanics."¹⁴⁸ Of those stops, 52% involved frisks, but a weapon was only recovered 1.5% of the time,

in the US, GUARDIAN, <http://www.theguardian.com/us-news/ng-interactive/2015/jun/01/the-counted-police-killings-us-database> (last visited Oct. 19, 2018) [<https://perma.cc/3XW6-UMKY>] (providing a list of each individual killed by police in 2015 and 2016).

144. Andrew Gelman, Jeffrey Fagan & Alex Kiss, *An Analysis of the New York City Police Department's "Stop-and-Frisk" Policy in the Context of Claims of Racial Bias*, 102 J. AM. STAT. ASS'N 813, 821 (2007) ("In the period for which we had data, the NYPD's records indicate that they were stopping blacks and Hispanics more often than whites, in comparison to both the populations of these groups and the best estimates of the rate of crimes committed by each group."); K. Babe Howell, *Broken Lives From Broken Windows: The Hidden Costs of Aggressive Order-Maintenance Policing*, 33 N.Y.U. REV. L. & SOC. CHANGE 271, 276–80 (2009) (discussing the various downfalls associated with zero-tolerance policing).

145. *Floyd v. City of New York*, 959 F. Supp. 2d 540, 562 (S.D.N.Y. 2013) ("The City acted with deliberate indifference toward the NYPD's practice of making unconstitutional stops and conducting unconstitutional frisks."); *Ligon v. City of New York*, 925 F. Supp. 2d 478, 492–510 (S.D.N.Y. 2013) (providing evidence of nine independent police stops illustrating misconduct); *Davis v. City of New York*, 902 F. Supp. 2d 405, 412–30 (S.D.N.Y. 2012) (providing seven unique instances of NYPD misconduct); *Bailey v. City of Philadelphia*, No. 10-5952 (E.D. Pa. June 21, 2011) (order approving settlement agreement, class certification, and consent decree), https://www.aclupa.org/download_file/view_inline/744/198 [<https://perma.cc/8Q5S-VZ55>]; *Daniels v. City of New York*, 198 F.R.D. 409, 412 (S.D.N.Y. 2001) (documenting allegations of misconduct in as many as 18,000 instances).

146. *Floyd*, 959 F. Supp. 2d at 562 (finding that out of nineteen instances, nine stops were unconstitutional, five frisks were unconstitutional, and the rest were constitutional stop and frisks).

147. *Id.*; see *id.* at 660 ("The NYPD's practice of making stops that lack individualized reasonable suspicion has been so pervasive and persistent as to become not only a part of the NYPD's standard operating procedure, but a fact of daily life in some New York City neighborhoods.")

148. *Id.* at 556.

meaning “in 98.5% of the 2.3 million frisks, no weapon was found.”¹⁴⁹ In only 6% of the stops was a suspect arrested.¹⁵⁰ Despite being stopped more often, contraband was found less often on Blacks and Hispanics compared to Whites.¹⁵¹ While the collected stop data made the lawsuit possible, it also demonstrated a pattern of systemic and recurring constitutional violations.¹⁵²

In Philadelphia, a lawsuit challenged the practice of Philadelphia police officers stopping individuals without constitutional justification.¹⁵³ The lawsuit documented a recurring pattern of Fourth Amendment violations and resulted in a consent decree requiring further monitoring.¹⁵⁴ Somewhat troublingly, despite being under court-ordered monitoring, “one-half of all stops were made without the requisite reasonable suspicion and . . . over one-half of all frisks were made without reasonable suspicion.”¹⁵⁵ These recurring patterns of constitutional violations continued in 2011, 2012, and 2013.¹⁵⁶

149. *Id.* at 558.

150. *Id.* at 558–59 (“6% of all stops resulted in an arrest, and 6% resulted in a summons. The remaining 88% of the 4.4 million stops resulted in no further law enforcement action.”).

151. *Id.* at 559 (“In 52% of the 4.4 million stops, the person stopped was black, in 31% the person was Hispanic, and in 10% the person was white. . . . Contraband other than weapons was seized in 1.8% of the stops of blacks, 1.7% of the stops of Hispanics, and 2.3% of the stops of whites.”).

152. See generally Jeffrey Bellin, *The Inverse Relationship Between the Constitutionality and Effectiveness of New York City “Stop and Frisk,”* 94 B.U. L. REV. 1495, 1541 (2014) (“The NYPD’s use of stop-and-frisk to deter people from carrying weapons runs afoul of another constitutional provision: the Fourteenth Amendment’s Equal Protection Clause.”); Jeffrey Fagan & Amanda Geller, *Following the Script: Narratives of Suspicion in Terry Stops in Street Policing*, 82 U. CHI. L. REV. 51, 69 (2015) (providing empirical data to demonstrate violations of the Fourth Amendment and Fourteenth Amendment); Harris, *supra* note 137, at 854–57 (highlighting the case law establishing the NYPD’s systemic violations of the Constitution).

153. Complaint, *Bailey v. City of Philadelphia*, No. 10-5925 (E.D. Pa. Nov. 4, 2010), 2010 WL 4662865.

154. *Bailey*, No. 10-5952 (order approving settlement agreement, class certification, and consent decree), https://www.aclupa.org/download_file/view_inline/744/198 [<https://perma.cc/8Q5S-VZ55>] (requiring a “data base [that] shall have the capability to retrieve Information by DC number, district, date, race, officer’s actions, and other relevant characteristics necessary to effective monitoring of stop and frisk practices”).

155. See Plaintiffs’ First Report to Court and Master on Stop and Frisk Practices, *supra* note 137, at 7 (emphasis omitted); see *id.* at 8:

In sum, over the first six months of 2011, based on the 1426 75-48a forms reviewed by counsel (a larger number were reviewed by law students with similar findings), 713 pedestrian stops were made with reasonable suspicion and 713 were made without reasonable suspicion. Of 355 frisks, 165 were with reasonable suspicion and 190 without reasonable suspicion.

156. See sources cited *supra* note 155; see also Plaintiffs’ Fourth Report to Court and Monitor on Stop and Frisk Practices at 7, *Bailey*, No. 10-5952 (Dec. 3, 2013), https://www.aclupa.org/download_file/view_inline/1529/198 [<https://perma.cc/7YZ9-WAE5>] (“43% of all stops and over 50% of all frisks were made without the requisite reasonable suspicion. These results are not appreciably different from the data reviews for 2011 and 2012, as set forth in the First, Second, and Third Reports.”); Plaintiffs’ Third Report to Court and Monitor on Stop and Frisk Practices

Additionally, a series of investigations by the Department of Justice Civil Rights Division uncovered systemic problems touching on unconstitutional stops, use of force, and racial discrimination.¹⁵⁷ During 2015 through 2017, the DOJ Civil Rights Division investigated the Chicago Police Department (“CPD”),¹⁵⁸ the City of Baltimore Police Department,¹⁵⁹ and the Ferguson Police Department¹⁶⁰ and ultimately uncovered systemic and recurring constitutional violations that led to ongoing federal oversight.¹⁶¹ Read in total, these lengthy, in-depth reports offer a devastating critique of local policing practices and an equally damning account of the lack of accountability of police administrators.

For example, the DOJ found that Chicago police officers “engaged in a pattern or practice of unreasonable force in violation of the Fourth Amendment and that the deficiencies in CPD’s training, supervision, accountability, and other systems have contributed to that pattern or practice.”¹⁶² This force was not the product of individual “bad apples,” but “largely attributable to systemic deficiencies.”¹⁶³ The misconduct was routine,¹⁶⁴ largely ignored by the

at 8, *Bailey*, No. 10-5952, https://www.aclupa.org/download_file/view_inline/1015/198 [<https://perma.cc/XHL2-LHYN>]:

It is remarkable that 43-47% of all stops and over 45% of all frisks were made without the requisite reasonable suspicion. These results are not appreciably different from the data reviews for 2011, as set forth in the First and Second Reports. Thus, tens of thousands of persons in Philadelphia continue to be stopped each year (and a significant number frisked) without reasonable suspicion.

157. Rachel Moran, *Ending the Internal Affairs Farce*, 64 *BUFF. L. REV.* 837, 847–48 (2016):

Recent investigations by the DOJ’s Civil Rights Division have revealed that officers in many cities use unconstitutionally excessive force during their encounters with minorities, stop and frisk minorities without any legal justification, systematically arrest and charge minorities for nonviolent crimes far more aggressively than they enforce similar crimes in white communities, and arrest poor minorities—subjecting many of them to jail time—for minor unpaid fines.

158. CIVIL RIGHTS DIV., U.S. DEP’T OF JUSTICE, INVESTIGATION OF THE CHICAGO POLICE DEPARTMENT (Jan. 13, 2017), <https://www.justice.gov/opa/file/925846/download> [<https://perma.cc/U8W6-6C9G>] [hereinafter DOJ CHICAGO REPORT].

159. DOJ BALTIMORE REPORT, *supra* note 125, at 24.

160. DOJ FERGUSON REPORT, *supra* note 125, at 23.

161. Sunita Patel, *Toward Democratic Police Reform: A Vision for “Community Engagement” Provisions in DOJ Consent Decrees*, 51 *WAKE FOREST L. REV.* 793, 794 (2016) (“[T]he Obama administration has invigorated the Civil Rights Division of the Department of Justice, with particular emphasis placed on the Special Litigation Section’s involvement in police reform. The Special Litigation Section has opened thirty-six investigations and signed approximately twenty-one agreements or intent to reach agreements with various localities.”).

162. DOJ CHICAGO REPORT, *supra* note 158, at 23.

163. *Id.* at 5.

164. *Id.* (“The pattern of unlawful force we found resulted from a collection of poor police practices that our investigation indicated are used routinely within CPD.”).

city,¹⁶⁵ endemic to the force,¹⁶⁶ and directed predominantly at people of color.¹⁶⁷ Practices involving both deadly force¹⁶⁸ and nondeadly force¹⁶⁹ violated the Constitution. Traditional accountability mechanisms failed to remedy misconduct,¹⁷⁰ and police failed to develop training or supervision systems to improve the problem.¹⁷¹

In Baltimore, the DOJ revealed a recurring pattern of unconstitutional stops, frisks, and arrests in violation of the Fourth Amendment.¹⁷² Police stopped citizens without reasonable suspicion.¹⁷³ Police frisked individuals without a belief that the person was armed and dangerous.¹⁷⁴ Police arrested people without cause.¹⁷⁵ In fact, similar to *Utah v. Strieff*, the DOJ discovered a pattern of unconstitutional stops to run warrant checks, finding that officers regularly approached, detained, and questioned individuals on the sidewalk without reasonable suspicion.¹⁷⁶ These unconstitutional

165. *Id.* at 7 (“The City received over 30,000 complaints of police misconduct during the five years preceding our investigation, but fewer than 2% were sustained, resulting in no discipline in 98% of these complaints. This is a low sustained rate.”).

166. *Id.* at 8 (“We discovered numerous entrenched, systemic policies and practices that undermine police accountability.”).

167. *Id.* at 145 (“Blacks, Latinos, and whites make up approximately equal thirds of the population in Chicago, but the raw statistics show that CPD uses force almost ten times more often against blacks than against whites.”).

168. *Id.* at 5 (“CPD officers engage in a pattern or practice of using force, including deadly force, that is unreasonable.”).

169. *Id.* at 32 (“Although CPD documents generally include insufficient detail of when and how officers use force, particularly less-lethal force, our review of CPD records made clear that CPD’s pattern of unreasonable force includes unreasonable less-lethal force.”).

170. *Id.* at 47 (“Our investigation confirmed that CPD’s accountability systems are broadly ineffective at deterring or detecting misconduct, and at holding officers accountable when they violate the law or CPD policy.”).

171. *Id.* at 10 (“CPD’s pattern of unlawful conduct is due in part to deficiencies in CPD’s training and supervision. CPD does not provide officers or supervisors with adequate training and does not encourage or facilitate adequate supervision of officers in the field.”).

172. DOJ BALTIMORE REPORT, *supra* note 125, at 24 (“We find that BPD engages in a pattern or practice of making stops, searches, and arrests in violation of the Fourth and Fourteenth Amendments and Section 14141.”).

173. *Id.* at 6 (“BPD’s stops often lack reasonable suspicion.”).

174. *Id.* at 30 (“BPD officers commonly frisk people during stops without reasonable suspicion that the subject of the frisk is armed and dangerous.”); *see id.* at 6 (“During stops, BPD officers frequently pat-down or frisk individuals as a matter of course, without identifying necessary grounds to believe that the person is armed and dangerous. And even where an initial frisk is justified, we found that officers often violate the Constitution by exceeding the frisk’s permissible scope.”).

175. *Id.* at 34 (“Our investigation likewise found reasonable cause to believe that BPD’s approach to street-level crime suppression has contributed to officers making thousands of unlawful arrests over the past five years.”).

176. *Id.* at 28 (“Many of the unlawful stops we identified appear motivated at least in part by officers’ desire to check whether the stopped individuals have outstanding warrants that would allow officers to make an arrest or search individuals in hopes of finding illegal firearms or narcotics.”).

stops exposed a racial bias.¹⁷⁷ As the DOJ found, “[r]acially disparate impact is present at every stage of [the Baltimore Police Department’s] enforcement actions, from the initial decision to stop individuals on Baltimore streets to searches, arrests, and uses of force.”¹⁷⁸ Again, the DOJ did not find that these recurring unconstitutional actions were isolated but instead found them to be part of systemic, structural problems.¹⁷⁹ Accountability systems largely failed,¹⁸⁰ and training¹⁸¹ and internal disciplinary systems were demonstrated to be woefully lacking.¹⁸²

Much has already been written about the Ferguson Police Department,¹⁸³ as the DOJ’s investigation revealed a practice of

177. *Id.* at 7 (“BPD disproportionately searches African Americans during stops. BPD searched African Americans more frequently during pedestrian and vehicle stops, even though searches of African Americans were less likely to discover contraband.”).

178. *Id.*; *see also id.* (“Citywide, BPD stopped African-American residents three times as often as white residents after controlling for the population of the area in which the stops occurred.”); *id.* (“African Americans accounted for 91 percent of the 1,800 people charged solely with ‘failure to obey’ or ‘trespassing’; 89 percent of the 1,350 charges for making a false statement to an officer; and 84 percent of the 6,500 people arrested for ‘disorderly conduct.’”).

179. *Id.* at 10 (“BPD’s systemic constitutional and statutory violations are rooted in structural failures. BPD fails to use adequate policies, training, supervision, data collection, analysis, and accountability systems, has not engaged adequately with the community it polices, and does not provide its officers with the tools needed to police effectively.”).

180. *Id.* (“BPD lacks meaningful accountability systems to deter misconduct. The Department does not consistently classify, investigate, adjudicate, and document complaints of misconduct according to its own policies and accepted law enforcement standards.”); *see also id.* at 134 (“Moreover, BPD conducts minimal pattern analysis of officer activities. The Department does not generate any reports or otherwise track patterns in officers’ stops, searches, arrests, uses of force, or community interactions.”).

181. *Id.* at 43 (“BPD exacerbates the risk that its aggressive street enforcement tactics will lead to constitutional violations by failing to use effective policies, training, oversight, and accountability systems.”).

182. *Id.* at 135:

Despite BPD’s longstanding notice of concerns about its policing activities and problems with its internal accountability systems, the Department has failed to implement an adequate EIS or other system for tracking or auditing information about officer conduct. Rather, BPD has an early intervention system in name only; indeed, BPD commanders admitted to us that the Department’s early intervention system is effectively nonfunctional.

183. *See, e.g.,* John Felipe Acevedo, *Restoring Community Dignity Following Police Misconduct*, 59 HOW. L.J. 621, 633 (2016) (“The shortcomings of the Ferguson Police Department came to public attention following the killing of eighteen year old Michael Brown by police officer Darren Wilson.”); Devon W. Carbado, *Blue-on-Black Violence: A Provisional Model of Some of the Causes*, 104 GEO. L.J. 1479, 1502 (2016) (“Ferguson, Missouri presents a concrete example of the ease with which predatory policing can become an institutional feature of everyday policing.”); S. David Mitchell, *Ferguson: Footnote or Transformative Event?*, 80 MO. L. REV. 943, 944 (2015) (“‘Ferguson.’ No longer does this name simply represent the geographical boundaries of a city in St. Louis County formed initially by white flight from St. Louis City and that has become increasingly African American over time. It has come to represent so much more.” (footnote omitted)); Michael Pinard, *Poor, Black and “Wanted”: Criminal Justice in Ferguson and*

prioritizing low-level arrests to generate revenue for the municipal government.¹⁸⁴ These arrests primarily impacted the African American population¹⁸⁵ and did little to reduce crime. But the DOJ report also demonstrated a systemic bias in the use of force¹⁸⁶ and in recurring violations of the Fourth Amendment.¹⁸⁷ Police stopped people without reasonable suspicion as part of a larger system of revenue collection.¹⁸⁸ As in Chicago and Baltimore, the culture in Ferguson created a system that allowed recurring police misconduct.

These federal investigations offer a deep dive into a few specific departments. Because of poor data collection and the limitations of civil rights lawsuits and federal investigations, however, we do not know the extent of the national problem. But we do know that since 1994, with the enactment of 42 U.S.C. § 14141, the DOJ has opened 69 investigations and entered into 40 reform agreements.¹⁸⁹ Just since 2012, the DOJ has “opened 11 new pattern-or-practice investigations and negotiated 19 new reform agreements since 2012.”¹⁹⁰

These investigations confirm that systemic and recurring problems of racial discrimination, unconstitutional stops, and excessive force remain issues to be addressed.¹⁹¹ The DOJ revelations

Baltimore, 58 How. L.J. 857, 862 (2015) (“Pathetically, at the time of the DOJ investigation, only four out of fifty-four police officers in Ferguson were Black.”).

184. DOJ FERGUSON REPORT, *supra* note 125, at 15 (“FPD’s approach to law enforcement, shaped by the City’s pressure to raise revenue, has resulted in a pattern and practice of constitutional violations.”).

185. *Id.* at 4:

Ferguson’s law enforcement practices overwhelmingly impact African Americans. Data collected by the Ferguson Police Department from 2012 to 2014 shows that African Americans account for 85% of vehicle stops, 90% of citations, and 93% of arrests made by FPD officers, despite comprising only 67% of Ferguson’s population. African Americans are more than twice as likely as white drivers to be searched during vehicle stops even after controlling for non-race based variables such as the reason the vehicle stop was initiated, but are found in possession of contraband 26% less often than white drivers, suggesting officers are impermissibly considering race as a factor when determining whether to search.

186. *Id.* at 5 (“Nearly 90% of documented force used by FPD officers was used against African Americans.”).

187. *Id.* at 15 (“Officers violate the Fourth Amendment in stopping people without reasonable suspicion, arresting them without probable cause, and using unreasonable force.”).

188. *Id.* at 16 (“Frequently, officers stop people without reasonable suspicion or arrest them without probable cause. Officers rely heavily on the municipal ‘Failure to Comply’ charge, which appears to be facially unconstitutional in part, and is frequently abused in practice.”).

189. CIVIL RIGHTS DIV., U.S. DEP’T OF JUSTICE, THE CIVIL RIGHTS DIVISION’S PATTERN AND PRACTICE POLICE REFORM WORK: 1994-PRESENT 3 (Jan. 2017), <https://www.justice.gov/crt/file/922421/download> [<https://perma.cc/QC3S-A792>]; *see also id.* at 15 (“Of 69 total investigations since Section 14141’s enactment, the Division has closed 26 investigations without making a formal finding of a pattern or practice.”).

190. *Id.* at 1.

191. *See* I. Bennett Capers, *Crime, Legitimacy, and Testilying*, 83 IND. L.J. 835, 852 (2008) (“Regardless of whether this race-based policing is intentional or not, there is the continuing

offer a glimpse of the promise and potential of better data collecting mechanisms as a path to expose systemic or recurring patterns of misconduct. And at least in cities with documented patterns of unconstitutional stops, like Baltimore, Chicago, or Ferguson, such data could be used for individual suppression hearings.¹⁹²

C. Difficulties in Litigating Systemic or Recurring Violations

In the face of recurring police problems, and under the Supreme Court's constitutional command to be concerned with such systematic transgressions, the question remains: Why do these issues not manifest themselves in ordinary Fourth Amendment suppression hearings?

One answer is that the Supreme Court did not explain how these systemic or recurring patterns should be proven in court. The trial records in *Herring* and *Strieff* offered few clues. In *Herring*, the Dale County clerk had testified—somewhat imprecisely—that communication problems had arisen “several times.”¹⁹³ But because Chief Justice Robert's new test had not yet been written into law, there was no reason to expend effort to prove systemic or recurring problems at the trial level. The fact that database errors may have occurred in prior cases or in other counties did not become part of the record because it had not been identified as an important factor relevant for exclusion.

In *Strieff*, the suppression hearing did not include any testimony outside of the arresting officer's.¹⁹⁴ The arguments of the parties focused on attenuation due to a lawful warrant, not principles of error or deterrence.¹⁹⁵ In fact, the motions hearing in *Strieff* offers a revealing example of the sparse nature of these types of hearings.¹⁹⁶ The *Strieff* suppression hearing consisted of one witness—detective

perception, supported by evidence, that police treat citizens differently based on their race.”); Simmons, *supra* note 122, at 365 (“Empirical evidence supports the view that racial profiling is a widespread practice of police officers in many communities.”).

192. As detailed in Part III, the utility of collecting such data is that it demonstrates systemic or recurring problems. In a particular case involving a particular suppression issue, this demonstrated pattern should be admissible to prove the systemic and recurring negligence required under *Herring*.

193. United States v. Herring, 451 F. Supp. 2d 1290, 1292 (M.D. Ala. 2005), *aff'd*, 492 F.3d 1212 (11th Cir. 2007), *aff'd*, 555 U.S. 135 (2009) (“To be sure, during the first of two suppression hearings, Morgan testified as follows: ‘Q. All right. Ma’am, how many times have you had or has Dale County had problems, any problems with communicating about warrants?’ ‘A. Several times.’”).

194. Joint Appendix, Utah v. Strieff, 136 S. Ct. 2056 (2016) (No. 14-1373), 2015 WL 8146388.

195. See *id.* at *29 (“The issue at this point is going to rest on attenuation.”).

196. *Id.*

Fackrell—and a quite limited legal argument consisting of a few paragraphs of written text.¹⁹⁷ Such practice is quite common with most pretrial suppression hearings in relatively low-level criminal cases.

This practical reality creates tension with the Supreme Court's stated concern about systemic or recurring problems. In traditional practice, judges might well discourage building a record about incidents or problems not germane to the case at hand. In fact, one might speculate that if Strieff's counsel asked questions about other times detective Fackrell stopped other people without a warrant, the lawyer would have been shut down on relevance grounds.¹⁹⁸ One might imagine a judge would have been reluctant to grant discovery requests for department-wide practices, or internal training materials about stops or searches, or even detective Fackrell's own practice. Yet, as the United States Supreme Court and the Utah Supreme Court acknowledged, this unconstitutional practice *was* a normal police practice in Salt Lake City and would have been ripe for inquiry because negative exposure presumably would have had a future deterrent effect.¹⁹⁹

In addition to practical reality, such a broadening of the inquiry to systemic problems requires time and resources. As both Justice Sotomayor and Justice Ginsberg warned, such a burden negatively impacts indigent defendants.²⁰⁰ In public defense systems already underfunded and overwhelmed with cases and starved of proper investigative resources or expert funding, any requirement that defense counsel challenge patterns and practices of police misconduct would ordinarily be unrealistic.²⁰¹ Without better sources

197. *Id.*

198. Relevance is defined in terms of whether the evidence has “any tendency to make a fact more or less probable than it would be without the evidence.” FED. R. EVID. 401. Despite the term's broad construct, many judges view evidence about events not related to the defendant in court as irrelevant.

199. See *Strieff*, at 2069 (describing running warrant checks as a “‘routine procedure’ or ‘common practice’” (Sotomayor, J., dissenting) (quoting *State v. Topanotes*, 2003 UT 30, ¶¶ 2, 76 P.3d 1159, 1160)); see *id.* at 2073 (Kagan, J., dissenting) (“As Fackrell testified, checking for outstanding warrants during a stop is the ‘normal’ practice of South Salt Lake City police.”).

200. See *supra* notes 117, 121 and accompanying text.

201. See generally Mary Sue Backus & Paul Marcus, *The Right to Counsel in Criminal Cases, A National Crisis*, 57 HASTINGS L.J. 1031, 1031–36 (2006) (discussing deficiencies in the right to counsel for poor people in criminal cases); JUST. POL'Y INST., SYSTEM OVERLOAD: THE COSTS OF UNDER-RESOURCING PUBLIC DEFENSE 6–16 (July 2011), http://www.justicepolicy.org/uploads/justicepolicy/documents/system_overload_final.pdf [<https://perma.cc/YHE6-GV7Z>] (highlighting the ways in which underresourcing hinders adequate public defense); NAT'L RIGHT TO COUNSEL COMM., JUSTICE DENIED 49–99 (Apr. 2009), <http://www.constitutionproject.org/pdf/139.pdf> [<https://perma.cc/W6TN-76XX>] (exploring impediments to competent defense

of police data, one simply cannot expect ordinary, overworked defense attorneys to conduct full-scale investigations into pattern and practice problems in local police departments for low-level motions hearings.

Post-*Herring* there have been a handful of federal cases that attempted to take seriously the Supreme Court's interest in systemic or recurring negligence.²⁰² In *United States v. Esquivel-Rios*, the Court of Appeals for the Tenth Circuit decided a case involving an incomplete (and misleading) license plate database that resulted in the traffic stop of the defendant.²⁰³ Before deciding the case, the appellate court sent it back to the trial court in order to develop a factual record on the scope of negligent recordkeeping.²⁰⁴ At issue was the extent of errors in the computerized database.²⁰⁵ The appellate court recognized that in order to decide the suppression issue, it needed to understand the type and magnitude of errors in the database.²⁰⁶

In other cases, testimony about systemic practices of misconduct resulted in the suppression of evidence.²⁰⁷ In yet other cases, the lack of evidence of recurring violations allowed the court to avoid suppression.²⁰⁸ But the reported cases have thus far been rather

services, such as insufficient funding, excessive caseloads, and lack of performance standards, training, and oversight).

202. Claire Angelique Nolasco et al., *What Herring Hath Wrought: An Analysis of Post-Herring Cases in the Federal Courts*, 38 AM. J. CRIM. L. 221, 233–36 (2011).

203. 786 F.3d 1299, 1301–03 (10th Cir. 2015), *cert. denied*, 136 S. Ct. 280 (2015).

204. *Id.* at 1301. (“[W]e concluded that the record lacked the quantity and quality of information necessary for us to determine whether Mr. Esquivel–Rios’s Fourth Amendment rights had been violated. We remanded to allow the district court to reconsider its Fourth Amendment ruling in light of our discussion.” (citation omitted)).

205. *Id.* at 1301–03.

206. *Id.* at 1306 (“Whether the rule applies in any given case, however, is context-dependent. In other words, ‘suppression is not an automatic consequence of a Fourth Amendment violation.’” (quoting *Herring v. United States*, 555 U.S. 135, 139 (2009))).

207. See *United States v. Edwards*, 666 F.3d 877, 886 (4th Cir. 2011) (“[T]he circumstances under which Edwards was searched are likely to recur. Indeed, the evidence in this case showed that Baltimore City police officers conduct searches inside the underwear of about 50 percent of arrestees, in the same general manner as the strip search performed on Edwards.”); see also *id.* at 886 n.7:

Detective Bailey testified on cross-examination at the suppression hearing, in pertinent part, as follows: “Question: So is it customary for Baltimore City police officers to search the underwear area or the dip areas of people that are arrested? Detective Bailey: I would say it’s about 50 percent of the time, because nobody likes to do that search. . . . But if you have reason to believe that there might be something, then it’s a good idea to check, because often they do hide things down there.”

208. *United States v. Davis*, 690 F.3d 226, 256 (4th Cir. 2012):

We have no proof before us showing that victims’ DNA profiles or individuals cleared of suspicion in an investigation are routinely entered into the local database by . . . [Prince George’s County Police Department], or have been entered into the

few in number, and the practical and legal barriers have proven prohibitive to litigation.²⁰⁹

Therefore, in the absence of a full federal investigation and in recognition of the practical realities of trial practice, a new solution to expose systemic misconduct must be conceived. Fortunately, a solution potentially exists in the form of new surveillance technologies developed to police the citizenry. These big data technologies involving monitoring, predictive analytics, and data mining offer new ways to visualize and prove systemic and recurring problems of policing. This is the subject of the next Part.

II. BLUE DATA: INVERTING THE ARCHITECTURE OF BIG DATA SURVEILLANCE

In choosing the language “systemic or recurring negligence,” the Supreme Court invited defendants to prove a certain type of policing problem.²¹⁰ To know whether police are negligent, one needs data on policing practices at both a systemic and individual-officer level. This is the promise of “blue data”—quantified information of actual police practice in searchable, sortable, and usable formats.

To envision the potential of blue data, one needs to understand the existing big data policing capacities being developed in major U.S. cities. These technologies will fundamentally reshape criminal investigation by using a combination of data mining, social network analysis, and video, audio, sensory, and predictive analytics to identify, track, and monitor citizens living in certain neighborhoods.²¹¹ Currently adopted in piecemeal fashion in different cities, the technologies exist, have proven effective, and will likely expand in sophistication, integration, and reach.

This Part examines how digital surveillance technologies have been used to track those suspected of criminal activities; how these same technologies could be used to address the accountability

database in any other instance. There is nothing in the record to suggest that the acts here are likely to reoccur.;

United States v. Campbell, 603 F.3d 1218, 1235 (10th Cir. 2010) (“Defendant has demonstrated at most a *single* instance of an arguably negligent breakdown in communication among the WPD. He has not demonstrated what the Supreme Court appears to have indicated is required—‘*recurring or systemic negligence.*’” (quoting *Herring*, 555 U.S. at 144)).

209. As discussed in Section I.C, these barriers involve caseload, cost, and procedural rules that limit the development of a factual record to show systemic misconduct. See *supra* notes 194–201.

210. *Herring*, 555 U.S. at 144.

211. See FERGUSON, *supra* note 1, at 4.

problems of police violence, racial bias, and unconstitutional practices raised in Part I; and how proof of those problems could be introduced in suppression hearings to show systemic or recurring police negligence. While not comprehensive to the vast array of new technologies being developed, this Part looks at three widely adopted new policing tools: (1) data-mining technologies, (2) monitoring technologies, and (3) predictive technologies.

A. Data-Mining Technologies

The revolution commonly known as “big data computing” involves new capabilities to collect, store, and sort through vast quantities of data using sophisticated analytical and machine-learning tools.²¹² The quantity of data being created defies comprehension—the only way this amount of information can become practically useful is because computing power and analytics have matched its growth.²¹³ Within this expanding data stream, data mining offers new ways to search. In broad terms, data mining offers the ability to target particular items of information and visualize patterns of both expected and unexpected insights.²¹⁴

As to targeting, data mining allows researchers (or investigators) to locate a particular data point out of an overwhelming amount of information. For example, only digital automation and search capabilities could help the FBI match a suspect using facial recognition technology from a collection of fifty million mugshots.²¹⁵ Without the ability to quickly sort through images, the number of photographs would overwhelm traditional, human-matching capabilities.

212. VIKTOR MAYER-SCHÖNBERGER & KENNETH CUKIER, *BIG DATA: A REVOLUTION THAT WILL TRANSFORM HOW WE LIVE, WORK, AND THINK 2* (2013); Kenneth Cukier, *Data, Data Everywhere*, *ECONOMIST* (Feb. 25, 2010), <http://www.economist.com/node/15557443> [<https://perma.cc/SU2U-PPV8>]; Steve Lohr, *How Big Data Became So Big*, *N.Y. TIMES* (Aug. 11, 2012), <http://www.nytimes.com/2012/08/12/business/how-big-data-became-so-big-unboxed.html> [<https://perma.cc/NVX8-YM84>].

213. See EXEC. OFF. OF THE PRESIDENT, *BIG DATA: A REPORT ON ALGORITHMIC SYSTEMS, OPPORTUNITY, AND CIVIL RIGHTS 5–10* (May 2016), https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/2016_0504_data_discrimination.pdf [<https://perma.cc/H3BJ-PXS6>] (introducing the concept of big data and its ramifications).

214. See generally Zarsky, *supra* note 3, at 287 (discussing data mining’s role in “clos[ing] the intelligence gap constantly deepening between governments and their new targets”); Note, *Data Mining, Dog Sniffs, and the Fourth Amendment*, 128 *HARV. L. REV.* 691, 693–94 (2014) (defining data mining as the process by which people or algorithms examine data for patterns of useful information).

215. U.S. GOV’T ACCOUNTABILITY OFF., *GAO-16-267, FACE RECOGNITION TECHNOLOGY: FBI SHOULD BETTER ENSURE PRIVACY AND ACCURACY 10* (Aug. 3, 2016), <https://www.gao.gov/assets/680/677098.pdf> [<https://perma.cc/W6E6-4S3G>]; PERPETUAL LINE-UP, *supra* note 22.

As to pattern recognition, algorithms can be created to find suspected criminal activity. For example, most credit card fraud warnings and insider trading tips arise because investigators have programmed computer algorithms to identify unusual patterns of behavior that correlate with criminal activity.²¹⁶ But sometimes big data searches can uncover entirely unexpected correlations.²¹⁷ In the criminal justice space, for example, investigators in Richmond, Virginia, found that certain burglaries were more predictive of sexual assaults than were prior sexual assaults²¹⁸ and that sex trafficking could be discovered by looking at unusual credit card transactions in nail salon operations.²¹⁹ Whether used to predict consumer or criminal activities, the same technologies could be used to crunch, and thus comprehend, the accumulated big data.

1. Mining Criminal Clues

Law enforcement routinely mines databases for investigatory purposes.²²⁰ Large criminal justice databases include criminal histories and identifying data for millions of people.²²¹ Biometric databases with DNA samples, fingerprints, palm prints, photographs, and even iris scans allow police to identify suspects with relative

216. Philip K. Chan et al., *Distributed Data Mining in Credit Card Fraud Detection*, 14 IEEE INTELLIGENT SYS. 67 (1999), <http://cs.fit.edu/~pkc/papers/ieee-is99.pdf> [<https://perma.cc/2ULD-N3JU>]; Peter P. Swire, *Privacy and Information Sharing in the War on Terrorism*, 51 VILL. L. REV. 951, 964 (2006).

217. In the consumer space, Walmart discovered that impending hurricanes result in an uptick of purchases of strawberry Poptarts and Target learned to predict pregnant women from a combination of common household purchases. Cathy O'Neil, WEAPONS OF MATH DESTRUCTION: HOW BIG DATA INCREASES INEQUALITY AND THREATENS DEMOCRACY 98 (2016); Charles Duhigg, *How Companies Learn Your Secrets*, N.Y. TIMES MAG. (Feb. 16, 2012), <https://www.nytimes.com/2012/02/19/magazine/shopping-habits.html> [<https://perma.cc/T2LK-UX89>]; Constance L. Hayes, *What Wal-Mart Knows About Customers' Habits*, N.Y. TIMES (Nov. 14, 2004), <https://www.nytimes.com/2004/11/14/business/yourmoney/what-walmart-knows-about-customers-habits.html> [<https://perma.cc/J3QC-U7RW>].

218. Colleen McCue & Andre Parker, *Connecting the Dots: Data Mining and Predictive Analytics in Law Enforcement and Intelligence Analysis*, 10 POLICE CHIEF 115, 122 (2003).

219. Tierney Sneed, *How Big Data Battles Human Trafficking*, U.S. NEWS (Jan. 14, 2015), <https://www.usnews.com/news/articles/2015/01/14/how-big-data-is-being-used-in-the-fight-against-human-trafficking> [<https://perma.cc/NB3A-PSG9>].

220. See Daniel J. Steinbock, *Data Matching, Data Mining, and Due Process*, 40 GA. L. REV. 1, 4 (2005) ("Data mining's computerized sifting of personal characteristics and behaviors (sometimes called 'pattern matching') is a more thorough, regular, and extensive version of criminal profiling, which has become both more widespread and more controversial in recent years.").

221. See generally Logan & Ferguson, *supra* note 84, at 541 (discussing the growing scope of criminal justice data collection).

ease.²²² Court records, gang and sex offender registries, and other digital collections of criminal justice information provide new ways to investigate and monitor individuals.²²³ As traditionally used, these databases can be searched for a particular piece of information. If police need to match a fingerprint found at a crime scene, they can compare the lifted and digitized print with millions of similar prints.²²⁴ If police need to run a name through the National Criminal Information Center to find an address, they have access to millions of addresses with a single query.²²⁵

Big data policing rests on the idea of creating databases out of the almost incalculable number of variables that determine the “where,” “when,” and “what” of criminal activity. In the past few decades, crime analysts have been plotting and mapping these crime patterns.²²⁶ Particular hotspots can be identified by address.²²⁷ Crime patterns can be identified by neighborhood or block. In doing so, recurring problem areas can be visualized and environmental factors

222. See Laura K. Donohue, *Technological Leap, Statutory Gap, and Constitutional Abyss: Remote Biometric Identification Comes of Age*, 97 MINN. L. REV. 407, 415 (2012) (“[Remote Biometric Identification] technologies present capabilities significantly different from that which the government has held at any point in U.S. history.”); Logan, *supra* note 15, at 1575 n.91 (“‘Biometrics’ refers either to biological or physiological characteristics usable for automatic recognition of individuals on the basis of such characteristics.” (citing NAT’L SCI. & TECH. COUNCIL, *PRIVACY & BIOMETRICS: BUILDING A CONCEPTUAL FOUNDATION* 4 (Apr. 14, 2006), <http://www.biometrics.gov/Documents/privacy.pdf> [<https://perma.cc/W9QH-JYGH>])); Daniel J. Steinbock, *National Identity Cards: Fourth and Fifth Amendment Issues*, 56 FLA. L. REV. 697, 704 (2004) (“Biometrics are identification techniques based on some unique, physiological, and difficult-to-alienate characteristic.”).

223. WAYNE A. LOGAN, *KNOWLEDGE AS POWER CRIMINAL REGISTRATION AND COMMUNITY NOTIFICATION LAWS IN AMERICA* 22–30 (2009) (discussing local criminal registration laws).

224. Erin Murphy, *Databases, Doctrine & Constitutional Criminal Procedure*, 37 FORDHAM URB. L.J. 803, 806–08 (2010).

225. David M. Bierie, *National Public Registry of Active-Warrants: A Policy Proposal*, 79 FED. PROB. 27, 28 (2015) (“[NCIC] is the central transactional data system that tracks the nation’s warrants. All police agencies can enter their warrants in the system and check the system to identify whether a given individual has a warrant.”).

226. See generally Andrew Guthrie Ferguson, *Crime Mapping and the Fourth Amendment: Redrawing “High-Crime Areas,”* 63 HASTINGS L.J. 179, 184–86 (2011) (discussing the history of crime mapping programs).

227. James G. Cameron, *Spatial Analysis Tools for Identifying Hotspots*, in MAPPING CRIME: UNDERSTANDING HOT SPOTS 35, 35 (John E. Eck et al. eds., 2005):

A central concern of hot spot analyses of crime is assessing the degree of spatial randomness observed in the data. Most of the available tools provide different ways of determining whether the underlying pattern is uniform over space or whether significant clusters or other spatial patterns exist, which are not compatible with spatial randomness.;

John E. Eck, *Crime Hot Spots: What They Are, Why We Have Them, and How to Map Them*, in MAPPING CRIME, *supra*, at 1, 4 (“The most basic form of a hot spot is a place that has many crimes. A place can be an address, street corner, store, house, or any other small location, most of which can be seen by a person standing at its center.”).

identified.²²⁸ As computer power grew, and as data collection expanded, so did the capabilities of crime analysts and the development of data-crunching systems to help target and predict criminal activity in particular places.²²⁹ Now crime maps include not only the place, time, and type of crime but also a whole host of other environmental factors that might increase the risk of future crime.²³⁰ Out of the seeming chaos of individual crimes, a pattern of activity can be visualized and addressed.

In addition to seeing where crime is occurring, a few police organizations are proactively trying to create large-scale social network analysis datasets that can be queried for clues or investigatory leads about who is committing those crimes.²³¹ A good example of this data creation is found in the Los Angeles Police Department (“LAPD”). The LAPD has partnered with a private company—Palantir—to begin collecting data about chronic offenders in the city.²³² This collection process involves three distinct steps. First, police identify particular chronic offenders who are suspected to be involved in recurring criminal activity.²³³ Second, the police proactively contact these offenders in an effort to collect personal data about them.²³⁴ These contacts, recorded on “field interview cards,”

228. Anthony A. Braga et al., *The Relevance of Micro Places to Citywide Robbery Trends: A Longitudinal Analysis of Robbery Incidents at Street Corners and Block Faces in Boston*, 48 J. RES. CRIME & DELINQ. 7, 11 (2011) (“Studies of the spatial distribution of robbery in urban environments have also revealed that a small number of micro places generate a disproportionate number of robberies. Certain high-risk facilities, such as bars, convenience stores, and banks, at particular places also tend to experience a disproportionate amount of robbery”); Lisa Tompson & Michael Townsley, *(Looking) Back to the Future: Using Space-Time Patterns to Better Predict the Location of Street Crime*, 12 INT’L J. POLICE SCI. & MGMT. 23, 24 (2010) (“Research has repeatedly demonstrated that offenders prefer to return to a location associated with a high chance of success instead of choosing random targets.”).

229. See Andrew Guthrie Ferguson, *Policing Predictive Policing*, 94 WASH. U. L. REV. 1109, 1126–32 (2017) (“Predictive Policing . . . involved the collection of historical crime data (time, place, and type) and the application of an experimental computer algorithm that used data to predict likely areas of criminal activity.”).

230. *Id.*

231. CITY OF NEW ORLEANS, NOLA FOR LIFE: COMPREHENSIVE MURDER REDUCTION STRATEGY (Apr. 2016), <http://nolaforlife.org/files/n4l-2016-comprehensive-murder-reduction-strategy-b/> [<https://perma.cc/UU4N-Q6NM>]; Jason Sheuh, *New Orleans Cuts Murder Rate Using Data Analytics*, GOVTECH.COM (Oct. 22, 2014), <http://www.govtech.com/data/New-Orleans-Cuts-Murder-Rate-Using-Data-Analytics.html> [<https://perma.cc/9DBJ-FV9T>] (explaining how the city of New Orleans monitors criminal social networks in an effort to reduce crime).

232. Sarah Brayne, *Big Data Surveillance: The Case of Policing*, 82 AM. SOC. REV. 977, 987 (2017); Matt McFarland, *A Rare Look Inside LAPD’s Use of Data*, CNN MONEY (Sept. 11, 2017), <https://money.cnn.com/2017/09/11/technology/future/lapd-big-data-palantir> [<https://perma.cc/B8QN-W7PA>].

233. See Brayne, *supra* note 232, at 987 (“[Chronic offender field identification cards] are key intelligence tools for law enforcement and were one of the first data sources integrated into Palantir.”).

234. *Id.*

involve collecting information about where they were spotted, who they were with, the type of car they were driving, and any other identifiable information about the target or his associates.²³⁵ Third, police load this data into a large central database so that each field can be queried.²³⁶ As a result, if police want to search for the whereabouts of a particular gang member, they are able to access information related to where he has been spotted and who he has been spotted with over the last year and may then develop a network of social and geolocational connections. Each variable can be connected to any other variable in the database.

These data points then serve as the building blocks for a more ambitious networked system. The inputted data is combined with other crime data, some public government data, and even some consumer data to create a searchable network of criminal offenders.²³⁷ Again, each variable can be separately sorted and ordered. If police want to track a phone number or address across different groups of people, they can find a connecting phone number.²³⁸ If police want to track all visitors to a suspected house, they can geofence the area to identify any car that drives through.²³⁹ All of the data is inputted and connected through network analysis.²⁴⁰ The computer model for this social network technology evolved from developments tracking international terrorists who needed to be linked, monitored, and watched across different jurisdictions.²⁴¹

In terms of search capabilities, police can target a particular person (or phone number, or license plate) for investigation. For example, a partial license plate number, a partial description, and a

235. *Id.*

236. *Id.* at 992–93.

237. *See id.* at 993–96 (explaining how Palantir located a public database on foreclosures and added the public information to its system).

238. *See id.* at 994 (describing how the police acquire and connect people to various phone numbers).

239. Chris Hackett & Michael Grosinger, *The Growth of Geofence Tools Within the Mapping Technology Sphere*, PDVWIRELESS (Dec. 15, 2014), <https://www.pdvwireless.com/the-growth-of-geofence-tools-within-the-mapping-technology-sphere> [<https://perma.cc/P3VA-K29M>].

240. Jenna McLaughlin, *L.A. Activists Want to Bring Surveillance Conversation Down to Earth*, INTERCEPT (Apr. 6, 2016, 8:22 AM), <https://theintercept.com/2016/04/06/l-a-activists-want-to-bring-surveillance-conversation-down-to-earth> [<https://perma.cc/252Z-94A8>].

241. Mark Harris, *How Peter Thiel's Secretive Data Company Pushed into Policing*, WIRED (Aug. 9, 2017), <https://www.wired.com/story/how-peter-thiels-secretive-data-company-pushed-into-policing> [<https://perma.cc/B686-QS2E>]; Peter Waldman, Lizette Chapman & Jordan Robertson, *Palantir Knows Everything About You*, BLOOMBERG (Apr. 19, 2008), <https://www.bloomberg.com/features/2018-palantir-peter-thiel> [<https://perma.cc/7B4M-NPDZ>]; *see also* Palantir, *Palantir at the Los Angeles Police Department*, YOUTUBE (Jan. 25, 2013), <http://www.youtube.com/watch?v=aJ-u7yDwC6g> [<https://perma.cc/P8WB-BSLC>].

tattoo can transform into an actual human target by querying the database.

In terms of patterns, the same network analysis can be used to track gang members or others involved in large-scale criminal activity. In Chicago, for example, network analysis found that most homicides involve rival gangs of young men.²⁴² The circles of retaliatory killings can be studied using social network analysis.²⁴³ Police can develop a database that tracks where, why, and with whom their targets are associating. Police can see crime not only as a series of individual acts but as part of a larger pattern of relationships and connections. As might be expected from the name, “social network analysis” reveals hidden connections that otherwise would not be identified.

As a technical matter, the innovation for policing is the ability to break down ordinary life into discrete and searchable variables. Repeated problem actors can be identified. Recurring crimes can be linked with associated groups. The general point is that these types of technologies allow data to be queried in unusual ways to find new insights to identify and study crime patterns. Whatever the subject matter of the database, the technology allows for new mechanisms to manipulate and study the data. While hard questions remain about the cost of these systems, the interoperability of linking different datasets and the willingness of police to embrace a data-driven strategy combine to offer new ways to reduce crime.

2. Mining Policing Data

Police officers generate data during every single shift. Location, contacts, actions, observations, and arrests are all data points.²⁴⁴ For

242. TRACEY MEARES, ANDREW V. PAPACHRISTOS & JEFFREY FAGAN, HOMICIDE AND GUN VIOLENCE IN CHICAGO: EVALUATION AND SUMMARY OF THE PROJECT SAFE NEIGHBORHOODS PROGRAM (2009), <https://www.flintridge.org/newsresources/documents/HomicideandGunViolenceinChicago-EvaluationandSummaryoftheProjectSafeNeighborhoodsProgram-2009.pdf> [<https://perma.cc/TMM5-8HFB>]; see also David M. Kennedy, *Pulling Levers: Chronic Offenders, High-Crime Settings, and a Theory of Prevention*, 31 VAL. U. L. REV. 449, 459 (1997) (“Finally, much crime—violent, drug, property, and domestic—is concentrated in certain neighborhoods . . .”); Tracey Meares, Andrew V. Papachristos & Jeffrey Fagan, *Attention Felons: Evaluating Project Safe Neighborhoods in Chicago*, 4 J. EMPIRICAL LEGAL STUD. 223 (2007); Andrew V. Papachristos et al., *Social Networks and the Risk of Gunshot Injury*, 89 J. URB. HEALTH 992, 993 (2012) [hereinafter Papachristos et al., *Social Networks*]; Andrew V. Papachristos, *Commentary: CPD’s Crucial Choice: Treat Its List As Offenders or as Potential Victims?*, CHI. TRIB. (July 29, 2016, 10:00 AM), <http://www.chicagotribune.com/news/opinion/commentary/ct-gun-violence-list-chicago-police-murder-perspec-0801-jm-20160729-story.html> [<https://perma.cc/SR7C-852Q>].

243. See sources cited *supra* note 242.

244. Amy Feldman, *How Mark43’s Scott Crouch, 25, Built Software to Help Police Departments Keep Cops on the Street*, FORBES (Oct. 19, 2016, 10:00 AM), <https://www.forbes.com/>

supervisors or communities concerned with police accountability, this data is incredibly valuable. Do police stop more people of color? Do police stop people more in particular neighborhoods? Is police suspicion justified by successful outcomes (e.g., recovering weapons or contraband)? With data, police are able to determine if there are particular persons or patterns that raise concerns.

As with collected crime data, police could mine data they routinely collect to identify recurring violations of the Constitution and study systemic violations through social network analysis. One example of data-mining police practices arises from the NYPD stop and frisk litigation. As discussed previously, this data analysis ultimately led to the stop and frisk practice being declared unconstitutional.²⁴⁵ But it also inspired a team of researchers led by Professors Sharad Goel, Ravi Shroff, and David Sklansky to examine the data to see if they could predict which types of stop and frisks would more likely result in the recovery of contraband.²⁴⁶ As they explained, data could predict the likelihood that a stop and frisk would uncover contraband or other evidence based on the officer's prior knowledge, such as time, location, characteristics of the suspect, and the suspicious circumstance at hand.²⁴⁷ The researchers called this prediction a “stop-level hit rate,” which can be operationalized to predict the probability of recovering a weapon.²⁴⁸ According to analysis from the actual NYPD data, “43% of the *Terry* stops carried out by the NYPD based on suspicion of CPW [criminal possession of a weapon]

sites/amyfeldman/2016/10/19/how-mark43s-scott-crouch-25-built-software-to-help-police-do-their-jobs-better [https://perma.cc/99AN-72PF].

245. See *Floyd v. City of New York*, 959 F. Supp. 2d 540, 562 (S.D.N.Y. 2013) (“In conclusion, I find that the City is liable for violating plaintiffs’ Fourth and Fourteenth Amendment rights.”); Declaration of Jeffrey Fagan, Ph.D. at 2, *Floyd*, 959 F. Supp. 2d 540 (No. 08 Civ. 01034(SAS)), 2011 WL 7552634; see also CTR. FOR CONST. RTS., STOP AND FRISK: THE HUMAN IMPACT (2012), <https://ccrjustice.org/sites/default/files/attach/2015/08/the-human-impact-report.pdf> [https://perma.cc/8RRX-P9AN]; CTR. FOR CONST. RTS., RACIAL DISPARITY IN NYPD STOPS-AND-FRISKS 1, 10, 15 (Jan. 15, 2009), https://ccrjustice.org/sites/default/files/assets/Report-CCR-NYPD-Stop-and-Frisk_3.pdf [https://perma.cc/N8NC-2ZUV].

246. Sharad Goel et al., *Combating Police Discrimination in the Age of Big Data*, 20 *NEW CRIM. L. REV.* 181 (2017).

247. *Id.* at 187 (“The data can be used to compute the likelihood that any particular stop-and-frisk will result, for example, in the discovery of particular kinds of evidence . . .”).

248. *Id.* at 187–88:

[T]his information is recorded in what the NYPD calls a “UF-250” report, and it can be used to estimate a “stop-level hit rate”—the *ex ante* probability of discovering a weapon, based on all the factors that were known to the officer before the *Terry* stop. The stop-level hit rate, or “SHR,” can be thought of as a measure of the strength of the evidence supporting the suspicion that the individual to be stopped and frisked has a gun.

had less than a 1% chance of actually resulting in the discovery of a weapon.”²⁴⁹

The researchers came to this determination through sophisticated data analysis of the information already collected by the NYPD. Essentially, researchers collected data from NYPD UF-250 forms, only focusing on information that would have been available to officers when making a decision about whether to stop or not.²⁵⁰ They then built a computer model that incorporated numerous variables, including:

[D]emographic information about the suspect (sex, race, age, height, weight, and build); location of the stop (precinct; inside or outside; and on public transit, in public housing, or neither), date and time of the stop (year, month, day of week, and time of day); the recorded reasons for the stop (e.g., “furtive movements” or “high crime area”); whether the stop was the result of a radio run; whether the officer was in uniform; how long the officer observed the suspect before initiating the stop; and the “local hit rate” of stops at that location.²⁵¹

Then, utilizing this model, researchers examined which of the 472,344 stops from 2008 through 2010 recovered a weapon.²⁵² By considering recovery of a weapon a successful stop, researchers were able to isolate the variables that might contribute to successful stops and those variables that likely do not. The model included 7,705 predictive features.²⁵³ This model was then applied to stops for 2011 and 2012, under the reasoning that if the predictive model could isolate those variables that mattered to effective stops in 2008 through 2010, then the researchers should be able to predict the outcome for stops in 2011 and 2012.²⁵⁴

The results were impressively accurate. The model predicted eighty-three percent of successful stops.²⁵⁵ Equally helpful, the model could predict which types of stops would not be successful. For example, a stop-hit rate analysis showed some standard police

249. *Id.* at 187.

250. *Id.* at 211–12. UF-250 forms are NYPD documents that record the type of stop, the justifications for the stop, and the time and place of the stop.

251. *Id.* at 212.

252. *Id.* at 211–12.

253. *Id.* at 212.

254. *Id.*

255. *Id.* at 212–13:

The results produced by the SHR method are dramatic. First, the model turns out to be highly accurate. To evaluate the model, we selected random pairs of cases from among the 2011 and 2012 stops where a weapon was ultimately found in exactly one stop of the pair. Presented only with the stop-level predictors (and not the outcomes), a completely uninformative model would do no better than chance at determining in which one of the two stops a weapon was found. In contrast, we found that our SHR model correctly picked out the stop with the weapon 83 percent of the time, indicating good predictive performance.

justifications for a stop, such as “the suspect made furtive movements,” did not correlate with the recovery of a weapon.²⁵⁶ The ability to predict unsuccessful stops enables the model to assist in determining how stop and frisk practices could be redirected to be more effective²⁵⁷ and less discriminatory.²⁵⁸

Three conclusions arise from this experiment in data-mining stop and frisk statistics. First, the stop-hit rate could be used to show that whole categories of police practice—that is, systemic patterns—were both ineffective and racially discriminatory.²⁵⁹ Second, the stop-hit rate could be used retrospectively to determine in particular cases whether the officer did in fact have reasonable suspicion to conduct the stop and thus empirically support a court’s Fourth Amendment conclusion.²⁶⁰ Finally, the stop-hit rate could be used to create a predictive tool to assist officers in deciding whether to stop a suspect.²⁶¹ All of these possibilities are now recognized because scholars saw the value in studying blue data.

As another example of the potential to quantify and mine police practices, Stanford University Professor Jennifer Eberhardt led a team of researchers in a two-year data-driven study of the Oakland

256. *Id.* at 188 (“SHR analysis reveals that some of the standard justifications for pedestrian stops that the UF-250 has employed—‘furtive movements,’ for example—are unhelpful in identifying suspects who actually have weapons; avoiding the use of those factors would make stops less discriminatory and more successful.” (citation omitted)).

257. *Id.* (“The SHRs can thus provide a road map for redirecting stop-and-frisk practices to make them, simultaneously, less racially lopsided in their impact and more effective at finding what the police say they are looking for.”).

258. *Id.* (“But the SHR method does more than that. It pinpoints particular categories of *Terry* stops for CPW that both (a) are relatively unlikely to actually find a weapon, and (b) impose an especially disproportionate burden on racial minorities.”).

259. *Id.* (“And these low-odds stops had a heavy racial tilt: 49 percent of the stops of blacks fell below the 1 percent probability threshold, as did 34 percent of the stops of Hispanics, compared with only 19 percent of the stops of whites.”); *see also id.* at 215 (“Third, the SHR method provides strong, numerical support for the conclusion reached in *Floyd*: that the stop-and-frisk practices of the NYPD discriminated against racial minorities, particularly blacks.”).

260. *Id.* at 217:

Fourth, the SHR method not only allows one to estimate the aggregate number of stops that fall below a specified probability threshold, but also yields a quantitative measure of the evidence supporting a stop-and-frisk in each *particular* case, which can in turn be used to determine whether “reasonable articulable suspicion” existed.

261. *Id.* at 188 (“More ambitiously, SHR analysis could be used to craft a simple heuristic for officers to use on the street to determine which suspects to stop and frisk, drastically reducing the disparate impact and increasing the ‘efficiency’ of the searches.”); *see also id.* at 218:

Finally—and more speculatively—SHR analysis can be used not just to assess an officer’s decision to conduct a *Terry* stop after the fact, but also to guide that decision in the first place. Because the SHR is calculated from information available to the officer at the time the decision is made to carry out a stop-and-frisk, the method also could be used, in theory, to inform the stop decision.

Police Department.²⁶² Initiated by a federal court order, the project sought to examine whether racial bias impacted policing in Oakland.²⁶³ The methodology involved an intensive data dive into the records of the police department, examining stops, arrests, use of handcuffs, narrative scripts in police reports, and the language used in police stops (obtained from body camera footage).²⁶⁴ In many cases, this data is similar to the data described in Professor Sarah Brayne's study, but with the focus inverted from tracking civilians to tracking police officers.²⁶⁵ The data showed that Oakland police treated people of different races in different and seemingly discriminatory ways.²⁶⁶

For example, in studying police contacts, the researchers examined 28,119 self-initiated police stops over a thirteen-month period.²⁶⁷ Each of these stops generated a Field Interview/Stop Data Report ("FI/SDR") which could be broken down into different data fields, including "encounter variables," "officer variables," and "census track variables."²⁶⁸ Encounter variables included the reason for the encounter; the justification for the stop (reasonable suspicion, probable cause, traffic violation, probation or parole status, or consensual encounter); the time, date, and day of the week that the stop occurred; the type of stop (vehicle, pedestrian, or other); and the policing area in which the stop occurred, as well as the gender, age,

262. REBECCA C. HETEV ET AL., DATA FOR CHANGE: A STATISTICAL ANALYSIS OF POLICE, STOPS, SEARCHES, HANDCUFFINGS, AND ARRESTS IN OAKLAND, CALIF., 2013-2014 (June 23, 2016), <https://stacks.stanford.edu/file/druid:by412gh2838/Data%20for%20Change%20%28June%2023%29.pdf> [<https://perma.cc/8MSM-5Z4B>].

263. *Id.* at 11 ("In May 2014, the City of Oakland contracted with our team of Stanford University researchers to assist the Oakland Police Department (OPD) in complying with a federal order to collect and analyze data on OPD officers' self-initiated stops of pedestrians and vehicles by race." (citation omitted)).

264. *Id.* at 12–26 (providing an overview of the data that the study analyzed); *see also id.* at 9 (referencing the researchers' "[d]evelopment of computational tools to analyze linguistic data from body-worn cameras").

265. *See supra* notes 232–237 and accompanying text (describing the Los Angeles Police Department's collection of data on particular chronic offenders).

266. HETEV, *supra* note 262, at 9:

Across our research programs, we indeed uncovered evidence that OPD officers treat people of different races differently. At the same time, we found little evidence that this disparate treatment arose from overt bias or purposeful discrimination. Instead, our research suggests that many subtle and unexamined cultural norms, beliefs, and practices sustain disparate treatment.

267. *Id.* at 12 ("During this 13-month time period, 28,119 stops were recorded by 510 sworn OPD officers."); *id.* at 16 ("Members of the OPD are required to complete a stop data form for all self-initiated encounters that involve one or more persons subject to detention, arrest, search, or request to search." (citation omitted)).

268. *Id.* at 11 ("Our task was to analyze the reports that OPD officers completed after every stop they initiated between April 1, 2013, and April 30, 2014. These reports are called Field Interview/Stop Data Reports (FI/SDR), and the information they contain is called *stop data*.").

and race of the suspect.²⁶⁹ The system lists officer variables, including the officers' race, gender, age, experience level, type of assignment, squad, and a link to the individual employee ID.²⁷⁰ Census tract variables included information about the area of the stop, including the address where the stop occurred; the area's crime rate, population demographics, total population, population density, and land area; the age and race demographics of the population; and the percentage of the population living in poverty in the area, among other socioeconomic variables.²⁷¹

Using this data, researchers were able to study patterns of police stops and control for other potential influences. Researchers found that police officers stopped more African Americans than Whites, even after controlling "for neighborhood crime rates and demographics; officer race, gender, and experience; and other factors that shape police actions."²⁷² Despite African Americans only making up twenty-eight percent of the population, they were stopped sixty percent of the time, nearly three times more than Hispanics, who made up the next most common racial group.²⁷³

The same racial disparity could be observed in how police treated suspects after they had been stopped. For example, the data showed that African American men were handcuffed in one out of every four stops, compared to one out of every fifteen stops for White men.²⁷⁴ Again, even controlling for neighborhood crime rate, African Americans were more likely to be placed in handcuffs.²⁷⁵ Similarly, African American men were searched in one out of five stops compared to one out of twenty stops of White men.²⁷⁶ Again, even controlling for crime rate and the racial makeup of neighborhood, African Americans were searched more with no increase in recovered contraband.²⁷⁷

269. *Id.* at 49–51.

270. *Id.* at 52–53.

271. *Id.* at 54–60.

272. *Id.* at 10.

273. *Id.* at 14 ("African Americans were the racial group most often stopped . . . Sixty percent of stops, or nearly 17,000 stops, were of African Americans. Stops of African Americans were made at a rate of more than three times that of the next most common group, Hispanics.")

274. *Id.* at 90 ("Excluding arrests, African American men were handcuffed in 1 out of every 4 stops vs. 1 in every 15 stops for White men.")

275. *Id.* ("Even controlling for multiple covariates like neighborhood crime rate, African Americans were still significantly more likely to be handcuffed (excluding arrests) than Whites in 4 out of 5 of Oakland's policing areas.")

276. *Id.* at 109 ("Excluding incident to arrest, inventory, and probation/parole searches, Black men were searched in 1 out of 5 stops, vs. 1 out of 20 stops for White men.")

277. *Id.*:

Even after controlling for a host of factors, including the crime rate and the racial demographics of the neighborhood where the stop was made, African Americans were

Finally, African Americans were arrested more than one out of every six stops versus arrests for only one out of every fourteen White men stopped, with the arrest discrepancy most obvious in arrests for traffic violations.²⁷⁸

At a more granular level, researchers found that female officers made fewer stops,²⁷⁹ as did more experienced officers.²⁸⁰ Similarly, more senior officers arrested less and used handcuffs less, but seniority did not have an impact on the number of searches conducted.²⁸¹ The analysis also demonstrated that “Asian officers show[ed] less of an African American–White gap in searches.”²⁸² African American officers, on the other hand, “show[ed] more of an African American-White gap in arrests.”²⁸³

This data-mining approach was also applied to the narratives of the police reports. As one of the pilot programs, the Stanford researchers developed a machine-learning technique to sort through the narratives of the FI/SDR.²⁸⁴ This model could quickly sort through the different justifications for a traffic stop to see if racial bias could be detected in the outcome. Again, racial bias was detected: “These analyses uncovered racial disparities in both type and severity of stops, with [Oakland Police Department] officers disproportionately

still significantly more likely than Whites to be the subject of such high-discretion searches in 3 of Oakland’s 5 policing areas. The African American–White race difference was especially pronounced for vehicle stops, stops made because of traffic violations, and stops made by officers working special assignments, other than violence suppression. We found no race differences in search recovery rates.

278. *Id.* at 140:

Overall, more than 1 in 6 African American men stopped was arrested vs. only 1 in 14 White men stopped. Even when controlling for other variables, African Americans were still significantly more likely than Whites to be arrested in 2 of Oakland’s 5 policing areas. The African American-White arrest gap was most pronounced for vehicle stops, stops made because of traffic violations, and stops made by officers working violence suppression.

279. *Id.* at 158.

280. *Id.*

281. *Id.*

282. *Id.*

283. *Id.*

284. SPARQ, STANFORD UNIV., STRATEGIES FOR CHANGE: RESEARCH INITIATIVES AND RECOMMENDATIONS TO IMPROVE POLICE-COMMUNITY RELATIONS IN OAKLAND, CALIF. 24 (Jennifer L. Eberhardt ed., 2016), <https://stanford.app.box.com/v/Strategies-for-Change> [<https://perma.cc/2DGB-3GYG>] [hereinafter STRATEGIES FOR CHANGE] (“[W]e then developed advanced natural-language-processing and machine-learning techniques for coding the narratives in the stop data forms. Once refined, these techniques will eliminate the need for human coders, and allow the OPD and other law enforcement agencies to analyze large quantities of narrative data cheaply, quickly, and reliably.”).

stopping African Americans for all types of violations, as well as for very minor violations.”²⁸⁵

The Stanford study focused on racial disparities in policing, concluding that the Oakland Police Department’s practices produced racially discriminatory outcomes.²⁸⁶ The conclusion is useful to demonstrate the potential for data-driven accountability mechanisms for policing. The study showed that traditional police data, normally used to monitor criminal activity, could be mined to encourage police accountability and improve training and oversight.²⁸⁷

For purposes of this Article, the real insight is in the technological capacity to mine police data. While Oakland was just an experiment (and one mandated by federal court order), the fact that a major U.S. city with thousands of police-citizen interactions could collect, sort, and study its policing patterns to find disparate racial impacts shows the potential for obtaining other information reflecting policing patterns. In addition, social network analysis can show which officers are involved in what types of stops, where the officers are making those stops, and against whom the stops are made. If one wanted to query all police stops in a neighborhood, all police stops against a certain gang, or whether a particular unit caused more complaints, social network analysis makes that possible. Knowing who, where, how, and why suspects were stopped opens up new research avenues to understand the choices police make on a daily basis. Particular police officers could be targeted for study, and patterns relating to experience, gender, or other variables could be examined.

285. *Id.* at 20:

To enrich our exploration of police-community relations in Oakland, we first developed a coding scheme to analyze these narratives. We then recruited experts to use our coding scheme to sort some 1,000 traffic violations from April 2014 by type (e.g., moving violations vs. equipment violations) and severity (from minor to severe).

286. See HETFEY ET AL., *supra* note 262, at 179:

To be clear, though: our results do not suggest that OPD officers are “racists.” Our mission is not to point fingers at specific individuals, but to explore an institution’s effects on its communities, particularly its communities of color. Our exploration revealed that racial disparities in the OPD’s activities are widespread and systemic.

287. *See id.*:

These findings are not evidence of a few or even many bad apples, but of pervasive cultural norms—the unwritten rules of how to behave—about how to police people of different races. Focusing on individual officers, rather than on the culture as a whole, will likely allow racial disparities in policing to persist. Put another way, focusing on the individual officer may let law enforcement agencies, especially their leaders, off the hook too easily. Instead, to combat racial disparities in the treatment of community members, law enforce[ment] agencies must challenge the cultural beliefs, policies, practices, and norms that encourage disparate treatment.

While two experiments in data-rich policing environments cannot be used to predict the future of blue data, they do show the potential of data-driven accountability. While limited in scope and purpose, the ability to mine datasets for insights can be adapted to other police departments. While still early in its development, new data-mining techniques can provide new ways to visualize these constitutionally problematic practices. In fact, as will be discussed in the next Section, these data-driven insights might provide evidence of the systemic and recurring problems needed to fulfill the Supreme Court's new exclusionary test.

3. Mining Exclusion

Mined data can reveal patterns of racial discrimination and unconstitutional stops. If the Supreme Court's new test requires defendants to show systemic or recurring negligence, imagine how suppression hearings might play out in Oakland, New York City, or Baltimore, where systemic problems have been documented. After all, in a five-year period, Baltimore police stopped over three hundred thousand people.²⁸⁸ Almost half of the stops took place in two small, predominantly African-American districts that contained only eleven percent of the city's population.²⁸⁹ According to the DOJ, many of those stops took place in violation of the Fourth Amendment with stops based on less than reasonable suspicion.²⁹⁰ More than ninety-four percent of the stops did not result in a citation or an arrest, meaning no contraband was recovered from suspicionless stops.²⁹¹ Again, following the Supreme Court's guidance in *Herring*, an unconstitutional stop connected to a systemic or recurring pattern warrants suppression.

288. DOJ BALTIMORE REPORT, *supra* note 125, at 5 ("BPD officers recorded over 300,000 pedestrian stops from January 2010–May 2015, and the true number of BPD's stops during this period is likely far higher due to under-reporting.").

289. *Id.* at 6 ("BPD's pedestrian stops are concentrated on a small portion of Baltimore residents. BPD made roughly 44 percent of its stops in two small, predominantly African-American districts that contain only 11 percent of the City's population.").

290. *Id.* ("BPD's stops often lack reasonable suspicion. Our review of incident reports and interviews with officers and community members found that officers regularly approach individuals standing or walking on City sidewalks to detain and question them and check for outstanding warrants, despite lacking reasonable suspicion to do so.").

291. *Id.* ("Only 3.7 percent of pedestrian stops resulted in officers issuing a citation or making an arrest. And, as noted below, many of those arrested based upon pedestrian stops had their charges dismissed upon initial review by either supervisors at BPD's Central Booking or local prosecutors.").

The Stanford study focused on racial bias, a subject of relevance, if not a direct relation to Fourth Amendment practice.²⁹² But the same type of data analysis could focus on the justifications for why Oakland police stopped an individual, as the stop-hit-ratio researchers did with the NYPD data.²⁹³ Once collected, the data could be queried to show the events that transpired, the justifications for the stop, and the result of the stop. Following *Herring*, this data could be introduced in a Fourth Amendment suppression hearing to effectuate the exclusionary rule.

Take as an example facts from one of the plaintiffs in the NYPD *Floyd* stop and frisk litigation.²⁹⁴ Devin Almonor, a thirteen-year-old teenager, was stopped, frisked, detained in handcuffs, and taken to a police station without reasonable suspicion.²⁹⁵ Almonor's stop arose from a series of 911 calls reporting a fight in progress with the potential of armed juveniles in a particular geographic location.²⁹⁶ When police arrived at that location, Almonor and a friend were seen walking up the street.²⁹⁷ There was no description of the suspects except that the juveniles were Black youth.²⁹⁸ Police forcefully put Almonor over the hood of a police car, handcuffed him, searched him, and eventually took him to the police station. Ultimately, no contraband was recovered and the case was dismissed.²⁹⁹

But now consider the analysis if marijuana had been recovered from Almonor and, as with tens of thousands of other narcotics busts, the case required a Fourth Amendment suppression hearing. In Almonor's case, Judge Scheindlin found that the stop violated the Fourth Amendment—a necessary but, under *Herring*, not sufficient

292. *Whren v. United States*, 517 U.S. 806, 813 (1996) (“[T]he Constitution prohibits selective enforcement of the law based on considerations such as race. But the constitutional basis for objecting to intentionally discriminatory application of laws is the Equal Protection Clause, not the Fourth Amendment.”); Milton Heumann & Lance Cassak, *Profiles in Justice? Police Discretion, Symbolic Assailants, and Stereotyping*, 53 RUTGERS L. REV. 911, 956 (2001) (“Under the Court’s reasoning in *Whren*, race is irrelevant to any issues raised under the Fourth Amendment.”).

293. See *supra* notes 246–261 and accompanying text (describing the work of Professors Goel, Shroff, and Sklansky).

294. *Floyd v. City of New York*, 959 F. Supp. 2d 540, 628–30 (S.D.N.Y. 2013).

295. *Id.*

296. *Id.* at 628.

297. *Id.*

298. *Id.*

299. *Id.* at 628–29. Interestingly and relevant for data-driven policing, despite being innocent, Almonor’s personal information was entered into the police database accusing him of being suspected of possessing a weapon and resisting arrest. *Id.* at 629–30 (“Almonor was never arrested. The next morning, Officer Dennis filled out a computerized UF–250 and another juvenile report worksheet, both of which noted a suspicious bulge.” (citation omitted)).

condition for suppression.³⁰⁰ The second step would be to evaluate the deterrent value of suppressing the evidence, with one consideration being the systemic or recurring nature of the practice. In a traditional suppression hearing, all Almonor's lawyer would be able to show is that this case involved an unconstitutional stop. But with evidence of a 911 call, a flimsy but matching description, and close proximity to "the crime scene," one could hypothesize a judge finding that the error was one of isolated negligence. The stop was unconstitutional, yes, but not deliberate, reckless, grossly negligent, or part of a systemic or recurring pattern. As a result, the marijuana-possessioning defendant would lose.

But now imagine that a data-driven system existed that could be mined for police practices. Using a data-focused stop-hit rate, one could determine the actual likelihood that a stop would be successful. As the researchers concluded after examining the Almonor case, "[stop-hit rate] analysis indicates that there was a 3% chance that Devin Almonor—a thin, 5 foot, 10 inch 13-year-old black teenager in Harlem who 'fits description' and was behaving 'furtively'—would be found to have a weapon."³⁰¹ This low rate of successful stops might be sufficient to show a recurring constitutional problem, since ninety-seven percent of stops resulted in no finding of contraband.³⁰² Or one could examine the rates of all officers recovering contraband in similar stops in the city—data on the number of stops, the location of the stops, the type of stops, the outcome of those stops, and some figure about whether such stops were successful would all be available. In an individual case, one could target the rates of a particular officer's successful stops, the particular unit, or the particular police district.

Similarly, using mined data, one could track patterns of types of stops. While of course every stop would need to be evaluated individually, it might be possible to show in the aggregate that the practice resulted in largely ineffectual searches and thus demonstrates a systemic practice of unreasonable stops.³⁰³ And if the police administrators knew about this practice and did nothing, a

300. *Id.* at 630 ("Almonor's Fourth Amendments rights [were] violated at the inception of both the stop and the frisk . . .").

301. Goel et al., *supra* note 246, at 217.

302. *Id.*

303. See *Floyd*, 959 F. Supp. 2d at 559 ("[T]he analysis of the UF-250 database reveals that at least 200,000 stops were made without reasonable suspicion."); Second Supplemental Report of Jeffrey Fagan, Ph.D. at 10 tbl.1, *Floyd*, 959 F. Supp. 2d 540 (No. 08 Civ. 01034(SAS)); Jeffrey Fagan & Garth Davies, *Street Stops and Broken Windows: Terry, Race, and Disorder in New York City*, 28 FORDHAM URB. L.J. 457, 496 (2000); Meares, *supra* note 126, at 161; Meares, *supra* note 123, at 342.

defendant might be able to show that the police department acted negligently in not fixing training, policy, or practices.

Or consider a scenario similar to *Utah v. Strieff* but where data-mining technologies existed to monitor the patterns of police stops. If the question became whether detective Fackrell's actions were part of a systemic or recurring pattern of unconstitutional stops, the data could now support that theory. If Utah police recorded all of the times they followed the “stop, ask for identification, run a check”³⁰⁴ tactic, courts would know whether the practice was part of a systemic or recurring practice as alleged by the defendant and dissent. Independent of detective Fackrell, if others in the Salt Lake City Police Department repeatedly engaged in the tactic, this too would show a recurring problem warranting suppression. If collected and proved, data might change the outcome of the *Strieff* suppression hearing.

The point is that data mining can offer new insights into recurring police problems or systemic practices that fill the proof gap under the exclusionary rule, which requires some demonstration of systemic or recurring police negligence. Again, the technology exists. The data exists. All that is needed is to redirect the focus of the technology toward police accountability.

B. Monitoring Technologies

Law enforcement is in the information business. Police need information about what is happening on the streets, who is committing crimes, and where they are taking place, as well as data about the patterns of criminal activity and potential threats to the community. New surveillance technologies with video, audio, tracking, and automated alert capabilities dramatically expand the potential to watch what happens on the streets.³⁰⁵ This Section looks at how monitoring technologies provide potential mechanisms to surveil citizens and the police and establish patterns of systemic or recurring misconduct by police.

304. *Utah v. Strieff*, 136 S. Ct. 2056, 2073 (2016) (Kagan, J., dissenting) (“[T]he department’s standard detention procedures—stop, ask for identification, run a check—are partly designed to find outstanding warrants.”).

305. *See, e.g.*, SLOBOGIN, *supra* note 35, at 3 (“What is new about today’s surveillance is the ease with which it can be conducted; over the past several decades, technological advances have vastly expanded the government’s monitoring ability.”); Blitz et al., *supra* note 35, at 56 (“To opponents and skeptics . . . [drones] threaten to usher in Orwellian, ubiquitous surveillance.” (citation omitted)); Blitz, *supra* note 35, at 1383 (describing the expansion of video surveillance and the dramatic changes occurring in technologies that supplement and enhance such surveillance).

1. Monitoring Crime

In the not so distant future, police will go on patrol in the following surveillance environment: A network of linked cameras will record public activity on the streets.³⁰⁶ Thousands of camera feeds will relay live footage to a central command center.³⁰⁷ All of the video will be digitally recorded and thus watchable after the fact to track or investigate a crime.³⁰⁸ Automated algorithms programmed to spot specific activities (for instance, an abandoned bag or a hand-to-hand transaction) will flag particular actions for human observers.³⁰⁹ Particular objects, people, or activities will remain searchable for several weeks after the fact. If a crime is later reported, the entire incident, including the path of both perpetrator and victims, can be replayed through the series of linked cameras. This data can be viewed in real time or saved, creating a perfect investigative “time machine”³¹⁰ to solve the crime.

306. Gray & Citron, *supra* note 35, at 66 (“DAS will ensure the surveillance of New Yorkers and the city as a whole, twenty-four hours a day, seven days a week.”); Cara Buckley, *Police Plan Web of Surveillance for Downtown*, N.Y. TIMES (July 9, 2007), <https://www.nytimes.com/2007/07/09/nyregion/09ring.html> [<https://perma.cc/Y6P3-2PM9>]; Paul Harris, *NYPD and Microsoft Launch Advanced Citywide Surveillance System*, GUARDIAN (Aug. 8, 2012, 4:20 PM), <http://theguardian.com/world/2012/aug/08/nypd-microsoft-surveillance-system> [<https://perma.cc/V36V-NWG7?type=image>].

307. Davenport, *supra* note 19 (“[The NYPD’s DAS system] collects and analyzes data from sensors—including 9,000 closed circuit TV cameras . . .”).

308. See Amitai Etzioni, *A Cyber Age Privacy Doctrine: A Liberal Communitarian Approach*, 10 I/S 641, 659 (2014):

[Microsoft’s Domain Awareness System] collates thousands of pieces of information about the same person from public sources—such as that from the city’s numerous CCTV cameras, arrest records, 911 calls, license plate readers, and radiation detectors—and makes them easily and instantly accessible to the police. While the system does not yet utilize facial recognition, it could be readily expanded to include such technology.;

Joh, *supra* note 2, at 49:

The N.Y.P.D. claims that the DAS can track where a car associated with a suspect is located, and where it has been in the past days, weeks, or months. The DAS can also check license plate numbers, compare them to watch lists, and provide the police with immediate access to any criminal history associated with the car owner.

(citation omitted).

309. See Joh, *supra* note 2, at 49 (“This system gives the police real-time access to information that can reveal connections between persons, items, and places in ways that may not be obvious to individual crime analysts. The DAS employs video analytic software designed to detect threats, such as unattended bags.”); Associated Press, *NJ City Leading Way in Crime-Fighting Tech*, CBS NEWS (June 19, 2010, 9:30 AM), <https://www.cbsnews.com/news/nj-city-leading-way-in-crime-fighting-tech> [<https://perma.cc/PU29-JFGW>]; Digital Justice, AOL, *Digisensory Technologies Avista Smart Sensors*, YOUTUBE (Sept. 14, 2012), <https://www.youtube.com/watch?v=JamGobiS5wg> [<https://perma.cc/659A-V35Y>].

310. Stephen E. Henderson, *Fourth Amendment Time Machines (and What They Might Say About Police Body Cameras)*, 18 U. PA. J. CONST. L. 933, 937 (2016).

Overhead, another sort of visual time machine will be recording public movements.³¹¹ A small plane hovers with sophisticated cameras capable of recording entire neighborhoods. Multiple cameras, infrared sensors, and night vision track all visible objects.³¹² If a shooting should occur in a local park, the video footage can show not only the violence involved but also the paths of the participants before and after the incident. All public movement can be recorded and saved for future investigative use.

Police officers entering this surveillance space will wear attached body cameras that will record the sights and sounds of their interactions.³¹³ If turned on, every statement and scene will be recorded for future prosecution.³¹⁴ But, equally useful, a daily record of contacts, conversations, and the community will be recorded for investigators. Facial recognition can mark people by place and time.³¹⁵ Search capabilities will allow particular faces to be found amid the multitudes. Combined, facial recognition and GPS capabilities on body-camera systems and department-issued smartphones will track

311. Monte Reel, *Secret Cameras Record Baltimore's Every Move from Above*, BLOOMBERG BUSINESSWEEK (Aug. 23, 2016), <https://www.bloomberg.com/features/2016-baltimore-secret-surveillance> [https://perma.cc/8GQK-R95T].

312. See Amitai Etzioni, *A Cyber Age Privacy Doctrine: More Coherent, Less Subjective, and Operational*, 80 BROOK. L. REV. 1263, 1297 (2015) (“The planes also carry infrared cameras that can track people and cars under foliage and in some buildings.”); Ian Duncan, *New Details Released About High-Tech Gear FBI Used on Planes to Monitor Freddie Gray Unrest*, BALT. SUN (Oct. 30, 2015), <http://www.baltimoresun.com/news/maryland/freddie-gray/bs-md-ci-fbi-surveillance-flights-20151030-story.html> [https://perma.cc/KS4E-ZZGC] (discussing the FBI’s aerial surveillance operation in Baltimore, which captured thirty-six hours of video and infrared images).

313. See Barak Ariel et al., *The Effect of Police Body-Worn Cameras on Use of Force and Citizen’s Complaints Against the Police: A Randomized Controlled Trial*, 31 J. QUANTITATIVE CRIMINOLOGY 509 (2015) (explaining the results of a controlled trial in which officers wore body cameras during interactions with the public); David A. Harris, *Picture This: Body-Worn Video Devices (Head Cams) as Tools for Ensuring Fourth Amendment Compliance by Police*, 43 TEX. TECH. L. REV. 357 (2010) (advocating for the use of police body cameras during search and seizure incidents); Vivian Ho, *San Francisco Cops Expected to Get Body-Worn Cameras*, SFGATE (Apr. 30, 2015, 8:47 AM), <http://www.sfgate.com/crime/article/San-Francisco-cops-expected-to-get-body-worn-6232517.php> [https://perma.cc/59ZA-X3H2] (describing San Francisco Mayor Ed Lee’s efforts to equip city police with body cameras).

314. See Mary D. Fan, *Justice Visualized: Courts and the Body Camera Revolution*, 50 U.C. DAVIS L. REV. 897, 908 (2017) (characterizing the modern world as a “toutveillance society” wherein “everybody is watching everybody” and “everyone has incentive to record or control the narrative”).

315. See Julia Angwin, *Dragnet Nation: A Quest for Privacy, Security, and Freedom in a World of Relentless Surveillance: Chapter 1: Hacked*, 12 COLO. TECH. L.J. 291, 294 (2014) (“And new tracking technologies are just around the corner: companies are building facial recognition technology into phones and cameras, technology to monitor your location is being embedded into vehicles . . .”).

the location of police patrols and citizens in granular detail.³¹⁶ Anyone who comes into contact with police officers will be caught in this recorded web.

Police-issued computers—including handheld smartphones—will provide updated information about the neighborhood.³¹⁷ Criminal incidents, calls for service, historic crime patterns, gang rivalries, and predictive assessments about the crime forecast of the area will be updated in real time and sent to officers trying to assess risk.³¹⁸ As officers patrol, new information providing the context of the places and the people they interact with can be instantaneously retrieved. Facial recognition technology will augment police identification and allow automatic alerts from open arrest warrants in police databases.

Each of these technologies exists today in some form or another in major U.S. cities. They do not all exist together, and may not for some time, but the surveillance architecture is real and technically possible. In New York City, the Domain Awareness System links more than almost ten thousand cameras in a real-time surveillance net.³¹⁹ In West Baltimore, Persistent Surveillance System planes flew and recorded entire portions of the city.³²⁰ In Los Angeles, facial recognition cameras record people near Skid Row³²¹ and LAPD officers

316. See Sidney Fussell, *The New Tech That Could Turn Police Body Cams into Nightmare Surveillance Tools*, GIZMODO (Mar. 9, 2017), <https://gizmodo.com/new-ai-could-turn-police-body-cams-into-nightmare-surve-1792224538> [<https://perma.cc/W36W-6WJZ>] (describing novel body camera technology with surveillance abilities, including facial and object recognition).

317. Tim Fleischer, *Officers Embrace New Smartphones as Crime Fighting Tools*, ABC7NY (Aug. 13, 2015), <https://abc7ny.com/news/exclusive-officers-embrace-new-smartphones-as-crime-fighting-tools-928007> [<https://perma.cc/7D8K-N5G3>] (discussing the NYPD's new smartphone technology, which provides its thirty-five thousand officers with access to numerous department databases, including the Domain Awareness System); Palantir, *Palantir Mobile Prototype for Law Enforcement*, YOUTUBE (Oct. 20, 2010), https://www.youtube.com/watch?v=aRDW_A8eG8g [<https://perma.cc/Z66B-H3SX>] (demonstrating software that allows law enforcement to search numerous police databases through a mobile device).

318. See Justin Jouvenal, *The New Way Police Are Surveilling You: Calculating Your Threat Score*, WASH. POST (Jan. 10, 2016), https://www.washingtonpost.com/local/public-safety/the-new-way-police-are-surveilling-you-calculating-your-threat-score/2016/01/10/e42bccac-8e15-11e5-baf4-bd37355da0c_story.html [<https://perma.cc/CQG9-R7ZV>] (noting the availability of police software that compiles data and scores a suspect's potential for violence); Maurice Chammah, *Policing the Future*, MARSHALL PROJECT (Feb. 3, 2016), <https://www.themarshallproject.org/2016/02/03/policing-the-future> [<https://perma.cc/PHX6-BJ83>] (describing an officer's use of predictive policing technology in Missouri).

319. See Davenport, *supra* note 19; see also I. Bennett Capers, *Crime, Surveillance, and Communities*, 40 FORDHAM URB. L.J. 959, 962 (2013) (describing the surveillance capabilities of major urban cities).

320. The same company flew planes over the city of Compton in a "secret test of mass surveillance." Conor Friedersdorf, *Eyes over Compton: How Police Spied on a Whole City*, ATLANTIC (Apr. 21, 2014), <http://www.theatlantic.com/national/archive/2014/04/sheriffs-deputy-compares-drone-surveillance-of-compton-to-big-brother/360954> [<https://perma.cc/PR6U-P6LA>].

321. See Garvie & Frankle, *supra* note 22 ("In 16 'undisclosed locations' across northern Los Angeles, digital eyes watch the public. . . . Using facial-recognition software, the cameras can

input those contact cards into the Palantir-designed social network tracking system.³²² Body cameras have been adopted in dozens of jurisdictions, and data-driven patrols are part of even more policing strategies.³²³ In fact, in April 2017, Axon (the company formally known as Taser) offered all police officers free body cameras for a year.

This surveillance state raises obvious and poignant privacy concerns. Scholars, including myself, have examined the costs and problems of this new reality and even proposed constitutional solutions to the growing danger.³²⁴ But this Article examines the silver lining of such comprehensive surveillance as it relates to police accountability: all of this observational data is searchable and thus usable to visualize recurring patterns of police misconduct.

2. Monitoring Police

Imagine the same police patrol in the same surveillance state, but with a focus on tracking police officers and targeting police accountability.³²⁵ Police administrators want to know what particular officers are doing on the streets as well as patterns of police activity.

Police officers drive into the networked camera field. Automated license plate readers identify the patrol car. When the officer gets out of her car, every single interaction can be recorded by

recognize individuals from up to 600 feet away.”); *Stop LAPD Spying Coalition Visits the Regional Fusion Center*, PRIVACYSOS (Dec. 17, 2012), <https://privacysos.org/blog/stop-lapd-spying-coalition-visits-the-regional-fusion-center> [<https://perma.cc/WK9N-5TXQ>] (spotlighting a Los Angeles-based coalition’s efforts to end dragnet spying within the city).

322. See Brayne, *supra* note 232, at 992 (discussing how Palantir’s technology is used to track “person[s] of interest” by the LAPD).

323. See *supra* notes 313–316.

324. See e.g., A. Michael Froomkin, *Regulating Mass Surveillance As Privacy Pollution: Learning from Environmental Impact Statements*, 2015 U. ILL. L. REV. 1713, 1721 (2015):

Creating a database recording everyone’s movements allows the state to learn who associates with whom. It chills the freedom of association no less than requiring organizations to publish their membership lists. A government that has access to 24/7 information about the movements and habits of people is one that, even when acting within the law, has the power to investigate people for their political activities.;

Gray & Citron, *supra* note 35, at 66 (noting the comparison between surveillance technology used in New York City and “Orwell’s ‘Big Brother’ ”); Steve Mann & Joseph Ferenbok, *New Media and the Power Politics of Sousveillance in a Surveillance-Dominated World*, 11 SURVEILLANCE & SOC’Y 18, 26 (2013) (“Foucault’s prisoner metaphor is no longer sufficient to describe power relationships mediated by mobile computing and ubiquitous computing enabled by new media.”); Richards, *supra* note 35, at 1953 (“The power effects of surveillance illustrate three additional dangers of surveillance: blackmail, discrimination, and persuasion.”); see also Andrew Guthrie Ferguson, *Personal Curtilage: Fourth Amendment Security in Public*, 55 WM. & MARY L. REV. 1283, 1287 (2014) (“The question remains: does a space, constitutionally protected from technologically enhanced surveillance, exist in public?”).

325. Capers, *supra* note 319, at 986; see also Fan, *supra* note 136, at 102–03 (positing that “police panopticism” could increase both visibility and accountability in law enforcement).

surveillance cameras in real time. Supervisors can watch the complete pattern of interactions, every stop and every search, from the command center. Police cars can be tracked from overhead flights. GPS tracking can watch where police officers drive or walk or chase. If there should be an incident, a complaint, or a lawful arrest at any point, supervisors can rewind the video to watch the entire event occur. In fact, any of the contacts, stops, or arrests recorded can be studied with the ease of replaying a video.

The same incident will also be recorded on body-worn cameras, providing a more officer-centered perspective. This less structured but equally revealing footage can track the specific details of each stop or arrest.³²⁶ If supervisors wanted to search for all of an officer's past arrests, they could pull up each event. If supervisors wanted to study each traffic stop, they could review each stop. If they wanted to identify patterns of how frisks were conducted, when weapons were drawn, when handcuffs were used, or the types of physical contact initiated, they need only replace the existing automated search capabilities (for example, targeting an abandoned bag) for the type of event they wish to review (for example, a protective frisk). All searches at a particular corner, all frisks by a particular officer, or all stops by a particular unit could be identified and studied with algorithmic ease.

The surveillance capacities of body-worn cameras will increase with an increased capacity to search the footage. One company, Dextro—recently purchased by Axon/Taser, one of the leading body-camera companies—has debuted technology that can scan for any particular object in the footage.³²⁷ As a result, police can, for example, search for all Nike swoosh symbols, all baseball caps, or all hand-to-hand transactions observed over a day or a week.³²⁸ The company has explained that the process begins once the body camera identifies objects and movements. Once identified, the footage creates a timeline of when each action or object appears, including timestamps and frequency data. This allows law enforcement to reduce the footage to the exact time at which the object or motion in question appears and add these moments to a searchable database. For instance, law

326. See, e.g., David A. Harris, *How Accountability-Based Policing Can Reinforce—or Replace—the Fourth Amendment Exclusionary Rule*, 7 OHIO ST. J. CRIM. L. 149, 177–78 (2009) (presciently discussing the evolution of police body-worn cameras as a method of police accountability).

327. Fussell, *supra* note 316.

328. See *id.* (“Dextro scans and pinpoints objects in footage that users are looking for, for example, a book, a Nike shoe, lines of text, or a gun. Dextro can also pick up motion information, like handshakes or a punch.”).

enforcement could search for “officer foot chase” or “traffic stop.”³²⁹ The result would be a timeline of all foot chases, searchable with relative ease. This technology can also help with police training, so officers can review their decisionmaking strategies.³³⁰ This same technology will also record place, time, location, and conversations, thus limiting the amount of paperwork officers need to complete on a daily basis. In doing so, the technology will be responsible for a massive database of all police-citizen contacts. With almost four thousand police departments using body cameras, this technology will potentially offer a game-changing ability to track particular things, people, or patterns.³³¹

The available crime and neighborhood data also provides context for the police officer’s actions. In the same way police officers can learn to better understand an area because of the reported data, so too can supervisors better understand the officers’ decisions because of the information provided to officers before the stop.³³² Supervisors will know what the officers knew, what information they checked or failed to check, and the reasonableness of their reaction.

Beyond video footage, audio surveillance capabilities can also reveal policing patterns and practices. Professor Eberhardt’s investigation into the Oakland Police Department involved monitoring the language spoken between police and civilians.³³³ Because the Oakland Police Department used body-worn cameras and because those cameras recorded sound, the researchers could create a searchable database of audio recordings of police-citizen interactions.³³⁴

By tracking data on the tone, content, quality, and types of phrases chosen, researchers could observe language patterns that differed by race.³³⁵ In fact, by studying the use of “apologies” (words

329. *Id.*

330. *See id.*:

An officer’s body camera records an incident in which a cop mistook a cell phone for a gun; the software helps pinpoint the precise moments when the cop made a mistake; and the video is later used for training. Police departments could potentially analyze and compile hundreds of videos for similar purposes.

331. *Cf.* Fan, *supra* note 314, at 924–28 (explaining the potential for body cameras to positively alter the ways in which police departments engage with communities).

332. Patterns of crime may influence how officers see and react to particular neighborhoods or patrol assignments. It might be the case that tactics in higher-crime areas differ from lower-crime areas, and tracking those differences could alleviate community tension or improve officer training.

333. STRATEGIES FOR CHANGE, *supra* note 284.

334. *See id.* at 15 (describing the author’s “analysis of Oakland Police Department (OPD) stop data” in terms of linguistic exchanges).

335. *Id.*

and phrases like “excuse me,” “sorry,” and “apologies”), “gratitude” (words like “thanks”), “formal titles” (words like “sir” and “ma’am”), and police-relevant categories like “police equipment” (words and phrases like “breathalyzer,” “radar,” “handcuffs,” and “badge”),³³⁶ researchers could not only see a racial difference but predict—just by studying the language—whether the officer was speaking to an African American or White suspect.³³⁷ The choice of words revealed how police routinely provided more information and more procedural details to nonminority suspects.³³⁸

The study’s results also open up the possibility to visualize patterns of police-citizen interactions. As the researchers summarized:

One reason that law enforcement agencies do not systematically analyze BWC [body-worn camera] footage is that they and the public tend to think of the footage as evidence, rather than data. Evidence can prove liability or innocence in one specific case, but data can show patterns across incidents and possibly be used to change those patterns. Studying BWC footage in the aggregate could provide unparalleled insights into how police officers typically interact with community members, as well as how to improve those interactions.³³⁹

336. *Id.*:

To analyze officer language data on a large scale, we first created a set of categories of officers’ language use These categories reflect both linguistics and social psychology research, as well as new categories relevant to the particular circumstances of police-community interactions. We then count how many officers’ utterances contain words or phrases that fit into each category. Finally, we use statistical models to understand whether and how officers use these categories differently depending on the race of the community member.

337. *Id.*:

We began with a preliminary question: Can we predict the race of a community member simply from the words an officer uses with him or her? To answer this question, we created a randomly selected, artificially balanced dataset of stops (N = 380) with 50% White and 50% African American community members. Then, for each interaction, we measured a wide variety of linguistic indicators. These included: counts of every word and pair of words, measurements for dozens of linguistic categories, the total number of words spoken, the number of questions the officer asked, and so on. Because we have the same number of White and African American vehicle stops, a tool performing at chance would be 50% accurate at predicting the race of the community member from the officer’s language. Yet our model is 68% accurate—an improvement of 18% over chance. These results suggest that officers speak differently to White versus African American community members.

338. *Id.* at 18:

After statistically controlling for whether there was a search, the result of the stop, and the gender of the community member, we found that OPD officers more often used these explanatory words with White community members than they did with African American community members. These findings suggest that OPD officers more often explain the reason for their stop to White community members

339. *Id.* at 14 (emphasis added).

Such pattern analysis offers new abilities to improve training and monitor different implicit or explicit biases that might undermine trust in a community.³⁴⁰

Video footage can expose similar types of patterns. One regularly recurring constitutional issue involves whether police officers detained a suspect before requesting identification.³⁴¹ As in the *Strieff* case, the facts can be contested, with different and perhaps contradictory understandings of consent, detention, and seizure at issue. But with video surveillance, the pattern of such stops could be studied and clarifications in trainings and protocols provided. Similarly, the question of “furtive movements”—always difficult to articulate—could be clarified with video evidence.

Digital surveillance technologies allow new visibility for policing practices that usually operate without much transparency. Systems of policing practices can be watched, analyzed, and improved in trainings or protocols. And at some point in the future, this surveillance will go beyond video into a whole world of wireless and biometric data that can be collected and studied to optimize policing practices and study policing patterns.

3. Monitoring Exclusion

Inverting the surveillance architecture to focus on police accountability may or may not have a positive impact on improving policing as a profession.³⁴² But these new information sources do provide a game-changing innovation to document systemic or recurring negligence and thus rework the Supreme Court’s new exclusionary rule.

At both an individual and a programmatic level, systemic and recurring issues could be proven in court using available digital

340. *See id.*:

We plan to use these tools to quickly and accurately analyze the words officers use, their tone of voice, how many turns they take in their conversations with community members, and other indicators of the content and quality of the interaction. In combination with other stop data (e.g., the race of the person stopped, the location of the stop, the outcome of the stop), these tools will allow law enforcement agencies and researchers to examine whether and how police-community interactions unfold differently as a function of race.

341. One recurring dispute is whether the individual was “seized” for Fourth Amendment purposes before the police officer asked for identification or whether it was a consensual encounter.

342. *See* Capers, *supra* note 319, at 978 (“For many communities, public surveillance has the potential to do more than simply deter crime and aid in the apprehension of law-breakers. Public surveillance can also function to monitor the police, reduce racial profiling, curb police brutality, and ultimately increase perceptions of legitimacy.”).

footage. Take again the example of detective Fackrell's stop of Edward Joseph Strieff. As the case came before the Supreme Court, there was proof of isolated contact but no proof of systemic misconduct or any recurring pattern of misconduct.³⁴³

But with the surveillance state watching detective Fackrell, litigants could have an answer to whether the stop was part of a larger pattern of unconstitutional stops. Litigants could review video of Fackrell's prior stops. Litigants could review audio of all the times he asked for identification. In fact, they could search for all the times any officer asked for identification. They could divine patterns out of individual, fragmented practices. Studying detective Fackrell's movements could show that this incident was, in fact, just an isolated mistake, and studying his interactions could demonstrate that his misconduct deserves to be viewed with good faith deference. Or the review could very well expose a pattern of negligence—again, a low legal threshold signifying a failure to abide by a duty of care.³⁴⁴

More broadly, the same surveillance capabilities might show that the general practices of the police department reveal a systemic problem. The Supreme Court's language redefining exclusion appears to envision a structural problem akin to the NYPD's systemic violation of rights in their stop and frisk practices or to the type of excessive force or unconstitutional stop practices revealed by DOJ Civil Rights investigations.³⁴⁵ The issue was not the individual officer's action but the system that encouraged racially discriminatory stops.³⁴⁶ The ability to track multiple officers over time using data analytics, automated video searches, and audio searches could allow a more systemic examination of police practice. The granular ability—offered by companies like Dextro—to identify all foot chases, all interactions, all frisks, or all physical contacts at particular places along a timeline means that daily policing practices can be broken down into quantifiable (and thus visible) segments.³⁴⁷ Patterns—for example, of requesting identification—could be studied as a stand-alone issue. This systemic proof would make any claim of exclusion much stronger. Monitoring technologies could also provide capabilities for resolving

343. *Utah v. Strieff*, 136 S. Ct. 2056, 2063–64 (2016); see *supra* Section I.A.2.

344. See *Strieff*, 136 S. Ct. at 2063 (stating that officer Fackrell was at most negligent).

345. See *id.* at 2063–64; *Herring v. U.S.*, 555 U.S. 135, 144 (2009); *Floyd v. City of New York*, 959 F. Supp. 2d 540, 660 (S.D.N.Y. 2013) (discussing NYPD's systematic violation of rights); see *supra* Section I.B.2.

346. See Meares, *supra* note 126, at 162 (describing the “organizationally determined practice of stopping certain ‘sorts’ of people” as “imposed from the top down,” rather than “individual incidents”).

347. See Fussell, *supra* note 316 (discussing the novel video-analysis technology, Dextro, which uses object and movement identification to create a timeline of body camera footage).

whether the particular officer's actions were deliberate, reckless, or grossly negligent and whether the officer told the truth about the incident.³⁴⁸

As discussed in Part III, significant logistical and practical challenges exist with respect to this practice of using surveillance technologies, but in terms of technical capacity, the monitoring technologies of the future will be quite capable of recording and revealing systemic and recurring patterns and actions of all kinds.

C. Predictive Technologies

Police have long known that particular people drive up crime rates.³⁴⁹ Stopping those suspects before they commit the next crime has always been a challenge. New predictive technologies offer the potential to narrow the list of suspects, using algorithmic forecasts to target the highest-risk individuals.³⁵⁰ This Section looks at the promise of predictive targeting technologies as a mechanism to identify both at-risk suspects as well as at-risk police officers. Officers with histories of recurring misconduct can be tracked and targeted. In an exclusionary rule regime where failure to act on an identifiable risk may be considered negligent, these predictive systems offer another tool for proving systemic and recurring negligence within departments.

1. Predicting Criminal Risk

In a handful of cities across the United States, police have begun using algorithmic formulas to rank the most at-risk individuals in a community.³⁵¹ Most famously, the Chicago Police Department

348. See Melanie D. Wilson, *An Exclusionary Rule for Police Lies*, 47 AM. CRIM. L. REV. 1, 6 (2010) ("Technology and its widespread public availability provide increasing opportunities to accurately capture police-citizen encounters and to expose police lies.").

349. See, e.g., MEARES ET AL., *supra* note 242, at 1:

Data analysis immediately revealed that a very small number of neighborhoods in Chicago are responsible for most of the city's violence trends. The "city's" crime problem is in fact geographically and socially concentrated in a few highly impoverished and socially isolated neighborhoods. Data also revealed that most victims (and offenders) of gun violence in Chicago tend to be young African American men who live in neighborhoods on the West or South sides of the city.

350. Ferguson, *supra* note 30, at 705; see *id.* at 736 (describing the process of targeting individuals with predictive prosecution technologies).

351. See ANTHONY A. BRAGA ET AL., SMART APPROACHES TO REDUCING GUN VIOLENCE 12–13, 19 (2014), [https://www.nationalpublicsafetypartnership.org/clearinghouse/Content/Resource/Documents/SMART Approaches to Reducing Gun Violence.pdf](https://www.nationalpublicsafetypartnership.org/clearinghouse/Content/Resource/Documents/SMART%20Approaches%20to%20Reducing%20Gun%20Violence.pdf) [<https://perma.cc/96XT-2UTP>]; John Eligon & Timothy Williams, *Police Program Aims to Pinpoint Those Most Likely to Commit Crimes*, N.Y. TIMES (Sept. 24, 2015), <https://www.nytimes.com/2015/09/25/us/police-program->

developed the Strategic Subjects List, colloquially known as the “Heat List,” to rank the individuals most at risk of violence in the city.³⁵² The identified subjects on the Heat List are the people most likely to be shot in an act of violence, as well as those most likely to do the shooting.³⁵³ To be clear, this was not a “most wanted” list based on past acts of criminality but rather a predictive judgment that these individuals would be at risk in the future.

The original formula was created by Professor Miles Wernick at the Illinois Institute of Technology and consisted largely of “co-arrestees”—meaning the individuals arrested with suspects arrested for violence.³⁵⁴ The theory behind the coarrestee connection was that those individuals arrested with violent actors were more at risk for being involved in reciprocal acts of gang violence.³⁵⁵ Because many of the shootings in Chicago were gang related, this theory of looking at the networks of gang members made a great deal of sense.³⁵⁶ In fact,

aims-to-pinpoint-those-most-likely-to-commit-crimes.html [https://perma.cc/Y4DE-B4W6]; Tony Rizzo, *Amid a Crackdown on Violent Criminals, Kansas City Homicides Sharply Decline*, KAN. CITY STAR (Jan. 1, 2015), <https://www.kansascity.com/news/local/crime/article5304384.html> [https://perma.cc/GG66-E9R6].

352. Jeremy Gerner, *Chicago Police Use ‘Heat List’ as Strategy to Prevent Violence*, CHI. TRIB. (Aug. 21, 2013), <http://www.chicagotribune.com/news/ct-xpm-2013-08-21-ct-met-heat-list-20130821-story.html> [http://perma.cc/TTJ9-PZTW]; Mark Guarino, *Can Math Stop Murder?*, CHRISTIAN SCI. MONITOR (July 20, 2014), <http://www.csmonitor.com/USA/2014/0720/Can-math-stop-murder-video> [https://perma.cc/3H3N-YYMX] (“Armed with a plethora of statistics on everything from gun violations to individual parole and arrest histories, police here are trying to create a national model that will help them predict where shootings might occur and who might be involved – both victims and offenders.”); *Strategic Subject List*, CHI. DATA PORTAL (last updated Dec. 7, 2017), <https://data.cityofchicago.org/Public-Safety/Strategic-Subject-List/4aki-r3np> [https://perma.cc/EJV4-HUYX].

353. See CHI. POLICE DEP’T, CUSTOM NOTIFICATIONS IN CHICAGO, SPECIAL ORDER S10-05, at IV.A (Oct. 6, 2015); Editorial Board, *Who Will Kill or Be Killed in Violence-Plagued Chicago? The Algorithm Knows.*, CHI. TRIB. (May 10, 2016), <http://www.chicagotribune.com/news/opinion/editorials/ct-gangs-police-loury-algorithm-edit-md-20160510-story.html> [https://perma.cc/EX5W-VNCQ]; Nissa Rhee, *Can Police Big Data Stop Chicago’s Spike in Crime?*, CHRISTIAN SCI. MONITOR (June 2, 2016), <https://www.csmonitor.com/USA/Justice/2016/0602/Can-police-big-data-stop-Chicago-s-spike-in-crime> [https://perma.cc/T4AU-U5A3].

354. Davey, *supra* note 31 (discussing Professor Wernick’s original algorithm); see Guarino, *supra* note 352 (describing researchers’ analysis of arrest and homicide records); Jessica Saunders et al., *Predictions Put into Practice: A Quasi-Experimental Evaluation of Chicago’s Predictive Policing Pilot*, 12 J. EXPERIMENTAL CRIMINOLOGY 347, 357 (2016) (noting the term “co-arrestees”).

355. See Andrew V. Papachristos & David S. Kirk, *Changing the Street Dynamic: Evaluating Chicago’s Group Violence Reduction Strategy*, 14 CRIMINOLOGY & PUB. POL’Y 525, 533 (2015) [hereinafter Papachristos & Kirk, *Changing the Street Dynamic*] (discussing the relationship between proximity to violence and risk of becoming a victim or perpetrator); see also Andrew V. Papachristos et al., *Why Do Criminals Obey the Law? The Influence of Legitimacy and Social Networks on Active Gun Offenders*, 102 J. CRIM. L. & CRIMINOLOGY 397, 436 (2012) (reporting that individuals in social networks “saturated” with criminals tend to hold “negative opinions of the law”).

356. Guarino, *supra* note 352.

the study of networked violence had been demonstrated by social scientists in a range of experiments, including a few studies in Chicago.³⁵⁷ Essentially, the social science showed that small networks of individuals respond to violence with cascading and escalating additional violence.³⁵⁸ Put bluntly, the theory was based on the rough logic that “if you shoot my friend, I will shoot you and your friend.” And since those arrested together were assumed to be involved in violent networks together, this linkage served as the proxy for predictive risk.

An updated formula for the Heat List incorporated coarrestees, but also included factors such as whether an individual was in a gang, had dropped out of school, or was on probation, as well as the individual’s connection to victims of shootings.³⁵⁹ The inputs have continued to change. In May of 2017, the Chicago Police Department explained that the list involved eight variables, “including arrests for gun crimes, violent crimes or drugs, the number of times the person had been assaulted or shot, age at the time of the last arrest, gang membership and a formula that rated whether the person was becoming more actively involved in crime.”³⁶⁰ The actual algorithmic formula remains a secret, but the idea of looking for risk factors, weighting the variables, and using the resulting list as a mechanism to target at-risk individuals is generally well understood.³⁶¹ Once identified as being on the Heat List, police were expected to contact the identified targets and provide them with custom notification letters.³⁶² These custom notification letters, and related in-person

357. See Papachristos & Kirk, *Changing the Street Dynamic*, *supra* note 355, at 533–34 (surveying studies evaluating the impact of “the focused deterrence approach” on violent crime rates).

358. See Papachristos et al., *Social Networks*, *supra* note 242, at 1000–01 (analogizing a Boston case study that explains the relevance of small social networks to the risk of gunshot victimization in Chicago).

359. Saunders et al., *supra* note 354, at 357–58 (listing factors used for individual-level analysis by Chicago police as “(1) demographics (gender, age at most proximate arrest, race), (2) arrest history (number and type), (3) social network variables (number of first- and second-degree co-arrestees who were victims of homicide), and (4) the risk score generated by IIT,” in addition to a “second dataset contain[ing] all recorded police contact with the 17,754 arrestees with at least one first- or second-degree association with a homicide victim and law enforcement from 1980 through the end of the observation window”).

360. Mick Dumke & Frank Main, *A Look Inside the Watch List Chicago Police Fought to Keep Secret*, CHI. SUN-TIMES (May 18, 2017), <https://chicago.suntimes.com/news/what-gets-people-on-watch-list-chicago-police-fought-to-keep-secret-watchdogs> [<https://perma.cc/Y64N-Z8VL>].

361. See *id.*

362. See CHI. POLICE DEP’T, *supra* note 353, at IV.D:

The Custom Notification Letter will be used to inform individuals of the *arrest, prosecution, and sentencing consequences they may face if they choose to or continue to engage in public violence*. The letter will be specific to the identified individual and

“call-in meetings,” were used to educate and warn the target that the police were aware of their connection to violence and that they needed to stop their violent ways.³⁶³ Similar predictive targeting systems—or focused-deterrence programs—have been adopted in New Orleans, Chicago, and Kansas City, among other cities.³⁶⁴

Augmenting the environmental risk factors (including, for example, gang membership, unemployment, and neighborhood), more sophisticated predictive systems incorporate social media usage to predict violence.³⁶⁵ Antigang police units patrol YouTube and Twitter, monitoring and interrupting gang feuds that may start on social media but end with real bloodshed.³⁶⁶ In addition, social network analysis that reveals linkages to various gangs or clues to various disputes can be mapped through social media contacts.³⁶⁷ If police

incorporate those factors known about the individual inclusive of prior arrests, impact of known associates, and *potential sentencing outcomes* for future criminal acts.

(emphasis added).

363. Editorial Board, *‘Moneyball’ Crime-Fighting Comes to St. Louis*, ST. LOUIS POST-DISPATCH (June 26, 2015), https://www.stltoday.com/opinion/editorial/editorial-moneyball-crime-fighting-comes-to-st-louis/article_e61fbafa-e93c-5062-8d63-cb8ebb71ed53.html [https://perma.cc/M9LT-RJJJ] (quoting attorney Jennifer Joyce’s description of “call-in meeting” instructions: “Here are the rules. The first group that commits a homicide, the first body that drops, we’re coming after you and your friends. The group that does the most violence, we’re coming after you.”); Eligon & Williams, *supra* note 351 (“Call-ins are central to the program. The authorities invite about 120 of the group leaders they have identified (25 to 40 usually show up) to hear from a range of officials, including the local and federal prosecutors, the police chief and the mayor.”); see Editorial Board, *supra* (“Probation may be revoked, major and minor crimes will be prosecuted and so will minor ordinance violations, building code violations and civil issues like failure to pay child support.”).

364. See NOLA MURDER REDUCTION: TECHNOLOGY TO POWER DATA-DRIVEN PUBLIC HEALTH STRATEGIES, PALANTIR 5 (2014) (on file with author); KENNETH J. NOVAK ET AL., KANSAS CITY, MISSOURI SMART POLICING INITIATIVE: FROM FOOT PATROL TO FOCUSED DETERRENCE 7–12 (2015), http://www.strategiesforpolicinginnovation.com/sites/default/files/spotlights/Kansas_City_SPI_Spotlight_FINAL_2015.pdf [https://perma.cc/P5E4-53A9]; Davey, *supra* note 31; Jason Shueh, *New Orleans Cuts Murder Rate Using Data Analytics*, GOV’T TECH. (Oct. 22, 2014), <http://www.govtech.com/data/New-Orleans-Cuts-Murder-Rate-Using-Data-Analytics.html> [https://perma.cc/AT9P-WFJ7].

365. See Cheryl Corley, *When Social Media Fuels Gang Violence*, NPR: ALL TECH CONSIDERED (Oct. 7, 2015), <https://www.npr.org/sections/alltechconsidered/2015/10/07/446300514/when-social-media-fuels-gang-violence> [https://perma.cc/JWQ2-GPWX] (emphasizing the importance of using social media to curb gang violence).

366. See Ben Austen, *Public Enemies: Social Media is Fueling Gang Wars in Chicago*, WIRED (Sept. 17, 2013), <https://www.wired.com/2013/09/gangs-of-social-media> [https://perma.cc/VN8H-Z447] (“Gang enforcement officers in Chicago started looking closely at social media sites about three years ago . . .”); Stroud, *supra* note 28 (describing various applications that allow police officers to use keywords to search for violent social media posts).

367. See Cantú, *supra* note 28 (surveying different police departments that use social media software to monitor protests); Elizabeth Dwoskin, *Police Are Spending Millions of Dollars to Monitor the Social Media of Protesters and Suspects*, WASH. POST (Nov. 18, 2016), <https://www.washingtonpost.com/news/the-switch/wp/2016/11/18/police-are-spending-millions-to-monitor-the-social-media-of-protesters-and-suspects> [https://perma.cc/MHU8-PMVV] (describing local police departments’ use of software tools to find individuals who brag about committing

want to determine gang involvement or the probable location of potential violence, social media threats, boasts, and posturing provide a good forecast for brewing trouble.³⁶⁸

Particular crimes have also been examined through the lens of predictive analytics. The NYPD used an algorithmic process to identify those homes most likely to be sites of domestic violence incidents.³⁶⁹ Many domestic violence incidents escalate in severity, but with over 263,207 domestic violence calls a year, New York police did not know which homes to prioritize for additional attention.³⁷⁰ Using a computer system that automatically scanned police reports for keywords like “kill,” “alcohol,” or “suicide,” police were able to prioritize which homes to visit and proactively respond to potentially violent situations.³⁷¹ Other predictive technologies that target particular places or patterns of activity have been developed. Robbery, fraud, and human trafficking all leave data trails that can be monitored to track and predict future crime.³⁷² The thread connecting

crimes or who post about witnessing criminal activity on social media); John Knefel, *Your Social Media Posts Are Fueling the Future of Police Surveillance: Activists Use Tech to Fuel Their Movements, and Cops Turn to Geofeedia to Aggregate the Data*, *INVERSE* (Nov. 20, 2015), <https://www.inverse.com/article/8358-your-social-media-posts-are-fueling-the-future-of-police-surveillance> [<https://perma.cc/FD3J-FA62>] (discussing police monitoring of social media and the technology of “geofencing”).

368. See Chris J. Chasin, *The Revolution Will be Tweeted, but the Tweets Will be Subpoenaed: Reimagining Fourth Amendment Privacy to Protect Associational Anonymity*, 2014 U. ILL. J.L. TECH. & POL'Y 1, 27 (2014):

Social media monitoring has also provided preemptive warnings of illegal activity, allowing police to prevent crimes before they begin or to coordinate surveillance to catch the criminals in the act. This preventative use is surprisingly common, with forty-one percent of surveyed law enforcement officers reporting that they use social media to monitor for potential criminal activity.;

Megan Behrman, Note, *When Gangs Go Viral: Using Social Media and Surveillance Cameras to Enhance Gang Databases*, 29 HARV. J.L. & TECH. 315, 316–17 (2015) (describing the use of social media, surveillance tools, and electronic databases to combat gang violence); Joseph Goldstein & J. David Goodman, *Seeking Clues to Gangs and Crime, Detectives Monitor Internet Rap Videos*, N.Y. TIMES (Jan. 7, 2014), <https://www.nytimes.com/2014/01/08/nyregion/seeking-clues-to-gangs-and-crime-detectives-monitor-internet-rap-videos.html> [<https://perma.cc/D3XA-PM27>] (detailing police use of music videos to target suspects).

369. See Joseph Goldstein, *Police Take on Family Violence to Avert Deaths*, N.Y. TIMES (July 24, 2013), <https://www.nytimes.com/2013/07/25/nyregion/police-take-on-family-violence-to-avert-deaths.html> [<https://perma.cc/W38J-CL8K>].

370. *Id.*; see also Amanda Hitt & Lynn McLain, *Stop the Killing: Potential Courtroom Use of a Questionnaire That Predicts the Likelihood That a Victim of Intimate Partner Violence Will be Murdered by Her Partner*, 24 WIS. J.L. GENDER & SOC'Y 277, 283 (2009) (“Since the late 1970’s, as researchers clamored to create instruments that could accurately predict the threat of physical violence, over thirty-three IPV screening tools have been created.”).

371. Goldstein, *supra* note 369.

372. See Sneed, *supra* note 219 (detailing how anti-human trafficking groups can harness data analysis software to pinpoint location information and victim demographic information); Bernhard Warner, *Google Turns to Big Data to Unmask Human Traffickers*, BLOOMBERG (Apr. 10, 2013), <https://www.bloomberg.com/news/articles/2013-04-10/google-turns-to-big-data-to>

these strategies is that predictive variables showing a potential for risk can be identified and, further, that intervention with the person or location of that risk can reduce the chance of future crime.

2. Predicting Police Risk

Predictive policing technologies generally look outward toward the criminal world. But those same risk-identification technologies can also be turned inward toward police. In fact, the very same predictive analytic techniques can be used to identify at-risk officers most likely to be involved in recurring acts of excessive force or professional misconduct.

As a technological matter, there is little difference between isolating predictive variables that lead to high-risk behaviors in criminals and officers. The technologies measure environmental or personal factors that correlate with elevated risk. The variables are different, but the underlying theory that certain environmental or personal factors result in more risky behaviors remains the same. This insight finds support in the long but ineffective history of Early Intervention (“EI”) systems designed to identify and correct recurring police misconduct.³⁷³ For decades, remedial systems to identify at-risk officers have been implemented.³⁷⁴ These systems remained largely retrospective, looking to past acts (usually limited to complaints, accidents, or uses of force) in an effort to correct past bad behavior. They also rarely reduced police misconduct, although in many instances the EI systems were accompanied by other systemic changes to improve police accountability.³⁷⁵

unmask-human-traffickers [<https://perma.cc/S9K9-Y2MT>] (reporting on the consolidation and analysis of data from emergency calls to locate the sources of human trafficking).

373. See John A. Shjarback, *Emerging Early Intervention Systems: An Agency-Specific Pre-Post Comparison of Formal Citizen Complaints of Use of Force*, POLICING, Mar. 2015, at 1 (“An EI system is a non-punitive, data-driven management tool intended to spot officers who exhibit performance problems such as frequent use of force incidents and high numbers of citizen complaints.”); *id.* at 9 (“EI systems might have less of an influence on departments than previously believed.”); see also *id.* at 2 (“An EI system is a data-driven management tool used by departments as a mechanism for increasing police accountability.”).

374. See Harris, *supra* note 326, at 166:

Early intervention systems help police departments track the behavior of their officers, something difficult to do in the absence of a data-driven, systematic effort.

The idea originated at least as long ago as 1981, in the seminal report on police by the U.S. Civil Rights Commission, *Who Is Guarding the Guardians?*

(citing U.S. COMM’N ON CIVIL RIGHTS, WHO IS GUARDING THE GUARDIANS? A REPORT ON POLICE PRACTICES (1981)).

375. See Shjarback, *supra* note 373, at 10 (“Overall, departments with emerging EI systems did not appear to experience any positive outcomes (e.g. reduced complaint rates of use of force) associated with the development and implementation of such systems”); see also *id.* at 8 (showing no improvement for ninety-four departments after implementation of EI systems); *id.*

Predictive models promise something different. Predictive risk assessments focus on police misconduct using a host of more complicated variables beyond the traditional red flags used for problem officers. Building off of some of the same insights used to identify criminal actors most at risk for negative outcomes, these sophisticated computer models look at systemic environmental risk factors that contribute to stress, violence, and poor decisionmaking.

Professor Rayid Ghani, a data scientist at the University of Chicago, decided to test whether big data models could predict incidents of avoidable police-citizen conflict.³⁷⁶ With the full cooperation of the Charlotte-Mecklenburg Police Department, Ghani sought to predict the variables that might increase the risk of potential conflicts between officers and citizens.³⁷⁷

The predictive model began by collecting the different types of official police data corresponding to activities officers engage in on a daily basis. For example, data on all police dispatches were recorded, including time, location, and type of event.³⁷⁸ Similarly, all formal

(“In the aggregate, departments that have developed and implemented EI systems are generally not experiencing lower levels of formal citizen complaints of use of force relative to before the systems were employed.”); Robert E. Worden et al., *Intervention with Problem Officers: An Outcome Evaluation of an EIS Intervention*, 40 CRIM. JUST. & BEHAV. 409, 415 (2013) (“The evidence that supports the use of EI systems is not strong, and certainly not commensurate . . .”).

376. See Michael Gordon, *CMPD’s Goal: To Predict Misconduct Before It Can Happen*, CHARLOTTE OBSERVER (Feb. 26, 2016), <https://www.charlotteobserver.com/news/local/crime/inside-courts-blog/article62772592.html> [<https://perma.cc/7PXE-F7JA>] (describing the Charlotte-Mecklenburg Police Department’s collaboration with the University of Chicago research team in devising a way to better predict police behavior); Ted Gregory, *U. of C. Researchers Use Data to Predict Police Misconduct*, CHI. TRIB. (Aug. 18, 2016), <http://www.chicagotribune.com/news/ct-big-data-police-misconduct-met-20160816-story.html> [<https://perma.cc/22PW-5HH9>] (describing the University of Chicago research team’s similar work with the Chicago Police Department); Jaeah Lee, *How Science Could Help Prevent Police Shootings*, MOTHER JONES (May/June 2016), <https://www.motherjones.com/politics/2016/07/data-prediction-police-misconduct-shootings> [<https://perma.cc/PYT5-P2RP>] (recounting the development of Professor Ghani’s unique big data approach to police-violence prevention).

377. Rayid Ghani et al., *Identifying Police Officers at Risk of Adverse Events*, DATA SCI. FOR SOC. GOOD 1 (2016), <https://dssg.uchicago.edu/wp-content/uploads/2016/04/identifying-police-officers-3.pdf> [<https://perma.cc/7L7L-SLGS>] (“Certain officers, at certain periods of time, can be identified as being more *at risk* of involvement in an adverse event than others.”); see also *id.* at 2 (“To improve the current system, we focus on the following prediction task: Given the set of all active officers at time *t* and all data from time periods prior to *t*, predict which officers will have an adverse interaction in the next year.”).

378. *Id.* at 4:

[The Charlotte-Mecklenburg Police Department’s (“CMPD”) system creates a dispatch event every time an officer is dispatched to a scene—for example, in response to a 911 call—and every time an officer reports an action to the department. . . . Dispatch records include the time and location of all events, as well as the type of event (e.g. robbery) and its priority. Dispatches are often linked in CMPD’s system to other types of events, such as arrests or IA cases, that occurred during that dispatch.

citations,³⁷⁹ traffic stops,³⁸⁰ and arrests³⁸¹ were inputted into the system with corresponding event data and the suspect's socioeconomic information. Less formal "field interviews" recorded any time a person was stopped or frisked and also included data about the event, the officer, and the suspect.³⁸²

This event information was combined with more officer-specific information. Internal affairs records involving prior complaints, prior use of force allegations, vehicle pursuits and accidents, conduct violations, injuries, and internal affairs investigations were included.³⁸³ Actual criminal complaints against officers with all of the accompanying location and force details were added.³⁸⁴ Because the Charlotte-Mecklenburg Police Department had kept information from an EI system, a decade's worth of red flags for particular officers were available for review. The information showed all officers who had been flagged for having two or more incidents occur in the preceding 180 days.³⁸⁵ Finally, demographic information from employee records—

379. *Id.* ("The citations data provides details of each citation written by officers. Each record contains the date and type of citation, a code corresponding to the division, and additional meta-data such as whether the citation was written on paper or electronically.").

380. *Id.* ("CMPD officers are required to record information about all traffic stops they conduct. Records include time, location, the reason for and the outcome of the stop, if the traffic stop resulted in the use of force, and the stopped driver's socio-demographic profile.").

381. *Id.* ("CMPD records every arrest made by its officers, including when and where the arrest took place, what charges were associated, whether a judge deemed the officer to have had probable cause, and the suspect's demographic information.").

382. *Id.* at 5:

A "field interview" is the broad name given by CMPD for any event in which a pedestrian is stopped and/or frisked, or any time an officer enters or attempts to enter the property of an individual. . . . Records contain temporal and spatial information as well as information about the demographics about the interviewed person.

383. *Id.* at 3–4 (describing the department's internal affairs records to include filed complaints, as well as when "an officer uses force, engages in a vehicle pursuit, gets into a vehicle accident, commits a rule-of-conduct violation, is injured, or conducts a raid and search, CMPD creates an IA record").

384. *Id.* at 4:

The criminal complaints data provided by CMPD contains records of criminal complaints made by citizens. Each record includes a code for the incident, the location of the incident, the type of weapons involved if weapons were involved, and details about victims and responding officers. It also contains flags that include information such as whether the event was associated with gang violence, domestic violence, narcotics activity or hate crimes.

385. *Id.* at 5:

We were also given the history of EIS flags going back over 10 years to 2005. Each record identifies the relevant officer and supervisor, the threshold triggered (e.g. more than two accidents in a 180 day period or more than three uses of force in an 90 day period) and the selected intervention for each flag, which can include training and counseling.

including education levels, years of experience, race, height, weight, and gender³⁸⁶—was inputted along with training records.³⁸⁷

This event-specific and officer-specific data was then combined with neighborhood data. Census data and city data on neighborhood characteristics, crime, and economic health were layered in so that responses to certain dispatches could be tracked by neighborhood.³⁸⁸ The final result was a computer model with 423 features that could isolate when negative police-citizen incidents would be most likely to occur.³⁸⁹

The predictive model proved quite accurate. As the researchers summarized, “Our best performing model is able to flag 12% more high-risk officers (true positives), while flagging 32% fewer low-risk officers (false positives) compared to the current system.”³⁹⁰ Obvious variables—like higher rates of prior adverse incidents—correlated with higher risk, but so did unknown variables like the amount of vacant land area in a neighborhood³⁹¹ or whether the dispatch call came from a civilian or a fellow officer (the latter corresponding with a higher rate of violence).³⁹² More intriguingly, the model showed that

386. *Id.* (“The department’s employee information includes demographic information on every individual employed by the department, including those that have retired or been fired. The data includes officer education levels, years of service, race, height, weight, and other persistent qualities of officers.”).

387. *Id.* (“CMPD requires officers to receive rigorous training on a variety of topics, from physical fitness to how to interact with members of the public. The department records each officer’s training events.”).

388. *Id.*:

In addition to the data provided by CMPD, we also use publicly available data from 2010 and 2012 neighborhood quality-of-life studies to understand the geospatial context of CMPD events. These studies collect data on many neighborhood features including Census/ACS data on neighborhood demographics and data on physical characteristics, crime, and economic vitality.

389. *Id.*:

The goal of the EIS is to predict which officers are likely to have an adverse event in the near future. We formulate it as a binary classification problem where the class of interest is whether a given officer will have an adverse event in a given period of time into the future. . . . Efforts were chiefly geared towards the extraction of these features - in total 432 features were used.

390. *Id.* at 6.

391. *Id.*:

First, significant controls at the neighborhood level exist within the model. Such controls have an impact on prediction - for example, vacant land area rates are a significant predictor of officer risk. Second, indicators such as the rates of prior adverse incidents and sustained complaints indicate cases where IA officials previously found officers to be at fault over and above these increased risk rates. Combined, these observations provide support for the idea that a subset of officers are at particular risk for adverse events, and that an EIS which controls for non-officer level factors may be able to find such officers so that interventions can be applied.

392. *Id.* at 8:

exposure to high stress incidents like suicides, domestic violence, or cases involving young children resulted in a higher risk for a future adverse outcome.³⁹³ This exposure to trauma figured prominently in predicting future incidents.

The model offered improvements over the old EI systems. The prior Charlotte-Mecklenburg EI system had proven to be overinclusive,³⁹⁴ flagging almost half of all officers in the prior year.³⁹⁵ In addition, the old system did not differentiate between the types of patrols that officers engaged in, so that midnight shifts in high-crime areas were treated equally to more relaxed daytime patrols.³⁹⁶ The result was a system both unhelpful to supervisors and easily gamed by officers.³⁹⁷

Finally, the big data insights provide opportunities to change police practices to avoid these repeating high-risk incidents and improve training.³⁹⁸ The finding about trauma led police to reconsider dispatch protocols. Now, a more targeted dispatch system avoids sending officers who have recently been exposed to high-stress situations to the next triggering crime scene.³⁹⁹ This insight could encourage more officer-centric training and counseling services about

“Hot” dispatches initiated by officers themselves (as opposed to citizens by way of 911 calls), seem more likely to end in adverse outcomes. Indicators of heightened officer stress (hours on duty) and aggressive policing style (discretionary arrest rate), seem to also have a positive impact on the risk of adverse outcomes.

393. *Id.* at 5 (“Notably among incident sub-types, we track incidents we believe are likely to contribute to officer stress, such as events involving suicides, domestic violence, young children, gang violence, or narcotics.”).

394. *Id.* at 2:

Current EISs detect officers at risk of adverse events by observing a number of performance indicators and raising a flag when certain selection criteria are met. These criteria are usually thresholds on counts of certain kinds of incidents over a specified time frame, such as two accidents within 180 days or three uses of force within 90 days.

395. *Id.* (indicating that current EI system thresholds fail to consider important factors, potentially rendering them overinclusive).

396. *Id.* (“For example, CMPD’s system uses the same thresholds for officers working the midnight shift in a high-crime area as an officer working in the business district in the morning.”).

397. *Id.* at 3.

398. *Id.* at 2:

The system described here is the beginning of an effort that has the potential to allow police chiefs across the nation to see which of their officers are in need of training, counseling, or additional assistance to make them better prepared to deal safely and positively with individuals and groups in their communities.

399. *Id.* at 9 (“Our dispatch-level models take the first steps toward predictive risk-based dispatch decisions, where an officer who is at higher risk of an adverse incident for that dispatch can potentially be held back and a different officer, at a lower risk score, can be dispatched.”).

trauma and how to address posttraumatic stress.⁴⁰⁰ It also could flag circumstances that repeatedly create the potential for risk.

For privacy reasons, Professor Ghani's team purposely removed identifying material from the data and looked for common environmental factors as predictors of conflict rather than looking at individual "problem officers." The idea was to identify patterns of conflict, as opposed to predicting individuals within those patterns. But, while necessary for political acceptance in Charlotte-Mecklenburg, this limitation does not need to be implemented in the future. In fact, the same targeted predictive assessments akin to the Heat List could be used to identify particular at-risk officers.

For example, variables that have made it into various Early Warning or EI systems demonstrate data points that could be used to target at-risk officers. Professional factors such as prior complaints, prior uses of force, unprofessional conduct, or accidents are known red flags for behavioral problems (and were confirmed in Professor Ghani's data).⁴⁰¹ Personal stressors such as financial difficulties, divorce, injury, death in the family, or other losses could all signal a higher risk of professional stress. Psychological or medical factors resulting from posttraumatic stress, depression, or medical problems could also factor into officer reactions. Finally, personal activities—lifestyle choices and even hobbies⁴⁰²—can influence risk. While none of these factors predict police misconduct outright, they might predict when a higher risk of police misconduct exists.⁴⁰³ In combination with the environmental assessments of Professor Ghani, these predictive models could become very accurate.

400. *Id.*:

Our model significantly outperforms the existing system at the Charlotte-Mecklenburg Police Department (CMPD). Our model also provides risk scores to the department, allowing them to more accurately target training, counseling, and other interventions toward officers who are at highest risk of having an adverse incident. This will allow the department to better allocate resources, reduce the burden on supervisors, and reduce unnecessary administrative work of officers who were not at risk.

401. See Chani et al., *supra* note 383 (describing the situations in which CMPD creates an internal affairs record).

402. David J. Krajicek, *What's the Best Way to Weed Out Potential Killer Cops*, ALTERNET (May 15, 2016), <https://www.alternet.org/civil-liberties/whats-best-way-weed-out-potential-killer-cops> [<https://perma.cc/23CA-7B58>] (discussing a correlation between Muay Thai (a combat martial art) and officer violence). *But see* Cynthia Lee, *Race, Policing, and Lethal Force: Remedying Shooter Bias with Martial Arts Training*, 79 LAW & CONTEMP. PROBS., no. 4, 2016, at 145, 160–70 (discussing the positive impact of certain martial arts on police training).

403. Just as the Heat List does not predict violence but instead merely predicts a higher risk of potential violence, any algorithm using these variables will also only predict a "risk" of misconduct.

In addition, if the predictive models incorporate social media postings and other forms of communicative activity, other risk factors might emerge. In the DOJ report on the Chicago Police Department, the investigators discovered troubling examples of racial and ethnic bias in police social media postings.⁴⁰⁴ As with law enforcement monitoring for criminal risk, social media reflects current thinking, emotions, and influences of real people in real time. Monitoring bias or hate articulated in social media environments might provide red flags of future behavioral problems. Obviously, this sort of employee surveillance will elicit resistance from rank-and-file officers.⁴⁰⁵ No employee enjoys at-work surveillance, and most would balk at supervisors reviewing off-duty, even if publicly accessible, social media posts. Ironically, the major complaint by officers was a feeling of preemptive punishment for actions they had yet to take—the same complaint of communities targeted by predictive policing technologies. This tension is discussed further in Part III.

3. Predicting Exclusion

A predictive warning system that tracks past officer misconduct would be relevant for proving recurring patterns of misconduct.⁴⁰⁶ Evidence about a particular officer flagged for repetitive unconstitutional stops would be relevant in a suppression hearing to show that the stop at issue was not an act of isolated negligence. Had detective Fackrell been flagged as an officer who routinely had complaints of unconstitutional stops brought against him, this information would fit the definition of “recurring” negligence. Several jurisdictions have begun creating such Police Accountability

404. DOJ CHICAGO REPORT, *supra* note 158, at 15 (“Moreover, we found that some Chicago police officers expressed discriminatory views and intolerance with regard to race, religion, gender, and national origin in public social media forums”); *see also id.* at 147 (“One officer posted a status stating, ‘Hopefully one of these pictures will make the black lives matter activist organization feel a whole lot better!’ with two photos attached, including one of two slain black men, in the front seats of a car, bloodied, covered in glass.”); *id.* (“Supervisors posted many of the discriminatory posts we found, including one sergeant who posted at least 25 anti-Muslim statements and at least 43 other discriminatory posts, and a lieutenant who posted at least five anti-immigrant and anti-Latino statements.”); *id.* (describing an officer “who had posted racist comments and had called for a race war on social media forums”).

405. *See* Ifeoma Ajunwa, Kate Crawford & Jason Schultz, *Limitless Worker Surveillance*, 105 CALIF. L. REV. 735 (2017) (discussing the potential privacy violations stemming from modern-day worker surveillance technology and describing these innovations as a “decimat[ion] [to] worker privacy”).

406. *See* Harris, *supra* note 326, at 165–66 (“[W]e should use early intervention systems: data-driven accountability structures designed to detect, track, and highlight various aspects of police officer conduct.”).

Databases—or digital “bad cop” lists—with precisely this type of information.⁴⁰⁷

The identified risk may not only be with individual officers but with patterns of departmental misconduct as well. The same predictive risk assessment could identify whether particular police units possess a heightened risk of violence or exhibit patterns of unconstitutional stops. The percentages of constitutional stops memorialized in the DOJ reports could be broken down to particular units or officers and used as evidence in suppression hearings. Obviously, variables such as the type of patrol, neighborhood, and time of day would need to be factored in, but this is exactly the type of nuance that Professor Ghani’s researchers focused on in their study.⁴⁰⁸ Recurring patterns in particular places might give reason to see a problem that cannot be excused as isolated negligence.

In addition, recurring incidents of misconduct could be identified and, if not addressed, could lead to liability for negligence. For example, if a predictive warning system flagged an officer as likely to be involved in unconstitutional misconduct and police administrators did not adequately respond to the warning despite a duty to train and to develop policies and practices, this failure to act could give rise to a negligence claim. Or perhaps if it were shown (as it was in Charlotte-Mecklenburg) that responding to a traumatic event such as suicide leads to a higher likelihood that the officer’s next interaction will be violent and police administrators still assign the traumatized officer to the next high-risk situation, it could be argued that the police department acted negligently (if not recklessly) in ignoring a clear risk. In such a case, there exists a foreseeable risk, an alternative option, and a decision to ignore the risk. Such patterns, once revealed through data, put the administrators on notice of a systemic problem. And if that systemic problem arises in a case before a court, then the pattern could be relevant to the exclusionary rule decision.

407. See Cynthia H. Conti-Cook, *Defending the Public: Police Accountability in the Courtroom*, 46 SETON HALL L. REV. 1063, 1084 (2016) (“In 2014, The Legal Aid Society announced the Cop Accountability Project—anchored by a database for police misconduct—intended to serve its clients, its attorneys, and the community.”); Jason Tashea, *Clicking for Complaints: Databases Create Access to Police Misconduct Cases and Offer a Handy Tool for Defense Lawyers*, 102 A.B.A. J., Feb. 2016, at 17, 18:

The New York City database houses information on more than 7,000 NYPD officers with a paper trail of alleged or proven misconduct. The files come from a number of sources, including the news, state and federal lawsuits, criminal decisions, the federal court’s PACER database, New York City Civilian Complaint Review Board hearings, NYPD Internal Affairs complaints, social media, and Legal Aid Society attorneys’ own experiences in court and with clients.

408. See *supra* notes 377–400 and accompanying text (describing Professor Ghani’s study).

D. Programmatic Benefit of Blue Data

In addition to the instrumental benefits discussed above, the move toward blue data offers one final, broader benefit to how courts think about the Fourth Amendment. Blue data encourages courts to think programmatically about the Fourth Amendment.⁴⁰⁹

In recent years, scholars have begun to rethink the Fourth Amendment as a system of rules to be analyzed separate from the individual cases coming before courts for suppression. In Professor Daphna Renan's words, the Fourth Amendment should be understood in terms of "programs of surveillance" not in terms of transactional acts.⁴¹⁰ As such, policing can borrow from administrative law principles and be regulated accordingly.⁴¹¹ Professor Tracy Meares demonstrated that the NYPD stop and frisk program should be better understood as an unconstitutional "program" and not as a series of individualized unconstitutional incidents.⁴¹² This was also Justice Sotomayor's insight in *Strieff*, where she wrote that the warrant check was part of a system of unconstitutional searches for evidence.⁴¹³

Obviously, blue data systems offer new ways to visualize the programmatic or systemic nature of police misconduct. Blue data is a visualization tool, and courts will thus have the ability to see beyond individual actions to systemic conduct, whether through data mining or video surveillance or some other technology. Blue data can thus be a tool to bolster these new Fourth Amendment theories.

More practically, once Fourth Amendment "incidents" are thought of as programmatic, it becomes easier to bring claims of systemic negligence in court. It may not be possible for police administrators to know about unconstitutional "transactions" of individual officers, but they can know—and should know—about

409. See, e.g., Andrew Manuel Crespo, *Systemic Facts: Toward Institutional Awareness in Criminal Courts*, 129 HARV. L. REV. 2049, 2052 (2016) (explaining that in order to accomplish broader institutional awareness, criminal courts must consider "facts about the criminal justice system itself, and . . . the institutional behavior of its key actors").

410. Daphna Renan, *The Fourth Amendment As Administrative Governance*, 68 STAN. L. REV. 1039, 1041 (2016); see *id.* at 1042 ("While our Fourth Amendment framework is transactional, then, surveillance is increasingly *programmatic*").

411. See Christopher Slobogin, *Policing As Administration*, 165 U. PA. L. REV. 91, 97 (2016) ("[A] reframing of panvasive searches and seizures as administrative actions gives significant weight to legislative and executive decisionmaking, and it draws from the Court's precedent.").

412. See Meares, *supra* note 126, at 162 (arguing that a mass of stop and frisks is not simply an aggregation of individual incidents but rather a program in which police "engage in an organizationally determined practice of stopping certain 'sorts' of people for the stated purpose of preventing or deterring crime").

413. See *Utah v. Strieff*, 136 S. Ct. 2056, 2066 (2016) (Sotomayor, J., dissenting) ("[The warrant check] was part and parcel of the officer's illegal 'expedition for evidence in the hope that something might turn up.'" (quoting *Brown v. Illinois*, 422 U.S. 590, 605 (1975))).

unconstitutional *programs*. If administrators become aware of these problems, courts can find the requisite negligence. If administrators do not know about these recurring problems but should be aware of them, courts may find negligence. And if administrators do nothing to find out about these problems, courts may still find negligence if the administrators had a duty to be aware. Courts could even create an affirmative duty to investigate if policing programs continue to generate recurring constitutional problems.

The ability to visualize recurring problems creates legal liability for failing to act. In so doing, blue data can provide another negligence-related legal avenue to bring suppression claims under the Supreme Court's new application of the exclusionary rule, which emphasizes that claims of systemic negligence warrant exclusion while claims of isolated negligence do not. In addition, this type of systemic misconduct can be used in civil rights actions under 42 U.S.C. § 1983 and the federal government's ability to investigate patterns and practices of police abuse under 42 U.S.C. § 14141.⁴¹⁴

III. THE REVEAL OF RESISTANCE

The use of data mining, surveillance, and predictive analytics to target police negligence will likely face resistance. Police officers, administrators, and unions will probably protest the invasion of personal and professional privacy it threatens. Legal battles will erupt over whether (and how) to collect, sort, and introduce evidence from these new blue data systems in ordinary suppression hearings. Technological hurdles will divide jurisdictions between those departments that can turn surveillance technology into methods of police accountability and those without that capacity. Police will be joined in this criticism of data-driven surveillance by an odd consortium of civil liberties groups resistant to erecting the larger surveillance architecture and defense lawyers unwilling to concede a need for a secondary *Herring* analysis before suppression. The future of the exclusionary rule is already clouded, and the rise of new information streams may not make it any clearer.

Yet, this response of *resistance* is itself revealing and worth studying. Arguments pushing back against surveilling *police officers* also have application to surveilling *citizens*. The challenges of technology and a growing reliance on big data systems suggest universal cautions about the dangers and costs of any data-dependent system. These issues of professional resistance, legal resistance, and

414. See *supra* note 10.

technological barriers offer no simple answers but do offer an opportunity to rethink how the new exclusionary rule should interact with the even newer technologies being developed to assist law enforcement. This Part seeks to understand this resistance, unpacking the practical realities and possible responses, as well as the insights to be gained from examining why there will be—and probably should be—serious resistance to blue data.

A. Police Resistance

Police accountability measures have faced resistance in the past. In fact, one can easily find open resistance in response to many prior police accountability proposals.⁴¹⁵ Police officers have resisted the implementation of early warning systems.⁴¹⁶ Police unions have resisted releasing officer personnel (i.e., misconduct) records and other accountability reforms.⁴¹⁷ Police administrations (and cities) have pushed back on federal oversight.⁴¹⁸ And while some jurisdictions have embraced police accountability, many more have fought vocally to stop proposed changes. Even in the era of Black Lives Matter, which raised consciousness of racial bias and excessive force in policing, the rise of the Blue Lives Matter countermovement shows the long-standing protective reaction to any public criticism of police misconduct.⁴¹⁹

415. See, e.g., David H. Bayley, *Police Reform: Who Done It?*, 18 POLICING & SOC'Y 7 (2008) (describing how modern reform in policing has been met by resistance); Sklansky, *Police and Democracy*, *supra* note 123, at 1773–74 (detailing historical aspects of police reform); Steve Wilson & Kevin Buckler, *The Debate over Police Reform: Examining Minority Support for Citizen Oversight and Resistance by Police Unions*, 35 AM. J. CRIM. JUST. 184, 188 (2010).

416. See Harris, *supra* note 326, at 168 (discussing the professional sanctions that officers can face if flagged by an early warning system).

417. See Rushin, *supra* note 131, at 154 (“[C]ollective bargaining and civil service protections inadvertently discourage police management from responding forcefully to misconduct.”); Walker, *supra* note 122, at 72:

Collective bargaining agreements, for example, contain provisions related to the investigation of alleged officer misconduct (whether on the basis of a citizen complaint or an internally generated complaint) that impede a timely and thorough investigation. Officer appeals of discipline, meanwhile, may involve procedures that tend to increase the likelihood of disciplinary sanctions being mitigated or overturned.

418. See Barbara E. Armacost, *Organizational Culture and Police Misconduct*, 72 GEO. WASH. L. REV. 453, 533 (2004) (“[E]fforts by outside agencies to collect and analyze information in a potentially adversarial framework, such as a § 14141 lawsuit, may lead police officers to be defensive and uncooperative.”). *But see* PRESIDENT’S TASK FORCE ON 21ST CENTURY POLICING, FINAL REPORT 61 (2015), https://cops.usdoj.gov/pdf/taskforce/taskforce_finalreport.pdf [<https://perma.cc/E3YS-ULAS>] (proposing an increased focus on data collection about policing practices).

419. See Jim Salter & David A. Lieb, *New ‘Blue Lives Matter’ Laws Raise Concern Among Activists*, ASSOCIATED PRESS (May 26, 2017), <https://www.apnews.com/f550bca209d6467995530d4d82b4fbb7> [<https://perma.cc/3XJQ-YBTN>] (discussing activists’ reactions to laws permitting heightened sentences for people who assault or kill police officers).

A proposal to redirect existing data-driven surveillance systems toward police accountability will likely meet similar resistance. The reasons are fairly obvious. Such a system would invade personal privacy, restrict professional autonomy, constrain actions and language, and lead to increased supervision, training, and potentially negative professional outcomes. Police officers, like most employees, would rather avoid the adverse effects of worker surveillance, especially when such oversight is couched in dehumanizing terms like “predictive analytics” or “data mining.”⁴²⁰ Such invasive personal investigation could also undermine recruitment efforts and employee morale if potential officers did not want to have their own lives policed.

Police resistance exerted in either formal/informal or intentional/unintentional ways could undermine the ability to use blue data for exclusionary rule purposes. At the front end, since police agencies and officers would be responsible for setting up the technologies, they could also thwart any application directed toward police.⁴²¹ This resistance could be intentional, inadvertent, or due to cost and logistical concerns.

Similarly, as has been seen with other accountability technologies like dashboard cameras or body cameras, police have been known to intentionally frustrate the system by turning the cameras off.⁴²² Put simply, if police wished to not comply with a data collection system or figured out ways to make recovering the data too difficult, the information’s utility in suppression hearings would be quite limited. If police simply stopped collecting the underlying data, blue data would not exist. In both Oakland and New York City, the data collection was mandated by a court order. Unquestionably, an intentional effort to undermine data collection would undercut the value of this Article’s proposal to use such data in suppression hearings.

Inadvertent resistance also occurs when police make errors in data collection. The problem of data bias is endemic to all data-driven systems, and the difficulties of collecting police data are no different.

420. See 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/> [<https://perma.cc/J94M-6XZP>] (explaining how the use of big data in human resources is transforming how employers hire, fire, and promote employees).

421. Most of the technologies already exist but are currently directed at civilians and not police, demonstrating that, given the choice, police may choose not to have surveillance directed toward their professional work.

422. See Laurent Sacharoff & Sarah Lustbader, *Who Should Own Police Body Camera Videos?*, 95 WASH. U. L. REV. 269, 290 (2017) (recognizing that the “power to stop recording has led, in a great many cases, to abuse”).

As I have written in other contexts, bad data can corrupt an otherwise good data-driven system.⁴²³ Ensuring data integrity means adopting systems of data collection that are automatic and create automatic data trails (so as to see if the data is being manipulated).⁴²⁴ Data errors can be compounded by the growing volume of information being produced. Every day, every shift, there is more data collected without the commensurate resources to manage the accumulating data. Because of this volume of data, police may not be able to maintain the data systems to a level of accuracy necessary for use in court.

More practically, police may not be able to afford the cost of these new technologies. Big data technologies are expensive. Additionally, the data needs to be integrated into existing systems and must be updated and its accuracy maintained. Both in terms of having the financial ability to invest in the technology and the human capacity to use the available amount of data, cost constraints may undermine any potential utility. Cost workarounds such as partnering with private companies might make sense in terms of efficiency and expertise, but the outsourcing of local police power creates real dangers.⁴²⁵ Private companies could face ethical problems, conflicts, or confidentiality issues, and a growing dependence on private companies could undermine local public authority. Cost might thus create a real if unintentional barrier to adoption of blue data systems.

Whatever the practical limitations to implementation, police resistance to blue data does reveal a deeper truth about surveillance and data-driven suspicion. The natural police resistance to technology parallels community resistance to the same technology. Citizens also reflexively resist any technology which threatens to invade personal privacy, restrict personal autonomy, constrain actions or language, or lead to increased surveillance or negative outcomes. Police fears of blue data are the fears of big data surveillance more generally.

One insight from the police pushback to blue data is that this resistance might inform how local communities should respond to proposed new surveillance technologies. Resistance can be an educational moment. The successful push of police unions to thwart

423. See Ferguson, *supra* note 2, at 398–400 (discussing issues of accuracy with big data collection systems).

424. See Miriam H. Baer, *Pricing the Fourth Amendment*, 58 WM. & MARY L. REV. 1103, 1160 (2017) (proposing a regime that includes the use of body and dash cameras, periodic audits of search data, and imposition of stiff penalties for providing false information for ensuring the accurate accounting of the number and types of searches officers perform).

425. See Elizabeth E. Joh, *The Undue Influence of Surveillance Technology Companies on Policing*, 92 N.Y.U. L. REV. 101, 126 (2017) (“The continuing influence of surveillance companies even after police have purchased their services further removes policing from traditional mechanisms of oversight.”).

any data accountability project stems from organized efforts framed around appeals to fairness, due process, and concerns about personal privacy and free expression. Police unions have successfully weaponized the fear that a hard-working civil servant may be professionally penalized because of an algorithmic judgment of future risk. Yet, those same basic fairness issues apply in civilian surveillance of targeted communities and can also be used to frame a message of resistance.

In general, however, citizens have lacked the political organization and urgency that police advocates have developed. The message may be felt but not always heard. This may be changing in a few cities where this democratic voice against police surveillance has been growing louder.⁴²⁶ In Oakland, a Privacy Advisory Board was created to advise the city council on new police surveillance technologies,⁴²⁷ and similar surveillance awareness bills have been considered in eleven other jurisdictions.⁴²⁸ Seattle enacted one of the most comprehensive local surveillance ordinances in the country, mandating review of police surveillance technologies.⁴²⁹ On a local stage, many groups are coalescing around the idea of ensuring transparency and accountability for new data-driven policing technologies.⁴³⁰

426. See Andrew Guthrie Ferguson, *The Fragmented Surveillance State*, SLATE (Nov. 10, 2017), http://www.slate.com/articles/technology/future_tense/2017/11/the_united_states_fragmented_surveillance_system.html [<https://perma.cc/54XX-98UM>] (discussing how some cities require civilian surveillance over new police technologies).

427. See Darwin BondGraham, *Oakland Privacy Commission Approves Surveillance Transparency and Oversight Law*, E. BAY EXPRESS (Jan. 6, 2017), <https://www.eastbayexpress.com/SevenDays/archives/2017/01/06/oakland-privacy-commission-approves-surveillance-transparency-and-oversight-law> [<https://perma.cc/G6FP-5T4U>] (detailing the proposal for a Surveillance and Community Safety Ordinance which would require “[c]ity agencies . . . to seek city council approval before purchasing new technologies, and the law also imposes reporting requirements so that the public can evaluate the costs and benefits of technologies that monitor and track people”).

428. Jessica Anderson, *11 U.S. Cities to Consider Legislation to Require Greater Transparency for Police Surveillance Programs*, BALT. SUN (Sept. 21, 2016), <http://www.baltimoresun.com/news/maryland/baltimore-city/bs-md-aclu-police-surveillance-20160921-story.html> [<https://perma.cc/JJ47-QWE3>] (listing other cities that have considered surveillance awareness bills, including Seattle, Richmond, and Milwaukee).

429. *About the Surveillance Ordinance*, SEATTLE.GOV, <https://www.seattle.gov/tech/initiatives/privacy/surveillance-technologies/about-surveillance-ordinance> (last visited Mar. 16, 2019) [<https://perma.cc/72JL-2AF2>].

430. See Jose Pagliery, *ACLU Unveils Privacy Fight in 16 States*, CNN MONEY (Jan. 21, 2016, 11:53 AM), <http://money.cnn.com/2016/01/20/technology/aclu-state-privacy-laws> [<https://perma.cc/EN2J-P9CY>] (explaining how sixteen states are considering measures to protect personal information).

To be clear, the symmetry of surveillance resistance⁴³¹ need not be exact. There may be reasons to increase surveillance on citizens but not on police. But the fact that police raise reasonable concerns about the intrusiveness of surveillance offers a lesson on how to evaluate new privacy-invading technologies. The argument that the surveillance targets good cops as well as bad also highlights the overinclusive nature of public surveillance (targeting innocent citizens along with the guilty). The argument about the unfairness of being predictively flagged for conduct which has not yet occurred parallels the community's fear of predictive targeting. Arguments about the danger of correlative suspicion, as opposed to observed suspicion, raise wide-ranging issues of accuracy, transparency, and individualized justice. Seen through the eyes of police officers wishing to avoid negative professional discipline, the arguments against surveillance are sympathetic and meritorious. But that feeling should also transfer to communities wishing to avoid the same harms.

Whether practically feasible or not, as a thought experiment, the push for blue data brings in stark relief the concerns of all citizens wishing to avoid heightened surveillance. The pushback of police resistance offers a powerful example for ordinary citizens also concerned with invasive new technologies. If we take seriously the resistance to blue data, we may also moderate the rush toward greater surveillance. If police fear that predictive analytics are unfair to them, then how can one dismiss citizens' complaints about a similar technology?

In the end, police resistance to blue data may also be unavailing. The reason: once public-safety-oriented surveillance technologies have been turned against the citizens, it will be difficult to hide the data that also captures the police. The always-recording cameras exist in parts of New York City. The technology to search for each and every stop exists. The data will be available. Big data surveillance technologies are largely indiscriminating in who gets captured in the net and, once vacuumed up, the data exists for enterprising litigants to find. As such, the choice may really be about whether to adopt big data surveillance technologies in the first instance, recognizing that once adopted these technologies will watch everyone.

Further, in an exclusionary rule regime in which recurring and systemic negligence legally matters, incentives exist to use this data in suppression hearings. Whether or not police wish to give the data

431. See Joh, *supra* note 35, at 1000–02 (describing the rise of antisurveillance methods of protest and privacy).

up, it will be demanded and likely produced under court order.⁴³² If video of all of detective Fackrell's past requests for identification existed, it may be difficult for a police department not to comply with a valid lawful request for the information. If a computer model predicted detective Fackrell as someone likely to violate constitutional rights and that risk assessment is requested by the defense, the data will need to be turned over. Once built, the surveillance systems will not be limited only to the police.

B. Legal Resistance

In addition to police resisting the creation of blue data systems, criminal courts—including judges and litigants—may resist developing a record of recurring or systemic negligence. For different reasons, judges, prosecutors, and defense lawyers may choose a path of resistance rather than acquiescence to the introduction of blue data.

To put the legal burden in context, most suppression hearings in criminal cases (suppressing, for example, narcotics, weapons, or stolen goods) occur quickly, without a significant amount of pretrial litigation. Motions are filed and witnesses are called, but within a limited scope. Tactical pressures to limit the amount of evidence introduced before trial, as well as relevance considerations, further reduce the amount of testimony. At most, each side might call a few witnesses to testify to the relevant facts and might make a few arguments about the relevant case law governing those facts before the proceeding is over. Within this practice, which is fairly standard in state courts, the idea of introducing evidence of systemic and recurring misconduct becomes quite disruptive, requiring more resources, time, and effort for the court system.

From a trial judge's perspective, the additional burden of applying the *Herring* test to an ordinary case will be both time-consuming and confusing. In an earlier article, I examined the definitional and practical problems with the Supreme Court's use of "deliberate," "reckless," and "grossly negligent" as those terms relates to individual officers.⁴³³ Similarly, the burden to show systemic or

432. Or production of the data may be required under *Brady v. Maryland*, 373 U.S. 83 (1963), or other discovery rules. *See, e.g.*, *Conti-Cook*, *supra* note 407, at 1074.

433. *Ferguson*, *supra* note 9, at 644–56; *see also* *Herring v. United States*, 555 U.S. 135, 151 (2009) (Ginsburg, J., dissenting); *id.* at 157–58 n.7 (Breyer, J., dissenting) ("It is not clear how the Court squares its focus on deliberate conduct with its recognition that application of the exclusionary rule does not require inquiry into the mental state of the police."); *Laurin*, *supra* note 60, at 727 ("On its face, the Court's insistence that the standard it articulates be applied objectively seems nonsensical: Even if the lowest grade of culpability to trigger exclusion, gross

recurring patterns means opening up an ordinarily limited hearing to significantly more information. Aggressive defense lawyers will demand truncated Section 1983 hearings, developing the same record of a custom, policy, or practice, but with blue data evidence. Additional witnesses will be needed, including experts, to establish the duty of care and a baseline number for “recurring” problems.⁴³⁴ Trial judges who would prefer not to be reversed on appeal might be cautious in limiting evidence legally necessary to demonstrate recurring or systemic problems since the Supreme Court has suggested their importance. Findings of fact will need to be longer and will be more labor intensive. And all of these decisions will be made in an uncertain legal atmosphere, with little clarity about the definitions of “recurring,” “systemic,” or even “negligence” in the context of a suppression hearing.

From the defense lawyer’s perspective, the burden of proving non-case-related facts may be too taxing to undertake. Defense counsel may find it hard enough to litigate the facts at hand, let alone all other stops an officer conducted. In busy, urban courthouses, the ability to litigate pretrial motions ahead of time may be nonexistent. Within this crush of cases, litigating the equivalent of a massive structural reform challenge borders on impossible. Even on a small scale, the burden of blue data requires additional discovery motions, additional time to review hours of footage, and the wherewithal to use the available data in one’s case. While technically possible—and perhaps even appealing—this change adds real practical difficulties for defense attorneys.

Further, *Herring’s* change legally weakens the defense’s overall constitutional claims. Many defense attorneys may resist the idea that *Herring* imposes a second analytical step for suppression. The automatic linkage of a constitutional wrong and the suppression remedy has been ingrained in practice for decades, and the idea of conceding that automatic linkage is not appealing to defense lawyers. It is for that reason, perhaps, that *Herring’s* second step appears to be ignored in many courthouses. While some judges certainly conduct the second step of the analysis,⁴³⁵ many simply suppress evidence after finding a constitutional violation.

negligence, could be assessed solely by reference to objective factors, proof of reckless or deliberate conduct typically requires a subjective inquiry.” (footnotes omitted)).

434. An open question is how to define “recurring.” The threshold question will require both a numerical answer as well as a temporal answer since the question of recurring within what timeframe would also have to be answered.

435. See *Utah v. Strieff—Leading Case*, *supra* note 49, at 337–38 (explaining that the Utah Supreme Court performed the second-step attenuation analysis).

From a prosecutor's perspective, *Herring* offers a second bite at the apple after a constitutional violation. While appealing in theory, if recurring or systemic negligence becomes the centerpiece of a motions hearing, the entire proceeding shifts from the actions taken by the police officer in this particular case to all actions taken in other cases. Having to defend, or more likely seek to limit, extraneous information about bad policing practices across a city creates a real burden on prosecutors. Prosecutors also have too many cases and not enough time, so the burden of adding civil litigation-like responsibilities—culling discovery requests, sorting through data and footage, and the like—may be too much. Finally, the introduction of prior police misconduct or evidence of systemic behavior raises a concern that this information could spill over into trial.⁴³⁶

These arguments for resistance reveal an underappreciated difficulty of the Supreme Court's new exclusionary rule: as a practical matter, this new rule may only serve to confuse trial practice. For instance, who has the burden of proving systemic problems—the defense or the prosecution? When would the defense get access to discovery regarding patterns of misconduct? How specific must the patterns of misconduct be (e.g., is a pattern of unconstitutional stops relevant to a case involving unconstitutional frisks)? Who would hire the experts to interpret the data? What if police are deliberately indifferent to bad practices? Given that this data represents impeachment evidence, would it be subject to the disclosure requirements of *Brady v. Maryland*?⁴³⁷ And at what level of generality (local, city, or state) would the pattern need to be proven?⁴³⁸ Seemingly, in an effort to restrict the scope of the exclusionary rule remedy, the Supreme Court created a test that overburdens trial practice. Did the Court intend to turn every suppression hearing into a Section 1983 proxy or a pattern and practice investigation? Did the Court really want litigants to explore the systems that cause citizen-police tension across the nation? The dissenting Justices in *Herring* and *Strieff* make clear that this is the logical conclusion of the holdings,⁴³⁹ yet no one seems to know how it would work in practice.

436. For example, allegations of police misconduct could be used to challenge the credibility or veracity of officer testimony as the officers' felt need to defend the constitutionality of police actions could create an incentive to shade their testimony and thus create a form of bias cross-examination.

437. 373 U.S. 83 (1963) (requiring prosecutors to disclose all exculpatory evidence to criminal defendants prior to trial).

438. Thank you to Cynthia Conti-Cook for these insights and many more.

439. See *supra* notes 81–86, 433 and accompanying text.

Some might argue that the conservative majority of the Supreme Court likely believed the task of proving such recurring negligence near impossible, so it did not wrestle with the practicalities of implementing such a requirement. But now, enhanced technological capacities may have upended that plan by providing proof of recurring patterns or systemic problems with relative ease. In fact, the incentive exists for the entire defense bar to bring such challenges, because if systemic or recurring negligence is shown in certain practices, then such a finding will mean suppression in all related cases. For example, if Salt Lake City police officers routinely conducted unconstitutional stops for identification, all such cases involving that particular practice would result in suppression. What began as a narrowing of the exclusionary remedy might, in fact, turn out to be a much broader mandate to expand court-overseen police accountability practices. Every police stop will be analyzed in the context of a larger police practice, with particular attention paid to the policies, practice, and trainings of the police department at issue. This data collection will also be useful for future civil rights cases and federal investigations.

This in turn raises a different, although related, problem: not all jurisdictions will have equally sophisticated technology, leading to unequal or divergent applications of blue data accountability. For courts tasked with applying constitutional law and the exclusionary rule uniformly across the legal system, this reality presents more practical problems. Technology costs money and many jurisdictions will not or cannot invest the time and capital into developing big data policing strategies. There will then exist two tiers of policing systems: the technology haves and the technology have-nots. The open question will be what to do when big data becomes the preferred mechanism to demand police accountability but does not exist in a particular jurisdiction.

Again, these seem to be practical issues that the Court did not think through in offering its exclusionary rule pronouncement in *Herring*. Courts and lawyers resisting this change may well show the need to rethink *Herring's* lessons and to develop new ways to evaluate which types of misconduct warrant suppression. In taking *Herring* seriously, courts may realize that it does not work in practice. When faced with resistance to the practice on the ground, courts may be prompted to reevaluate the future of the exclusionary rule.

CONCLUSION

The idea of data-driven accountability is not new. But the convergence of new surveillance and data-driven technologies along with the Supreme Court's requirement to demonstrate recurring or systemic problems of police misconduct suggest a new way to visualize the exclusionary rule in the age of blue data. A data-driven vision is needed now more than ever, as other traditional means of police accountability diminish due to a shifting political landscape. This vision also fills the "proof gap" that exists when litigating police misconduct. In ordinary suppression hearings, civil cases, and civil rights investigations, this blue data will assist litigants and courts in proving and visualizing large-scale police accountability projects. Even if blue data accountability systems are not put in place, the push to develop them will offer powerful clues about how citizens and police react to new forms of big data surveillance. The reveal of the resistance is that all people—citizens and police—have reason to be concerned about growing big data surveillance systems.