SMARTER EARLY INTERVENTION SYSTEMS FOR POLICE IN AN ERA OF PERVASIVE RECORDING

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Investigations of police departments by the U.S. Department of Justice spurred the spread of early intervention systems that use data to detect officers at elevated risk of problematic conduct. These systems of internal self-surveillance remain even when consent decrees expire and federal investigators turn to other tasks—or pull back during Presidential regime changes. Such automated technologies of harm detection and prevention that outlast political upheaval are alluring—but they are only as effective as the data and criteria on which they rely to detect and prevent problems. Current systems largely are dependent on reported events and use simplistic thresholds based on intuition to trigger red flags. To improve the harm prevention power and build a smarter system, this Article proposes using a rich and growing source of data not traditionally used in early intervention systems—audiovisual data from police-worn body cameras and community-member cell phone cameras. The Article also presents findings from the coding and collection of 213 body camera policies regarding whether a major source of audiovisual data—police-worn body camera videos—may be used to monitor and evaluate officers. While there are policy silences, gaps, and splits, the Article concludes that the majority of departments have the opportunity to use the rapidly accumulating trove of audiovisual data to create smarter early intervention systems.

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I.   INTRODUCTION

A little over two decades ago, U.S. Department of Justice attorneys wielding their new power under 42 U.S.C. § 14141 to investigate police departments secured a then-unusual feature.[1] As a centerpiece of reform and a condition of settling an investigation into excessive force and illegal searches and seizures, the federal civil rights attorneys required the Pittsburgh Police Department to adopt an "automated early warning system."[2]

What was an automated early warning system?

At the time, "no one knew what an 'early warnings system' was or how to build it or what to measure," recalls Chuck Wexler, President of the Police Executive Research Forum, a police professional group.[3] Wexler likens Pittsburgh's reformist police chief tasked with overseeing the changes, Chief Robert McNeilly, to a "test pilot in the Mercury flight program," referring to the endeavor to launch the first U.S. astronauts into space.[4]

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1.   *See* Sheryl Gay Stolberg, *'It Did not Stick': The First Federal Effort to Curb Police Abuse*, N.Y. TIMES (Apr. 9, 2017), https://www.nytimes.com/2017/04/09/us/first-consent-decree-police-abuse-pittsburgh.html (noting that the 1997 investigation of the Pittsburgh Police Department was the first investigation initiated by federal prosecutors under 42 U.S.C. § 14141).

2.   Consent Decree at ¶ 12, United States v. City of Pittsburgh, No. 97-0354 (W.D. Pa. Apr. 16, 1997) [hereinafter Pittsburgh Consent Decree]. *See also, e.g.*, ROBERT C. DAVIS ET AL., FEDERAL INTERVENTION IN LOCAL POLICING: PITTSBURGH'S EXPERIENCE WITH A CONSENT DECREE 9 (U.S. Dep't of Justice Office of Cmty. Oriented Policing Serv. 2005) ("The new early warning system to track the conduct of individual officers is the centerpiece of the Bureau of Police's reforms in response to the consent decree.").

3.   Stolberg, *supra* note 1.

4.   *Id.*

Policing experts have long observed that a small group of officers drives a large proportion of complaints of excessive force and other problematic practices.[5] A goal of the early warning system is to detect and address such outlier officers and conduct.[6] The consent decree negotiated by the Justice Department attorneys described the early warning system as "a database containing relevant information about its officers, as well as a statistical model to identify and modify the behavior of problem officers."[7]

Under the decree, the system had to contain text-searchable information on issues such as citizen complaints; uses of force; arrests; civil suits involving the officer; and officer commendations, discipline, and mandatory counseling.[8] The system also had to permit analyses of certain discretionary arrests, such as obstruction of justice and disorderly conduct, by officer, unit, shift, and location.[9] In addition to creating the database and getting the relevant technology, Pittsburgh officials had the task of figuring out the thresholds of complaints or other indicators that would trigger supervisor intervention, and what kind of supervisor intervention.[10]

The allure of using data and technology to detect and prevent problematic policing practices predated the first § 14141 investigation. More than a decade before the Pittsburgh consent decree, in 1981, the U.S. Commission on Civil Rights called for police departments to create systems that would help detect officers "who are frequently the subject of complaints or who demonstrate identifiable patterns of inappropriate behavior."[11] The Oakland, New York City, Kansas City, and Miami police departments experimented with such systems in the 1970s and 1980s.[12] But Justice Department investigations and resulting consent decrees were the major movers in getting police agencies to adopt many of the first automated early warning systems, under duress.[13]

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5.   *See, e.g.*, STEPHEN RUSHIN, FEDERAL INTERVENTION IN AMERICAN POLICE DEPARTMENTS 144–45 (2017) (discussing studies); POLICE EXECUTIVE RESEARCH FORUM, CIVIL RIGHTS INVESTIGATIONS OF LOCAL POLICE: LESSONS LEARNED 16 (2013), http://www.policeforum.org/assets/docs/Critical_Issues_Series/civil%20rights%20investigations%20of%20local%20police%20-%20lessons%20learned%202013.pdf ("Research has long suggested that a small percentage of police officers account for a high percentage of use-of-force incidents."); SAMUEL WALKER, GEOFFREY P. ALPERT & DENNIS J. KENNEY, NAT'L INST. OF JUSTICE, EARLY WARNING SYSTEMS: RESPONDING TO THE PROBLEM POLICE OFFICER 1 (2001), https://www.ncjrs.gov/pdffiles1/nij/188565.pdf ("It has become a truism among police chiefs that 10 percent of their officers cause 90 percent of the problems.").

6.   WALKER, ALPERT & KENNEY, *supra* note 5, at 1.

7.   Pittsburgh Consent Decree, *supra* note 2, at 12.

8.   *Id*. at 12(a).

9.   *Id*. at 12(b).

10.   *See id.* at 21.

11.   U.S. COMM'N ON CIVIL RIGHTS, WHO IS GUARDING THE GUARDIANS?: A REPORT ON POLICE PRACTICES 81 (1981).

12.   Christopher J. Harris, *Early Intervention Systems and the Prevention of Police Misconduct, in* STRESS IN POLICING: SOURCES, CONSEQUENCES AND INTERVENTIONS 207, 209 (Ronald J. Burke ed. 2017).

13.   MIKE GIBBS & CAROLYN KENDRICK, SAN DIEGO POLICE DEP'T, ENHANCING CULTURES OF INTEGRITY: BUILDING LAW ENFORCEMENT EARLY INTERVENTION SYSTEMS 3 (U.S. Dep't of Justice, Office of Cmty. Oriented Policing Serv. 2011).

Today, termed Early Intervention Systems ("EIS"), these automated data-bases are a standard part of consent decrees and memoranda of understanding, settling civil rights investigations into police departments.[14] Even when consent decrees end and reformist chiefs and their endeavors fade away, these automated systems remain. In Pittsburgh, the consent decree ended in 2002.[15] Four years later, Chief McNeilly left, and various reforms implemented under the consent decree ceased in use.[16] But the early intervention system, which the police bureau terms the Personnel Assessment and Review System (PARS), continue.[17]

Moreover, this strategy of data-driven internal surveillance has spread well beyond the police agencies that have come under Justice Department investigation.[18] According to a 2007 survey of a sample of law enforcement agencies that included a question about early warning or early intervention systems, about 40% of agencies serving jurisdictions of over 50,000 residents have an early intervention system.[19] The mission of early intervention systems also has grown from identifying outlier officers to more data-driven and effective management of police personnel.[20]

Despite decades of use, early intervention systems are still largely in their infancy in terms of developing their potential.[21] Surveys of agencies reporting use of an early intervention system found considerable variations in terms of what performance indicators to use and what triggers interventions.[22] The most common performance data include citizen and internal complaints, use of force

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14.   *See, e.g.*, Brian A. Jackson, Vivian Lau Towe, Lisa Wagner, Priscillia Hunt, Sarah Greathouse, & John S. Hollywood, *Managing Officer Behavioural Risk Using Early Intervention Systems: Addressing System Design Challenges for Law Enforcement and Corrections Environments*, 11 POLICING 103, 104 (2016).

   In external interventions into departments via federal consent decrees, the collection, analysis, and release of data has been part of the prescription for responding to serious organizational problems. And a prominent element in those interventions has been putting systems in place to analyse data in real time to identify officers whose behaviour is problematic, enabling leaders to respond before that behaviour becomes a more serious problem for the department and the career of the officer involved.

Id. One of the leading experts on police early intervention systems, Samuel Walker, has noted that "[t]hey are a required reform in all of the Justice Department consent decrees and settlement agreements." *Early Intervention Systems*, SAMUEL WALKER, http://samuelwalker.net/issues/early-intervention-systems/ (last visited Oct. 7, 2018).

15.   Stipulated Order at 5, United States v. City of Pittsburgh No. 97-0354 (W.D. Pa. Sept. 20, 2002).

16.   Stolberg, *supra* note 1.

17.   DAVIS ET AL., *supra* note 2, at 13.

18.   WALKER, ALPERT & KENNEY, *supra* note 5, at 2.

19.   *See* INTER-UNIVERSITY CONSORTIUM FOR POLITICAL AND SOCIAL RESEARCH, LAW ENFORCEMENT MANAGEMENT & ADMINISTRATIVE STATISTICS (LEMAS), 2007; *See also* WALKER, ALPERT & KENNEY, *supra* note 5, at 107 ("Does your agency have an operational computer-based personnel performance monitoring/assessment system (e.g., Early Warning or Early Intervention System) for monitoring or responding to problematic officer behavior patterns?"); RUSHIN, *supra* note 5, at 145 n.216 (summarizing how percentage is derived).

20.   Harris, *supra* note 12, at 209.

21.   *Id*.

22.   ROBERT E. WORDEN, SARAH J. MCLEAN, EUGENE PAOLINE & JULIE KRUPA, FEATURES OF CONTEMPORARY EARLY INTERVENTION SYSTEMS: THE STATE OF THE ART 6 (IACP Conference 2015); SAMUEL WALKER, GEOFFREY P. ALPERT & DENNIS J. KENNEY, RESPONDING TO THE PROBLEM POLICE OFFICER: A NATIONAL STUDY OF EARLY WARNING SYSTEMS, A FINAL REPORT 1.6–1.8 (2000).

incidents, involvement in high-speed pursuits, vehicle damages or accidents, and internal investigations.[23] There also is wide variation in what triggers the flagging of officers, units, or practices for intervention.[24] This crucial issue is largely left to the intuition and professional judgment of police professionals.[25] Demonstrating the intuitive appeal of a three-strike approach, many systems flag officers who have three or more indicators in a twelve-month period, such as three or more citizen complaints.[26]

The problem of improving early intervention systems has drawn the attention of public-interest-oriented technological talent. Technologists with the University of Chicago's Data Science of Social Good collaborated with the Charlotte-Mecklenburg Police Department to improve on the simplistic threshold models and use machine learning to better predict which officers are at greater risk and reduce the false positive of incorrectly identifying officers.[27] To build a better predictive model, the technologists drew on police department records relating to issues such as dispatch calls, complaints, and information recorded by officers regarding traffic stops, arrests, and citations.[28] Data on adverse events and officer fault were based on Internal Affairs records.[29] Deploying machine learning is an important advance. Strikingly, however, even technologists at the vanguard of improving early intervention systems were reliant on agency records and officer-recorded information.[30]

This Article proposes a further advance drawing on a growing trove of powerful information not traditionally used in early intervention systems—audiovisual data from citizen and police cameras recording officer activities. The Article explores how to harness the cultural revolutions in recording the police to create smarter early intervention systems. The Article also presents some of the findings based on the collection and coding of 213 departmental policies on police-worn body cameras. These results show an emerging future of pervasive recording of police activities previously largely left to reconstruction based on officer memory and officer-created records. The results also show policy silences and splits regarding whether body camera data can be used to monitor and evaluate officers.

The Article proceeds in three parts. Part II discusses policing in a panopticon where a camera could be recording at any time and how the resulting audiovisual big data can help generate smarter early intervention systems. Part III

23. WORDEN, MCLEAN, PAOLINE & KRUPA, *supra* note 22, at 6; WALKER, ALPERT & KENNEY, *supra* note 22, at 1.6–1.7.

24. WORDEN, MCLEAN, PAOLINE & KRUPA, *supra* note 22, at 9–10; WALKER, ALPERT & KENNEY, *supra* note 22, at 1.

25. Harris, *supra* note 12, at 208.

26. WORDEN, MCLEAN, PAOLINE & KRUPA, *supra* note 22, at 8–10; WALKER, ALPERT & KENNEY, *supra* note 22, at 1.7.

27. Samuel Carton et al., *Identifying Police Officers at Risk of Adverse Events* (Univ. of Chi. 2016) (unpublished manuscript), https://dssg.uchicago.edu/wp-content/uploads/2016/04/identifying-police-officers-3.pdf.

28. *Id*. at 3–4.

29. *Id*. at 4.

30. *Id.* at 3–4.

presents findings based on the coding of 213 policies regarding whether a growing major source of audiovisual big data—police-worn body camera videos—can be used for officer monitoring and evaluation. Part IV concludes by discussing how incorporating audiovisual big data into early intervention systems can address two major limitations of current systems: the reliance on reported events as indicators, and using simplistic thresholds as red flag triggers.

II. AUDIOVISUAL ANALYTICS AND POLICE REGULATION

From cell phones, to body cameras, to surveillance cameras and sensors, we live in an age of more mobile cameras ready to record than ever before in history.[31] In the United States, 91% of adults have cell phones.[32] Community members increasingly are using their phones to record the police, whether to record their personal encounters, incidents they witness, or as organized "Copwatch" groups.[33] Following the national outcry over killings by police officers in 2014 and 2015, increasing numbers of police departments also are requiring officers to wear body cameras to record their activities.[34] This Part discusses the dual recording revolutions by community members and the police and how the growing body of audiovisual data can enhance the detection of problematic policing practices.

A. Toutveillance and Policing in a Panopticon Constructed of Cameras

Police work is performed on a public stage where, increasingly, a camera could be aimed and recording at any time.[35] The camera could be wielded by community members or worn by an officer.[36] A competing story can be offered by private and public surveillance cameras recording from a different angle and

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31. Mary D. Fan, *Justice Visualized: Courts and the Body Camera Revolution*, 50 U.C. DAVIS L. REV. 897, 907 (2017) [hereinafter Fan, *Justice Visualized*]; Rose Eveleth, *How Many Photographs of You Are Out There in the World?*, ATLANTIC (Nov. 2, 2015), http://www.theatlantic.com/technology/archive/2015/11/how-many-photographs-of-you-are-out-there-in-the-world/413389/ [https://perma.cc/9YB8-XC33]; *When Fatal Arrests Are Caught on Camera*, TIME (July 23, 2014), http://time.com/3024396/fatal-arrests-police-camera/.

32. Lee Rainie, *Cell Phone Ownership Hits 91% of Adults*, PEW RES. CTR. (June 6, 2013), http://www.pewresearch.org/fact-tank/2013/06/06/cell-phone-ownership-hits-91-of-adults/.

33. Mary D. Fan, *Democratizing Proof: Pooling Public and Police Body Camera Videos*, 96 N.C. L. REV. 102 [1639], 1643–45 (2018).

34. Fan, *Justice Visualized*, *supra* note 31, at 928–936.

35. *See id.* at 907 (quoting Lt. Joel Guay, Seattle Police Dep't).

I wouldn't know what to say to officers who didn't think they were on camera all the time, everywhere. At this point, you would just look at them and you say, "Seriously?" And then maybe sit them in a room for a day and have them read the newspaper. I think there is a general understanding that cameras are everywhere all the time.

Id. See also, e.g., HANS TOCH, COPWATCH: SPECTATORS, SOCIAL MEDIA, AND POLICE REFORM xviii (2012) ("A police officer who is nowadays engaged in an unseemly confrontation can literally discover him- or herself acting on a public stage. The use of force can be memorialized in vivid color, and reveal detail, to be disseminated on the evening news, under morning newspaper headlines, and in a range of outlets over the Internet.").

36. Fan, *Democratizing Proof*, *supra* note 33, at 1641.

at different time points.[37] I coined the term "toutveillance" to capture this modern condition, where I could be recording you, you could be recording me, and the police and other private and public surveillance devices are recording us too.[38] The flexible French word *tout*, meaning "all" or "every," better captures our modern condition of simultaneous recording from diverse directions and points of view.[39]

In contrast, the term surveillance has a top-down control connotation beginning with the French preposition *sur*, meaning "above" or "over."[40] The more *avant-garde* term "sousveillance," coined by Steve Mann, has the opposite bottom-up connotation, to capture the traditional subjects of the surveillance turning the camera's gaze on the police.[41] The lines of power are more complex and chaotic than the orderly bidirectionality connoted by the concepts of surveillance and sousveillance. The cameras worn by the officers are meant to exert control and encourage better behavior from those bearing the badge, and the people policed.[42] The numerous other recording devices saturating our communities can be consciously aimed as protest and counterproof, or incidentally available and offering yet another perspective from an alternative angle.[43]

In this era of toutveillance, policing occurs in a modern-day Panopticon constructed of cameras. Before it was a famous metaphor, the Panopticon was a plan for an efficient modern prison by a father of modern deterrence theory, Jeremy Bentham.[44] As conceived by Bentham in 1791, the Panoptic prison

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37. *See, e.g.*, Andrew Davis, *Graphic Video: 4 SCMPD Officers Cleared in Deadly Shooting*, WSAV (May 23, 2016, 6:35 PM), http://wsav.com/2016/05/23/graphic-video-shooting-of-officers-and-suspect-in-savannah/ [http://perma.cc/QG5H-L6VA] (contrasting recordings from different body camera angles; one of which did not capture the suspect's reach for his weapon and the other which did); Conor Friedersdorf, *The Conspiracy to Brutalize Derrick Price*, ATLANTIC (Feb. 1, 2016), https://www.theatlantic.com/politics/archive/2016/02/the-conspiracy-to-brutalize-derrick-price/457134/ [http://perma.cc/D28M-J7X5] (contrasting body camera video of the arrest of Prince with what private video surveillance recorded).

38. Fan, *Justice Visualized*, *supra* note 31, at 908.

39. *See, e.g.*, *Tout*, COLLINS FRENCH TO ENGLISH DICTIONARY, https://www.collinsdictionary.com/dictionary/french-english/tout (last visited Oct. 7, 2018) (defining *tout* as all, every, or any).

40. *Cf.* Steve Mann, *Equiveillance: The Equilibrium Between Sur-veillance and Sous-veillance*, ON THE IDENTITY TRAIL (2005), http:// wearcam.org/anonequity.htm [https//perma.cc/2ZPJ-CVZ3] ("Surveillance is derived from [the] French 'sur' (above) and 'veiller' (to watch). Typically (though not necessarily) surveillance cameras look down from above, both physically (from high poles) as well as hierarchically (bosses watching employees, citizens watching police, cab drivers photographing passengers, and shopkeepers videotaping shoppers).").

41. Steve Mann, *Veillance and Reciprocal Transparency: Surveillance Versus Sousveilance, AR Glass, Lifeglogging, and Wearable Computing*, 2013 IEEE INT'L SYMP. ON TECH. & SOC'Y 1, 1.

42. *See* POLICE COMPLAINTS BD., ENHANCING POLICE ACCOUNTABILITY THROUGH AN EFFECTIVE ON-BODY CAMERA PROGRAM FOR MPD OFFICERS 3 (2014); POLICE EXECUTIVE RESEARCH FORUM, *supra* note 5, at 6.

43. Fan, *Democratizing Proof*, *supra* note 33, at 1675.

44. *See, e.g.*, Alice Ristroph, *Proportionality as a Principle of Limited Government*, 55 DUKE L.J. 263, 272 (2005) (calling Jeremy Bentham the "father of utilitarianism"); Michael L. Siegel, *Bringing Coherence to Mens Rea Analysis for Securities-Related Offenses*, 2006 WIS. L. REV. 1563, 1569 n.46 ("The father of deterrence theory is Jeremy Bentham.").

would put prisoners in transparent cells around an opaque watchtower.[45] The guardhouse looms above the prisoner.[46] The prisoner never knows when the eye is on him—but it could be on him at any time.[47] Thus vulnerable, the prisoner self-polices, behaving as if there was a guard watching him at all times to ensure compliance with the rules.[48] The idea of control via the prospect of omni-present observation has become an influential metaphor for the management of modern-day society.[49]

In the police regulation context, panopticism for police turns the logic of control by transparency on the traditional masters of surveillance: law enforcement.[50] I have previously written about how the reforms in federal consent decrees negotiated by U.S. Department of Justice attorneys leverage data and early intervention systems to incentivize officers to self-police, akin to panoptic control for police.[51] The dominant paradigm of data then were records generated by the office and department, as it remains for early intervention systems today.[52] But the revolutions in recording the police—by officers wearing body cameras, and by community members recording officers—open a new frontier for police panopticism and early intervention systems.

Long before today's painful drumbeat of viral videos of controversial violent or deadly police encounters, some people have recorded the police.[53] Before the cell phone videos of Demetrius Bryan Hollins kicked and punched in the face during a traffic stop, or Nania Cain repeatedly punched in the face during a stop for allegedly jaywalking, or a fifteen-year-old African American female high school student slammed to the floor, plumber George Holliday used a camcorder to record the beating of Rodney King.[54] Patrol car dash cameras

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45. Miran Božovič, *Introduction* to JEREMY BENTHAM, THE PANOPTICON WRITINGS 13–17 (Miran Božovič ed., 1995).

46. JEREMY BENTHAM, THE WORKS OF JEREMY BENTHAM, NOW FIRST COLLECTED; UNDER THE SUPERINTENDENCE OF HIS EXECUTOR, JOHN BOWRING, PART III, at 40 (1778).

47. *Id*.

48. *Id*.

49. *See, e.g.*, MICHEL FOUCAULT, DISCIPLINE AND PUNISH: THE BIRTH OF THE PRISON 200–01 (Alan Sheridan trans., 1977) (extending Panopticon metaphor to one of management of modern society); THEORIZING SURVEILLANCE: THE PANOPTICON AND BEYOND 4–8, 14–17 (David Lyon ed., 2006) (extending the metaphor to management of modern society); Larry Catá Backer, *Global Panopticism: States, Corporations, and the Governance Effects of Monitoring Regimes*, 15 IND. J. GLOBAL LEGAL STUD. 101, 112 (2008) (tracing modern decentralized and globalized surveillance state); Daniel J. Solove, *Privacy and Power: Computer Databases and Metaphors for Information Privacy*, 53 STAN. L. REV. 1393, 1415–16 (2001) (tracing influence in modern governance and discourse).

50. Mary D. Fan, *Panopticism for Police: Structural Reform Bargaining and Police Regulation by Data-Driven Surveillance*, 87 WASH. L. REV. 93, 102–03 (2012).

51. *Id*.

52. *See* discussion, *supra*, in the text at notes 20–28.

53. Harvey Silverglate & James Tierney, Echoes of Rodney King, BOS. PHOENIX (Feb. 21, 2008), http://wayback.archive-it.org/1981/20170510031045/http://thephoenix.com//Boston/news/56680-echoes-of-rodney-king/ (discussing experiences of bystanders in Boston who recorded the police).

54. *See, e.g.*, *Black Lives Upended by Policing: The Raw Videos Sparking Outrage*, N.Y. TIMES (Apr. 19, 2018), https://www.nytimes.com/interactive/2017/08/19/us/police-videos-race.html (collecting recent cases of nationally controversial police encounters caught on camera); Erik Ortiz, *George Holliday, Who Taped Rodney King Beating, Urges Others to Share Videos*, NBC NEWS (June 9, 2015 7:53 PM),

were widespread before police departments raced to adopt police-worn body cameras after the national outcry following the deaths of Michael Brown in Ferguson, Missouri, Eric Garner, in New York, and other nationally protested killings.[55] A few pioneering police departments also experimented with deploying body cameras.[56] But our era of pervasive police recording is unprecedented in scope because of the normalization of recording police activities by cell phones and, increasingly, police-worn body cameras that capture far more activities than a dash camera can.

In July 2013, a survey of 254 police departments found that less than a quarter of responding agencies used body cameras.[57] Then came the fires of Ferguson after the killing of eighteen-year-old Michael Brown and the refusal of a grand jury to indict the officer who shot Brown—a "watershed event in policing."[58] Accounts of what happened deeply diverged and no camera recorded what happened.[59] Michael Brown's grieving mother called for police to wear body cameras.[60] Civil rights and civil liberties groups traditionally opposed to police surveillance such as the ACLU and the NAACP also joined to call for police-worn body cameras.[61] The crisis in public confidence in police after Brown's killing and other controversial deaths, and the national attention to the severely unequal risk of death black men face in police encounters, spurred police departments to adopt body cameras.[62] The change in the willingness to record was rapid and dramatic—95% of a sample of seventy law enforcement

https://www.nbcnews.com/
nightly-news/george-holliday-who-taped-rodney-king-beating-urges-others-share-n372551.

55. Robinson Mayer, *Seen It All Before: 10 Predictions About Police-Worn Body Cameras*, ATLANTIC (Dec. 5, 2014), https://www.theatlantic.com/technology/archive/2014/12/seen-it-all-before-10-predictions-about
-police-body-cameras/383456/.

56. *Id*.

57. POLICE EXECUTIVE RESEARCH FORUM, U.S. DEP'T OF JUSTICE, IMPLEMENTING A BODY-WORN CAMERA PROGRAM: RECOMMENDATIONS AND LESSONS LEARNED 2 (2014), http://www.justice.gov/iso/opa/resources/472014912134715246869.pdf.

58. Sandhya Somashekhar, Wesley Lowery, Keith L. Alexander, Kimberly Kindy & Julie Tate, *Black and Unarmed*, WASH. POST (Aug. 8, 2015), http://www.washingtonpost.com/sf/national/2015/08/08/black-and-unarmed/.

59. Josh Sanburn, *The One Battle Michael Brown's Family Will Win*, TIME (Nov. 24, 2014), http://time.com/3606376/police-cameras-ferguson-evidence/.

60. Adam Aton, *Michael Brown's Family Pushes for Missouri Body Camera Bill*, ASSOCIATED PRESS (Feb. 17, 2016), https://apnews.com/f7e642c0855f48dda1a0df3385d77c07.

61. LAWYERS' COMMITTEE FOR CIVIL RIGHTS UNDER LAW ET AL., A UNIFIED STATEMENT OF ACTION TO PROMOTE REFORM AND STOP POLICE ABUSE 1–3 (Aug. 18, 2014), https://www.aclu.org/sites/default/files/assets/black_leaders_joint_statement_-_final_-_8-18.pdf; Jay Stanley, *Police Body-Mounted Cameras: With Right Policies in Place, a Win for All*, ACLU 2 (Mar. 2015), https://www.aclu.org/sites/default/files/assets/police
_body-mounted_cameras-v2.pdf.

62. Max Ehrenfreund, *Body Cameras for Cops Could Be the Biggest Change to Come Out of the Ferguson Protests*, WASH. POST (Dec. 2, 2014), https://www.washingtonpost.com/news/wonk/wp/2014/12/02/body-cameras-for-cops-could-be-the-biggest-change-to-come-out-of-the-ferguson-protests.

agencies were planning to adopt body cameras or had already done so by the close of 2015.[63]

While recording by community members generally is more spontaneous and sporadic, the rapid uptake of police-worn body cameras by police departments across the nation opens a vast frontier of audiovisual data that is supposed to be consistently collected under body camera policies. As summarized in Table 1, the majority of body camera policies collected from 213 police departments across the United States require officers to record searches, arrests, uses of force, stops, and officer responses to calls for service.[64] These recording requirements are paving the way for a future where the main staples of law enforcement activity will be recorded.

TABLE 1: LAW ENFORCEMENT ACTIVITIES THAT MUST BE RECORDED PURSUANT TO THE 213 PUBLICLY AVAILABLE BODY CAMERA RECORDING POLICIES COLLECTED AND CODED[65]

Enforcement Activity	Mandatory: Number (%) of Departments	Discretionary: Number (%) of Departments	No Provision: Number (%) of Departments
Terry stops	136 (63%)	0	77 (36%)
Traffic stops	185 (87%)	1 (0.5%)	27 (13%)
Arrests	153 (72%)	1 (0.5%)	59 (28%)
Pursuits, foot or traffic	147 (69%)	0	66 (31%)
Responding to calls for service	141 (66%)	5 (2%)	63 (30%)
Searches	147 (69%)	2 (1%)	64 (30%)
Encounters that escalate or get adversarial	139 (65%)	3 (1%)	70 (33%)
Use of force	118 (55%)	2 (1%)	93 (44%)
Transporting persons in custody	106 (50%)	6 (3%)	101 (47%)
Consensual encounters	135 (63%)	7 (3%)	71 (33%)

Remarkably, a majority of the departments require recording of one of the most opaque and unregulated zones of policing—consensual encounters. Consensual encounters is criminal procedure lingo for an encounter where the subject is—theoretically at least—free to leave.[66] Consensual encounters are useful for investigative purposes where there is either no basis yet for reasonable articulable suspicion to justify an investigative *Terry* stop or if it is unclear if the

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63. Mike Maciag, *Survey: Almost All Police Departments Plan to Use Body Cameras*, GOVERNING (Jan. 26, 2016), http://www.governing.com/topics/public-justice-safety/gov-police-body-camera-survey.html.

64. *See infra* Section II.A.

65. The numbers in the right-most two columns may not add up to 213 because some policies may not specify a position on the issue.

66. Florida v. Rodriguez, 469 U.S. 1, 5–6 (1984).

officer has enough basis yet for a stop.[67] Because these encounters are based on consent, they are not considered searches and seizures regulated by the Fourth Amendment, the main body of constitutional conduct rules for police.[68] Consensual encounters also are controversial because consent often is fictional from the perspective of the person approached, and because of the risk for targeting based on hunches predicated on a person's race, gender, and socioeconomic status.[69] It is a remarkable shift for a majority of departments to require recording of one of the most opaque domains of police power unregulated by the Fourth Amendment.

B.   *Audiovisual Big Data and Pattern and Practice Detection*

The era of pervasive recording of the police—especially systematic recording of most law enforcement activities by police-worn body cameras—opens new possibilities for detecting and remedying problematic patterns and practices. The amount of audiovisual data on policing is staggering and growing, particularly as police departments deploy more body cameras.[70] By 2015, one of the major companies offering cloud-based storage of body camera data, Evidence.com, already had more than a petabyte (one million gigabytes) of audiovisual data, with the trove growing at a rate of a video upload every 2.9 seconds.[71] A petabyte of data is so massive that it could store the DNA of the entire U.S. population cloned twice, or 500 billion pages of printed text.[72]

Legal scholars often use the term big data ominously to signify a Big Brotherly tool of police and corporate power, and potential threat to civil liberties.[73] But the traditional tools and strategies of the powerful also can be wield-

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67. *See, e.g.*, United States v. Avery, 137 F.3d 343, 352 (6th Cir. 1997) (describing the unregulated nature of consensual encounters, "which may be initiated without any objective level of suspicion").

68. *Id*.

69. Janice Nadler, *No Need to Shout: Bus Sweeps and the Psychology of Coercion*, 2002 SUP. CT. REV. 153, 156 (2002) ("[T]he Court's Fourth Amendment consent jurisprudence is either based on serious errors about human behavior and judgment, or else has devolved into a legal fiction of the crudest sort—a mere device for attaining the desired legal consequence."); Margaret Raymond, *The Right to Refuse and the Obligation to Comply: Challenging the Gamesmanship Model of Criminal Procedure*, 54 BUFFALO L. REV. 1483, 1486 (2007) ("Police are free to initiate a consensual encounter with an individual for any reason or no reason, perhaps based on a whim or a "hunch" that cannot be supported by specific and articulable facts."); Daniel J. Steinbock, *The Wrong Line between Freedom and Restraint: The Unreality, Obscurity, and Incivility of the Fourth Amendment Consensual Encounter Doctrine*, 38 SAN DIEGO L. REV. 507, 509 (2001) ("Requiring no objective indication of criminality, a consensual encounter can be initiated for no reason or for any reason at all, including the kind of inchoate hunches and suspicions disallowed even for stops, the least intrusive form of seizure.").

70. *Cf.* Scott McManus, *The Hidden Challenge Behind Body Cams–Storage* GCN (May 11, 2017), https://
gcn.com/articles/2017/05/11/body-camera-storage.aspx.

71. Lucas Mearian, *As Police Move to Adopt Body Cams, Storage Costs Set to Skyrocket*, COMPUTERWORLD (Sept. 3, 2015 2:45 AM), http://www.computerworld.com/article/2979627/cloud-storage/as-police-move-to-adopt-body-cams-storage-costs-set-to-skyrocket.html.

72. Brian McKenna, *What Does a Petabyte Look Like?*, COMPUTERWEEKLY (Mar. 2013), http://www.computerweekly.com/feature/What-does-a-petabyte-look-like.

73. *E.g.*, TERENCE CRAIG & MARY E. LUDLOFF, PRIVACY AND BIG DATA: THE PLAYERS, REGULATORS AND STAKEHOLDERS 7–8 (Mike Loukides & Meghan Blanchette eds. 2011); ANDREW G. FERGUSON, THE RISE

ed to check government power rather than enlarge it.[74] The growing mass of audiovisual big data capturing law enforcement activities from diverse sources, including community member cell phone cameras and police-worn body cameras, offers the potential for technology-enhanced oversight, both internally through early intervention systems and supervisor reviews, and externally, by courts and review boards.[75]

Small mobile cameras offer a window into everyday law enforcement actions that may never reach the level of a formally filed complaint, a court case, or even a police report.[76] Stops of persons that do not lead to arrests, searches that do not uncover contraband, conversations during routine traffic stops, and numerous other activities that may be humiliating and intrusive for a person often are not captured in written records.[77] Formal complaints—a common variable used in early warning systems—miss the vast universe of encounters that may erode police-public relations because people who do not trust the police are unlikely to go to a police station to file a complaint with officers.[78] Yet cameras at the scene, whether worn by the officer or wielded by bystanders, can capture common events, such as *Terry* stops and frisks, which can exacerbate police-community tensions.[79]

At the individual level, the recording may not seem to reveal much, but analyses of numerous such encounters, in the aggregate, can be powerfully revealing. There is a tendency in criminal law and procedure toward what Andrew Crespo has termed transactional myopia.[80] Transactional myopia means the tendency to focus at the individual case level of analysis.[81] In contrast, a

OF BIG DATA POLICING 7–135 (N.Y.U. Press ed. 2017); Dana Boyd & Kate Crawford, *Critical Questions for Big Data*, 15(5) INFO., COMM. & SOC'Y 662, 662–79 (2012); Elizabeth E. Joh, *Policing by Numbers: Big Data and the Fourth Amendment*, 89 WASH. L. REV. 35, 36–38, 42–57 (2014).

74. *Cf.* Maya Wiley, *Body Cameras Help Everyone—Including the Police*, TIME (May 9, 2017), http://time.com/4771417/jordan-edwards-body-cameras-police/.

75. *Cf. id.*

76. Mary D. Fan, *Body Cameras, Big Data, and Police Accountability*, 43 L. & SOC. INQUIRY 1236 (2018).

77. *Id.*

78. Ronald Weitzer & Rod. K. Brunson, *Strategic Responses to the Police among Inner-City Youth*, 50 SOC. J. Q. 235, 248–49 (2009) (discussing resignation and alienation among survey respondents and the reasons why a majority "believed that there was little accountability" in the police department and did not file formal complaints).

79. *Cf., e.g.*, Terry v. Ohio, 392 U.S. 1, 15 n.11 (1968).
The President's Commission on Law Enforcement and Administration of Justice found that "(i)n many communities, field interrogations are a major source of friction between the police and minority groups." . . . While the frequency with which "frisking" forms a part of field interrogation practice varies tremendously with the locale, the objective of the interrogation, and the particular officer . . . it cannot help but be a severely exacerbating factor in police-community tensions. This is particularly true in situations where the "stop and frisk" of youths or minority group members is "motivated by the officers' perceived need to maintain the power image of the beat officer, an aim sometimes accomplished by humiliating anyone who attempts to undermine police control of the streets."
Id.

80. Andrew Manuel Crespo, *Systemic Facts: Toward Institutional Awareness in Criminal Courts*, 129 HARV. L. REV. 2049, 2051 (2016).

81. *See id.* at 2057 (explaining that "constitutional criminal adjudication . . . is largely transactional in nature, focusing on the 'one-off interaction typified by the singular' search, seizure or prosecution of 'a particu-

systemic-level perspective considers the larger pattern of data over time.[82] Crespo has argued that court records analyzed in the aggregate can reveal issues such as boilerplate affidavits claiming probable cause.[83] This Article argues that audiovisual data can reveal even more systemic facts about how police power is experienced on the ground, without ever making it into a courtroom.

The potential power of audiovisual data analysis is particularly great when it comes to body camera videos because the data is generated in an organized and systematic way, pursuant to a departmental recording policy.[84] A recent study applying computational linguistic techniques to the Oakland Police Department offers proof of concept.[85] The team used 183 hours of body camera footage documenting 981 traffic stops in April 2014.[86] The investigators transcribed the footage and extracted 36,738 utterances by officers during the stops.[87] In a preliminary study, the investigators had people rate the respectfulness of officer utterances from a randomly sampled subset of 414 utterances.[88] The study found a high degree of inter-rater reliability and disparities in officer respectfulness by the race of the person stopped.[89] Whereas white community members were 57% more likely to hear the most respectful utterances by officers, black motorists were 61% more likely to hear one of the least respectful utterances.[90]

In the main study, the investigators scaled up to analyze the entire larger dataset of utterances using computational linguistic models for respectful language examining features such as apologizing, expressions of gratitude, expressions of concern for safety, and softening commands.[91] The model also considered negative indicators such as ordering motorists to keep their hands on the wheel and using informal titles such as "my man."[92] The investigators found that officers were less respectful to Black motorists after controlling for officer race, infraction severity, stop location, and outcome of the stop.[93]

As the investigators aptly concluded, the study "demonstrates the power of body camera footage as an important source of data, not just as evidence," addressing the limitations of methods that rely on memory, human observation,

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lar suspect for a specific crime'" (emphasis omitted) (quoting Daphna Renan, *The Fourth Amendment as Administrative Governance*, 68 STAN. L. REV. 1039, 1039 (2016)).

82.   *See id.* at 2066–68 (describing systemic facts as "information with respect to which a given decision-making institution enjoys deep institutional familiarity, privileged (or perhaps even exclusive) access, or both").

83.   *Id.* at 2065–66.

84.   *See* Elizabeth FitzGerald, *Analysing Video and Audio Data: Existing Approaches and New Innovations,* OPEN U., http://oro.open.ac.uk/33506/1/FitzGerald-SurfaceLearning2012.pdf (last visited Oct. 7, 2018).

85.   Rob Voigt et al., *Language From Police Body Camera Footage Shows Racial Disparities in Officer Respect*, 114(25) PROC. NAT'L ACAD. OF SCI. 6521, 6521–26 (2017).

86.   *Id.* at 6524.

87.   *Id.* at 6523.

88.   *Id.* at 6522.

89.   *Id.*

90.   *Id.* at 6524.

91.   *Id.* at 6523.

92.   *Id.*

93.   *Id.* at 6521.

and records.[94] The significance of word selection in an individual case may not be apparent just viewing the case in isolation. Analyses across a large dataset, however, can reveal potential patterns that contribute to elevated risk and stress in police encounters with minority individuals, thereby better informing strategies to address the root cause of problems before they escalate.

III. POLICIES ON USING BODY CAMERA DATA TO MONITOR AND EVALUATE OFFICERS

Audiovisual big data analytics has great potential to better detect and address problems that raise the risk of escalation to violence and other problematic practices—if policies permit. As discussed in Part I, a major source of systematically collected audiovisual data is body camera videos. Because legislatures and courts often trail behind technological change in policing, much of the detailed policies governing the deployment and use of police-worn body cameras are contained in police departmental policies.[95] Authorizations to use such data for officer evaluation and monitoring—as well as limitations on use—also are contained in these policies.[96] Based on the collection and coding of 213 police-worn body camera policies, this Section presents findings on silences and splits in policy approaches to the use of body camera video for officer monitoring and evaluation.

A.   Methods

The author, and a research team composed of research assistants and law librarians, conducted online searches for departmental body camera policies from repositories such as the Bureau of Justice Assistance toolkit, supplemented by direct contact with police departments and public records requests. The collection process yielded a set of 213 body camera policies from police agencies around the nation.[97] While my prior work focused on policies available from the 100 largest metropolitan areas in the United States,[98] this study expanded the scope to a much larger dataset to get a wider picture of policy positions from jurisdictions varying widely in size and geography.

The resulting sample had great diversity of region and city size. Major jurisdictions like New York City, with 8.5 million people, were included.[99] But small jurisdictions such as Kotzbue, Alaska, population 3,245, also were ana-

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94.   *Id.* at 6524.
95.   Fan, *Body Cameras, Big Data, and Police Accountability*, *supra* note 76.
96.   *Id.* at 14.
97.   The author and research team have no external sources of funding or conflicts to report.
98.   Mary D. Fan, *Privacy, Public Disclosure, Police Body Cameras: Policy Splits*, 68 ALA. L. REV. 395, 422–429 (2016) [hereinafter Fan, *Privacy*]; Fan, *Justice Visualized*, *supra* note 31, at 929–932.
99.   Fan, *Privacy*, *supra* note 98, at 424; Fan, *Justice Visualized*, *supra* note 31, at 903.

lyzed.[100] Appendix A lists the 213 jurisdictions for which we collected and coded departmental body camera policies, ordered by state.

The 213 policies constituted a sample set more than nine times larger than the collection of twenty-three body camera policies mapped by the Brennan Center.[101] It includes thirty-eight major cities not covered in that set, such as Atlanta, Boston, Cleveland, Houston, Miami, Philadelphia, San Francisco, and St. Louis. The study also codes substantive positions beyond a simple yes or no—for example, capturing combinations of positions, discretionary versus mandatory language and other features. This project thus builds upon and advances prior important work.[102]

The codebook used to systematize and standardize policy coding was generated through an iterative process based on an evaluation of the provisions.[103] The results reported in Part II regarding law enforcement events that may or must be recorded are based on a cluster of twelve variables that summarize recording provisions by type of event. The results reported in Section II.B below are based on the coding of variables addressing whether body camera videos can be used to monitor officers, whether there may be random review or audits of video footage, and whether supervisors are able to access to the footage.

B. Results

TABLE 1: POLICY POSITIONS ON USING BODY CAMERA VIDEOS TO MONITOR
OFFICERS, 213 DEPARTMENTAL BODY CAMERA POLICIES

Policy Position	Number of Agencies	Proportion of Sample
The policy explicitly states that body camera recordings cannot be used to monitor officers and/or it is not the policy of the department to use recordings to monitor officers absent good cause.	23	11%
Recordings may be used generally to assess officer performance.	47	22%
Recordings may be used to investigate a specific act of officer conduct.	10	5%
Recordings may be used to assess officer performance generally and to investigate specific	27	13%

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100.   For population size data, see *Population, Housing Units, Area, and Density: 2010—United States— Places by State; and for Puerto Rico*, U.S. CENSUS BUREAU, https://factfinder.census.gov/faces/nav/jsf/ pages/community_facts.xhtml (last visited Oct. 7, 2018).

101.   *Police Body Camera Policies: Accountability*, BRENNAN CTR. FOR JUST. (Aug. 3, 2016), http://www. brennancenter.org/analysis/police-body-camera-policies-accountability.

102.   *Id.*

103.   For background on policy coding, see, e.g., Charles Tremper et al., *Measuring Law for Evaluation Research*, 34 EVALUATION REV. 242, 252–55 (2010).

acts.		
The policy does not state or specify whether recordings may be used to monitor officer behavior.	106	50%

TABLE 2: WHETHER RANDOM REVIEW OR AUDITS OF BODY CAMERA VIDEOS
ARE AUTHORIZED, 213 POLICE DEPARTMENT BODY CAMERA POLICIES*

Policy Position	Number of Agencies	Proportion of Sample
The policy explicitly prohibits random review of videos and/or audits of videos.	10	5%
The policy explicitly prohibits random review of videos to monitor officer performance BUT allows review to ensure compliance with recording requirements.	2	0.9%
The policy permits but does not require random review of videos and/or audits of videos to ensure compliance with recording requirements.	9	4%
The policy requires random review of videos and/or audits of videos to ensure compliance with recording requirements (mandatory language).	49	23%
The policy permits random review of video generally with no distinction on whether it is to monitor officer performance or ensure recording requirements.	30	14%
The policy contains no provisions regarding random review and/or audits of videos.	113	53%

TABLE 3: SUPERVISOR ACCESS TO BODY CAMERA FOOTAGE FOR
EVALUATION, 213 POLICE DEPARTMENT BODY CAMERA POLICIES*

Policy Position	Number of Agencies	Proportion of Sample
Supervisors may not use recordings for evaluation unless there is an adverse event trigger (e.g., citizen complaint, good cause)	42	20%
An adverse event and higher authorization are required for supervisor evaluation	1	0.5%
Supervisors are prohibited from using recordings to search for minor violations	7	3%
Supervisor may view or audit recordings generally (discretionary)	88	41%
Supervisors are required to regularly view or audit a sample of recordings for compliance	28	13%
Audits for policy compliance authorized	20	9%
No provision governing supervisor review of recordings	29	14%

As Table 1 reports, half of body camera policies in this sample had no provision limiting or authorizing the use of body camera videos to monitor officers. Of the remaining jurisdictions with provisions on the use of body camera to monitor officers, 74 (69% of the remaining jurisdictions with policies on the issue; or 35% of the overall sample) provide that recordings may generally be used to assess officer performance. In contrast, 23 jurisdictions (21% of the remaining jurisdictions with policies on the issue, or 11% of the overall sample) explicitly prohibit the use of body camera recordings to monitor officers.

Nearly half of the policies also had provisions regarding whether random review or audits of body camera videos are permitted. As Table 2 shows, of the 100 policies with such provisions, nearly half (49 jurisdictions) require random review or audits of body camera video to ensure that officers are complying with recording policies. Of greater import for the issue of using body camera video in early intervention systems, are the provisions regarding random review or audits for officer monitoring. Of the 100 policies with provisions on the issue, 30% permit random review of video generally, rather than limited to ensuring compliance with recording requirements. However, 12 jurisdictions (12% of the jurisdictions with policies on the issue) prohibit random review or audits of video for general performance evaluation.

Body camera policies also frequently had provisions governing supervisor access to body camera footage for officer evaluation. Only 14% of the sample was silent on supervisor access. The most prevalent approach, in 41% of the sample, was to give supervisors the discretion to view or audit recordings generally. Some jurisdictions (13%) go even farther and require supervisors to regularly view or audit a sample of their officers' recordings to ensure compliance with recording policies. However, a sizeable minority—42 jurisdictions (20%)—prohibit supervisors from using recordings for evaluation absent an adverse event. Seven jurisdictions also have express prohibitions against supervisors using recordings to search for minor violations by officers.

The results for this much broader sample, including numerous smaller jurisdictions, are intriguingly different in some respects compared to my prior analyses focused on a smaller set of municipal police departments serving one of the largest 100 cities in America. One major difference is the greater prevalence of policies that are silent on issues addressed by larger jurisdictions, which tend to have more detailed policies. Another intriguing difference is that the subset of big-city jurisdictions were more likely to have protections for officers against the use of body camera data in officer evaluation, monitoring, and discipline.[104] In contrast, the broader landscape of law enforcement agencies is more open to incorporating body camera data in officer monitoring and evaluation and using the data in random reviews and audits.[105] This may be due to the

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104. Fan, *Privacy, supra* note 98.
105. *Id.*

stronger police unions in larger cities being able to secure more protections for line-level officers.[106]

IV. BUILDING SMARTER EARLY INTERVENTION SYSTEMS USING AUDIOVISUAL DATA

How vigorously—or whether at all—U.S. Department of Justice attorneys pursue structural reform litigation and civil rights investigations of police departments can wax and wane with Presidential administrations.[107] The current regime's Justice Department is reviewing potential rollbacks in enforcement under § 14141 power.[108] Moreover, even with the will to enforce, the resource-intensive nature of investigations and structural reform litigation limits cases to just a handful each year—on average three investigations annually between 1994 and 2013.[109] In a nation with approximately 18,000 law enforcement agencies,[110] being investigated by the Justice Department can seem like being struck by lightning—an unfortunate low-probability, high-salience event.

In contrast, early intervention systems—a legacy of structural reform litigation cases—have wider reach and the potential for more lasting oversight.[111] Present in about 40% of agencies surveyed serving populations over 50,000, these automated systems have the potential for greater day-to-day impact in more jurisdictions, particularly in an era of cutbacks in federal intervention in state and local police departments.[112] Yet these early intervention systems are only as good as the data and algorithms that automate them.

There are two major limitations with the current data and thresholds for intervention that innovations with audiovisual data can help address. First, while jurisdictions differ in the indicators their early intervention systems assess, there is a general tendency to focus on reported or formal events captured in records, such as filed complaints, use of force incidents or high-speed pursuit incidents reported by officers, and internal investigations.[113] Second, the cur-

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106.   For a discussion of the influence of police unions in shaping departmental policies, see Mary D. Fan, *Missing Police Body Camera Videos: Remedies, Evidentiary Fairness, and Automatic Activation*, 52 GA. L. REV. 57, 83–87 (2017); Stephen Rushin, *Police Union Contracts*, 66 DUKE L.J. 1191, 1201–13, 1222–38 (2017).

107.   RUSHIN, *supra* note 5, at 9–18.

108.   Memorandum from Attorney General Jeffrey B. Sessions on Supporting Federal, State, Local, and Tribal Law Enforcement to Heads of Department Components and United States Attorneys (Mar. 31, 2017), http://www.documentcloud.org/documents/3535155-Memorandum-from-Attorney-General-Jeff-Sessions.html; Stephen Rushin, *Police Reform During the Trump Administration*, 2017 U. ILL. L. REV. ONLINE: TRUMP 100 DAYS (Apr. 29, 2017), http://illinoislawreview.org/symposium/first-100-days/police-reform-during-the-trump-administration/.

109.   Jason Mazzone & Stephen Rushin, *From Selma to Ferguson: The Voting Rights Act as a Blueprint for Police Reform*, 105 CAL. L. REV. 263, 280–81 (2017).

110.   BRIAN A. REAVES, U.S. DEP'T OF JUSTICE, CENSUS OF STATE AND LOCAL LAW ENFORCEMENT AGENCIES, 2008 2 (2011), http://www.bjs.gov/content/pub/pdf/csllea08.pdf.

111.   See discussion and sources cited, *supra*, at notes 13–28.

112.   *Id.*

113.   WORDEN, MCLEAN, PAOLINE & KRUPA, *supra* note 22, at 6; WALKER, ALPERT & KENNEY, *supra* note 22, at 2.

rent systems use simple intuition-based thresholds such as three complaints in twelve months, or a combination of such events, to trigger intervention.[114]

A. Rich Data That Capture More than Reported Events and Reduce Paperwork Burdens on Officers

As to the first limitation, the reliance on reported events has at least two major downsides. First, reported events miss much of the everyday action in policing that impacts the experience and trust of community members but are not documented.[115] Absent the coercion of a court order or the rare mandate of a legislature, many jurisdictions do not collect data on stops that yield no arrest, frisks that yield no contraband, or the demographics of persons investigated for minor infractions.[116] There is simply no way to detect issues such as ruder language or tones of voice based just on what is captured in police department records and events as documented by officers.[117]

Second, requiring more comprehensive documentation of a wider range of events to provide better data is cumbersome, costly, and distracting for officers in the field.[118] Officers have legitimate concerns regarding data collection requirements.[119] First, data collection by officers from persons stopped may intensify tensions in an encounter, particularly with minority group members.[120] Imagine after receiving your ticket in a traffic stop also having to endure the indignity of answering further questions like identifying your race. Second, officers may object to being required to collect data that is perceived to be just ammunition to portray them negatively in biased studies.[121] Third, the job of a law enforcement officer is far different than that of a social scientist or researcher, and an officer must focus on the exigencies of the field.[122]

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114. Carton, *supra* note 27, at 1–2.

115. *Id.* at 5.

116. *See, e.g.*, Riham Feshir, *The Trouble with Police Traffic Stop Data*, MPR NEWS (Nov. 2, 2016), https://www.mprnews.org/story/2016/11/02/police-traffic-stop-records-data-challenges (noting problems with inconsistent data gathering, failure to collect data, lack of a comparative baseline data, and other information gaps even after controversies forced a Minnesota municipal police department to turn over traffic stop data); David Rudovsky & David A. Harris, Terry-Stop-and-Frisks: The Troubling Use of Common Sense in a World of Empirical Data, Penn Law Public Law and Legal Theory Research Paper No. 18–10, at 26 (2018) (unpublished manuscript) (on file with the author) (noting that "only a few departments collect and maintain this [stop-and-frisk] data in a comprehensive and usable form . . . [and] [t]he few police departments that have collected data—most prominently, New York City and Philadelphia—have done so as a result of litigation").

117. Rob Voigt et al., *Language from Police Body Camera Footage*, 114 PROC. NAT'L ACAD. SCI. 6521, 6524 (Mar. 26, 2017), http://www.pnas.org/content/pnas/early/2017/05/30/1702413114.full.pdf.

118. LORIE A. FRIDELL, UNDERSTANDING RACE DATA FROM VEHICLE STOPS: A STAKEHOLDER'S GUIDE 29 (Police Executive Research Forum 2005), https://cops.usdoj.gov/pdf/publications/understanding_Race _Data.pdf.

119. *Id.* at 22.

120. *Id.*

121. *Id.* at 23.

122. *See, e.g.*, Atwater v. City of Lago Vista, 532 U.S. 318, 347 (2001) (noting that officers must make judgment calls "on the spur (and in the heat) of the moment").

Audiovisual data can help address the major limitations of reliance on re-
ported and recorded events.[123] Police-worn body cameras capture far more de-
tail and data than can be recorded in a police report, citation, or incident report-
ing form.[124] This yields a far richer dataset for experts to analyze than reported
incidents. Moreover, technologists can create programs that auto-populate
forms with metadata from videos, reducing the paperwork burden on officers
with filing reports and providing other documentation.[125] These programs can
advance in sophistication if there is market demand from police departments, to
detect and extract other forms of relevant data.[126]

Most police departments are in the early days of experiencing and imagin-
ing the possible uses of body cameras data beyond gathering evidence for a
prosecution or to document potentially controversial incidents.[127] As discussed
in Part II, there are widespread silences and some emerging splits regarding
whether body camera video can be used for officer monitoring and evalua-
tion.[128] The majority of the 213 policies analyzed do not have specific prohibi-
tions, however. This leaves open the possibility of innovation using body cam-
era data in early intervention systems.

Beyond body cameras, recordings by community members also can help
supplement the gross under-inclusiveness of just relying on formally filed com-
plaints.[129] Residents in communities where mistrust of police is strong are un-
likely to go to the same department to file a report against a brother or sister of-
ficer.[130] Yet increasingly, community members are aiming their cameras at
police in protest and creating videos.[131] If departments provide community
members the opportunity to upload their protest videos, these can be an addi-
tional important source of information that could be used to detect problems.

B.   Algorithms That Uncover Root and Systemic Risk Factors to Improve
Harm Prevention

A fundamental question that an early intervention system is trying to an-
swer is predictive: from the set of all active officers, which ones are likely to
have an adverse event, as defined by the department and community?[132] The

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123.   Fan, *Justice Visualized*, *supra* note 31, at 956.

124.   *Id.* at 909–12.

125.   Shibani Mahtani & Zusha Elinson, *Artificial Intelligence Could Soon Enhance Real-Time Police
Surveillance*, WSJ (Apr. 3, 2018) https://www.wsj.com/articles/artificial-intelligence-could-soon-enhance-real-
time
-police-surveillance-1522761813.

126.   *Id.*

127.   *Id.*

128.   *See supra* Part II.

129.   Fan, *Justice Visualized*, *supra* note 31, at 898.

130.   Ronald Weitzer & Rod K. Brunson, *Strategic Responses to the Police Among Inner-City Youth*, 50
SOCIOLOGICAL QUARTERLY 235, 248–49 (2009).

131.   Fan, *Democratizing Proof*, *supra* note 33, at 1641; Jocelyn Simonson, *Copwatching*, 104 CAL. L.
REV. 391, 393 (2016).

132.   Carton, *supra* note 27, at 1–2.

simplistic thresholds set by expert intuition can be unfair to officers who work tougher areas and shifts.[133] An officer may be more likely to cross the threshold and receive a red flag for having a certain number of uses of force or accidents within the time period because she or he works a midnight shift in an area with a higher incidence of violent crime.[134] Yet some early intervention systems have the same threshold for the officer working the tougher midnight shift in a high-crime area as the officer working the still early morning hours in a business district.[135] Others may have a somewhat more sophisticated model that accounts for the area and time that an officer patrols but leave out other important factors.[136]

Another problem with simplistic thresholds is that they are easily gamed.[137] If one knows the number of events and time period that sets off a red flag, one can simply avoid taking certain actions, or avoid reporting certain events.[138] The simple thresholds, combined with a system dependent on reported events, creates a perverse incentive to distort the data and not report events, or to be less proactive in policing.[139] The honest officer, and the officer who takes on the tougher calls, is perversely at risk of being flagged because of these desirable qualities.

Machine learning models present a better approach to address these challenges.[140] A core discipline for artificial intelligence and data science, machine learning powers systems that improve automatically through experience.[141] Many aspects of modern life that we now take for granted, such as tailored web searches, content filtering, and product recommendations based on our search history, are possible because of machine learning.[142] Algorithms "learn" to deliver better tailored and more accurate results by "training" on large datasets to hone predictive capabilities.[143] Weights for an array of predictive factors in the algorithm adjust based on hits and misses in predictions.[144]

The richer and larger set of audiovisual data provides powerful material to "train" smarter algorithms to capture underlying contextual and behavioral stressors that elevate the risk of harm.[145] Moreover, data processing techniques, such as artificial neural networks, can help detect, learn, and predict complex

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133. *Id*. at 2.
134. *Id*.
135. *Id*.
136. *Id*.
137. *Id*. at 3.
138. *Id*.
139. *Id*.
140. *Id*.
141. M. I. Jordan & T. M. Mitchell, *Machine Learning: Trends, Perspectives, and Prospects*, 349 SCIENCE 255, 255 (2015).
142. Yann LeCun, Yoshua Bengio & Geoffrey Hinton, *Deep Learning*, 521 NATURE 435, 436–37 (2015).
143. Jordan & Mitchell, *supra* note 141, at 256; LeCun et al., *supra* note 142, at 436–37.
144. LeCun et al., *supra* note 142, at 437–38.
145. *Id*. at 436–37.

relationships between factors that can elevate risk of adverse outcomes.[146] These techniques would advance risk detection and harm prevention far beyond simplistic thresholds set by intuition, instead detecting complex and perhaps hidden relationships that elevate the probability of an adverse outcome.

The risk of tragedy may be elevated, even among the best-intentioned officers, because of contextual factors such as dealing with high-stress situations like battered children; domestic violence; suicide threats in a prior call; time of day; time on shift; and the nature of the next call for service.[147] Identifying such contextual risks can help departments better deploy their most important human assets to protect the public.[148] This further advances the mission of early intervention systems, progressing from the original orientation of detecting individual outlier or "problem" officers, to harm prevention for both officers and the public.[149]

V.   CONCLUSION

One of the lasting legacies of federal investigations of police departments is the spread of early intervention systems. These systems reach a much wider swathe of jurisdictions than federal investigators can, and last through expired consent decrees and the waning of federal oversight due to the vagaries of politics. Despite about two decades of use, these systems remain in their infancy in terms of development. The systems still rely largely on reported information and simple intuition-based thresholds for red flags.

The revolution in recording the police has the potential to transform early intervention systems and enhance their harm-prevention power. Police-worn body cameras capturing more law enforcement activity than ever before, and community member recordings on cell phone cameras, provide the opportunity to enhance the harm detection and prevention power of early intervention systems. The array of policies governing the most systematically collected and major source of audiovisual data on law enforcement activity, police-worn body cameras, vary, but generally do not foreclose the possibility of such innovative internal use of data. Much work remains to be done to realize this potential, in partnership with technologists versed in disciplines such as machine learning and approaches such as artificial neural networks. The goal of this Article is to propose a place for audiovisual data in early intervention systems to spur innovation that better protects the public and police officers from harm.

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146.   *See, e.g.*, M. De Beule et al., *Artificial Neural Networks and Risk Stratification: A Promising Combination*, 46 MATHEMATICAL & COMPUTER MODELLING 88, 89 (2007) (explaining artificial neural networks).

147.   *See, e.g.*, John M. Violanti, Desta Fekedulegn, Tara A. Hartley, Luenda E. Charles, Michael E. Andrew, Claudia C. Ma, and Cecil M. Burchfiel, *Highest Rated and Most Frequent Stressors among Police Officers: Gender Differences*, 41(4) AM. J. CRIM. JUST. 645, 652–54 (2016) (reporting findings on the highest-stress situations for officers based on survey).

148.   WALKER, ALPERT & KENNEY, *supra* note 5, at 1.

149.   *Id.*; Harris, *supra* note 12, at 209.

APPENDIX A

BODY CAMERA POLICIES WERE COLLECTED FROM THE JURISDICTIONS BELOW

Alabama
Argo
Calera

Alaska
Kotzebue

Arizona
Lake Havasu
Mesa
Multi-departmental
policy
Oro Valley
Peoria
Phoenix
Surprise
Tempe
Tucson
Yavapai
Yuma

Arkansas
Fort Smith
Pine Bluff

California
Anaheim
Chico
Chula Vista
Escondido
Fresno
Hayward
Hermosa Beach
Los Angeles (police
department)
Los Angeles (sheriff's
department)
Menlo Park
Merced
Modesto

California, continued
Palo Alto
Rialto
Richmond
Riverside County
San Diego
(Police Department)
San Diego
(Sherriff's Department)
San Francisco
Santa Clara
Santa Rosa
Union City
Vallejo

Colorado
Commerce City
Denver
Fort Collins
Lone Tree
Parker
Pueblo

Connecticut
East Haven
Hamden
New Haven
Police Training Center
Redding
Westport

Delaware
New Castle

Florida
Jacksonville
Marianna
Miami-Dade
Ocala
Okaloosa
Orlando
Owasso
Sarasota
Tampa
West Palm Beach

Georgia
Athens-Clarke
Atlanta
Centerville
Richmond County
Savannah Chatham
Smuter County
Valdosta

Hawaii
Honolulu
Kauai

Idaho
Canyon County
City of Post Falls
Coer D'Alene

Illinois
Chicago
Evanston

Indiana
Evansville
Greenwood
McCall
Tipton

Kansas
Lenexa
Sedgwick City
Wichita

Kentucky
Hopkinsville
Lexington
Louisville
Russellville
Scottsville

Louisiana
Baton Rouge
New Orleans

Maryland
Frederick
Laurel
Montgomery County
Prince Georges County

Massachusetts
Boston

Michigan
Chocolay
Grand Rapids
Clare
East Lansing
Lansing
Marquette

Minnesota
Burnsville
Duluth
Minneapolis
Olmstead
Rochester
Roseville
Saint Paul
Spring Lake
St. Anthony

Mississippi
Columbus
St. Louis
Columbia
Ferguson
St. Charles
Wentzville

Montana
Missoula

Nebraska
Omaha

Nevada
Las Vegas

New Hampshire
Gilford
Lincoln
Weare

New Jersey
Camden

New Mexico
Grants
Taos

New York
Albany
Niagra Falls
New York City
Rochester
Tompkins

North Carolina
Albemarle
Asheville
Carrboro
Charlotte-Mecklenburg
Davidson
Greensboro
Wilmington
Winston-Salem

North Dakota
Devil's Lake
Grand Forks
Minot

Ohio
Cleveland

Oklahoma
Cherokee Nation
Oklahoma City
Owasso
Tulsa

Oregon
Beaverton
Clackamas County
Eugene
Lincoln County
Medford
Newport
Portland

Pennsylvania
Philadelphia
Pittsburgh

Rhode Island
Providence

South Carolina
Charleston
Greenville
Greer
Aberdeen
Waterton

Tennessee
Alcoa
Cleveland
Memphis
Sullivan County

Texas
Aransas
Austin
De Soto
Dallas
Fort Worth
Houston
Rockport
San Antonio
Tyler

Utah
American Fork
Layton
Logan
Salt Lake City
West Jordan
West Valley

Vermont
Burlington

Virginia
Arlington County
Chesapeake
Fredericksburg
Gordonsville
Harrisonburg
Henrico
Norfolk
Virginia Beach
Warrenton
Westmoreland

Washington
Airway Heights
Bainbridge Island
Bellingham
Lake Forest Park
Liberty Lake
Poulsbo
Pullman
Seattle
Spokane

West Virginia
Morgantown

Wisconsin
Eau Claire
Fox Valley
La Crosse
Madison
Milwaukee
New London
Whitewater

Wyoming
Mills