

Crime Mapping and the Fourth Amendment: Redrawing “High-Crime Areas”

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Crime-mapping technology has the potential to reshape Fourth Amendment protections in designated “high-crime areas.” In Illinois v. Wardlow the Supreme Court held that presence in a high-crime area is one of only two factors necessary for creating reasonable suspicion to stop an individual. Since Wardlow, thousands of federal and state cases have used the term “high-crime area,” yet only a handful of courts have considered how to define it. New crime-mapping technologies can now address that definitional problem. Crime-mapping technologies can collect and analyze crime statistics so that police districts can produce almost perfect information about the level, rate, and geographic location of crimes in any given area. The result: police can define official “high-crime areas” for Fourth Amendment purposes.

Crime-mapping technology raises significant Fourth Amendment questions. Does crime-mapping technology alter the existing Fourth Amendment reasonable suspicion analysis? Will this technology create an implicit high-crime area exception to the Fourth Amendment? How will this technology effect police-citizen encounters and liberty interests in officially designated high-crime areas? This Article addresses these questions in an effort to reevaluate and rethink the concept of the high-crime area as understood by the courts. Tracing the history and practice of crime-mapping technology and its effect on Fourth Amendment doctrine, this Article proposes a new framework and redefinition of the term that is both informed by existing crime-mapping technologies and consistent with Fourth Amendment principles.

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INTRODUCTION

Virtually everyone in one section of Brooklyn’s Brownsville neighborhood has either been stopped, questioned and frisked by the police, or they know someone who has . . . [T]he overwhelming majority of people stopped and frisked by the NYPD have committed no crime. The statistics . . . show that [an eight-block area] had 52,000 stops between January 2006 and March 2010. That averages nearly one stop a year for every person who lives in the . . . area.¹

On a map of a city, an irregular rectangle is marked off in gray. It is a “high-crime area,” a “hotspot” of crime. The chief of police has duly designated the north, south, east, and west boundaries. It is official, documented, and legal. The shaded area means there existed a statistically disproportionate amount of crime during a given time period. Depending on the jurisdiction, this map may result in an increased police presence or targeted police activities in an area. As a strictly administrative matter, a “high-crime area”² designation may be a good example of data-driven policing—responding to crime-ridden areas with increased police presence. As a legal matter, however, this designation may have Fourth Amendment implications.³ More fundamentally, for the thousands of citizens living inside this shaded area, this official designation has the potential to alter the liberty protections they enjoy: because these people live in a high-crime area, they may receive less protection under the Fourth Amendment and it may be more reasonable for police to stop or search them on suspicion of criminal activity.⁴

This Article focuses on crime-mapping⁵ technology, including Geographic Information Systems (“GIS”) and how this developing technology has the potential to reshape Fourth Amendment protections in designated high-crime areas. In the past few years, the ability of police administrators to identify and officially label high-crime areas has rapidly expanded.⁶ GIS crime-mapping technology has simplified the collection

1. James Ford, *Nearly Every Resident in Brooklyn Neighborhood Stopped, Frisked*, WPIX NEWS 11, July 12, 2010, <http://www.wpix.com/news/wpix-stop-and-frisk-brownsville,0,89085,print.story>.

2. *Illinois v. Wardlow*, 528 U.S. 119, 124 (2000). The term “high-crime area” will be defined and discussed throughout this Article.

3. The Fourth Amendment to the United States Constitution provides that the people have a right “to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures.” U.S. CONST. amend. IV.

4. Adam Carlis, *The Illegality of Vertical Patrols*, 109 COLUM. L. REV. 2002, 2009 (2009) (“[S]topping and frisking individuals in a poor community is significantly easier than stopping and frisking individuals on the ‘right’ side of town. As a result, those living in ‘high crime areas’ receive less robust protection from the Fourth Amendment than those in areas with lower crime rates.”).

5. The term “crime mapping” is used as shorthand for the entire GIS technology spectrum, which includes data collection, analysis, and dissemination of crime data in all forms—maps and otherwise. GIS technology involves computer based systems to record and analyze crime patterns. *See infra* Part II.

6. *See* DEREK J. PAULSEN & MATTHEW B. ROBINSON, CRIME MAPPING AND SPATIAL ASPECTS OF CRIME 154 (2d ed. 2009).

and analysis of crime statistics. Sophisticated computer programs, databases, and algorithms have made it easier empirically to designate certain areas as having a disproportionately higher level of crime.⁷

Simply stated, these GIS crime-mapping technologies can produce almost perfect⁸ information about the frequency and geographic location of crimes in any given area.⁹ The crime data can be broken down and analyzed by location, crime, and time period. Some jurisdictions have almost real-time data collection and daily reports of problematic areas to officers in the field.¹⁰ There is no longer a statistical question about which areas, in fact, have higher levels of crime.¹¹ Maps can be created detailing the last twenty auto thefts in a given neighborhood, the last three months of drug arrests within a city, or the locations of all of the homicides committed in a given year. Typically, the data collection, storage, and analysis are done by police administrators to determine staffing needs or allocate resources.¹² However, these technologies can now be used officially to label areas as having an empirically higher level of crime.¹³

While these technologies serve as effective policing tools, they also present unexamined constitutional questions. Under existing Supreme Court precedent, *Illinois v. Wardlow*,¹⁴ the fact that an area is designated a high-crime area has Fourth Amendment implications.¹⁵ Such a finding

7. See generally KEITH HARRIES, MAPPING CRIME: PRINCIPLE AND PRACTICE 92 (1999); PAULSEN & ROBINSON, *supra* note 6, at 154; LUC ANSELIN et al., *Spatial Analyses of Crime*, in 4 CRIMINAL JUSTICE 2000 at 213, 215 (David Duffee ed., 2000); see also *infra* Part II.

8. It is important not to overstate the accuracy of existing data. While the technology exists to have complete and thorough data of crime patterns, there also are limitations in the collection and analysis of the data. Importantly, the positional accuracy of the crime location data available is limited by the technology in use. Interview with Dr. Timothy Hart, Assistant Professor, Univ. of Nev., Las Vegas (Jan. 2011).

9. See *infra* Part II.

10. 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, 172 (2007); John Douglass, *Tactical Deployment: The Next Great Shift in Law Enforcement?*, GEOGRAPHY & PUB. SAFETY, Jan. 2009, at 6, 7.

11. In large measure, crime-mapping technology focuses only on "street crime" as opposed to corporate crime, cyber crime, identity theft, or fraud. This focus on street crime in combination with a focus on crime mapping can distort the understanding of overall crime patterns in a jurisdiction. See JOHN MARKOVIC & CHRISTOPHER STONE, CRIME MAPPING AND THE POLICING OF DEMOCRATIC SOCIETIES 2 (2002) ("The fact that unreported crimes cannot be mapped influences which types of crime police and researchers try to map. Categories of crime that are reported to the police with some regularity, such as homicide and auto theft, are more frequently mapped than categories that are rarely reported, such as drug sales and simple assault.").

12. Susan W. Brenner, *Toward a Criminal Law for Cyberspace: Distributed Security*, 10 B.U. J. SCI. & TECH. L. 1, 73 (2004) ("Crime'-location patterns are also used to allocate resources; they let law enforcement agencies allocate officers to geographical areas where certain types of 'crimes,' at least, are committed with the greatest frequency.").

13. See *infra* Part IV.

14. 528 U.S. 119 (2000).

15. See *Pennsylvania v. Dunlap*, 129 S. Ct. 448, 448 (2008) (Roberts, C.J. and Kennedy, J., dissenting); *Brown v. Texas*, 443 U.S. 47, 49 (1979); *Adams v. Williams*, 407 U.S. 143, 144 (1972).

in a suppression hearing can affect a court’s determination about whether police officers had “reasonable suspicion” to stop an individual suspected of a crime.¹⁶ After *Wardlow*, the fact that the stop occurred in a “‘high crime area’ [is] among the relevant contextual considerations in a *Terry* [v. *Ohio*] analysis.”¹⁷ The result in *Wardlow* was a finding of reasonable suspicion based on the “totality of circumstances” of only two factors—a high-crime area plus an unprovoked flight from police.¹⁸ In thousands¹⁹ of post-*Wardlow* cases, the designation of an area as a high-crime area has had not only constitutional effects on the liberty interests of individuals in those areas, but also practical effects on courts analyzing the reasonableness of a Fourth Amendment stop.²⁰

What a “high-crime area” is, however, has not been defined by courts, legislatures, or police administrators in any consistent fashion.²¹ In contested Fourth Amendment hearings, determinations are made on a case-by-case basis, with differing levels of proof, conflicting definitions, and contradictory outcomes.²² Much of the reason for this divergence results from the long-standing difficulty of collecting and analyzing crime statistics to make them useful for court consideration. This reality has been changed by the advent of new crime-mapping technologies.

Two questions frame this Article. First, how does GIS crime-mapping technology alter Fourth Amendment reasonable suspicion analysis? Or

16. See, e.g., Lenese C. Herbert, *Can't You See What I'm Saying? Making Expressive Conduct a Crime in High-Crime Areas*, 9 GEO. J. ON POVERTY L. & POL'Y 135, 135 (2002); Brian D. Walsh, *Illinois v. Wardlow: High-Crime Areas, Flight, and the Fourth Amendment*, 54 ARK. L. REV. 879, 879–80 (2002); Debra Meek Nelson, Comment, *Illinois v. Wardlow: A Single Factor Totality*, 2001 UTAH L. REV. 509, 511.

17. *Wardlaw*, 528 U.S. at 124 (citing *Adams*, 407 U.S. at 144, 147–48; *Terry v. Ohio*, 392 U.S. 1 (1968)).

18. *Id.* (“In this case, moreover, it was not merely respondent’s presence in an area of heavy narcotics trafficking that aroused the officers’ suspicion, but his unprovoked flight upon noticing the police. Our cases have also recognized that nervous, evasive behavior is a pertinent factor in determining reasonable suspicion.”).

19. In the years since *Wardlow* was decided, there have been over one thousand federal and state cases citing the term “high-crime area” in reference to a finding of reasonable suspicion. This number comes from the Author’s search of Westlaw and Lexis and includes unpublished but reported opinions.

20. See *infra* Part III; see also Margaret Raymond, *Down on the Corner, Out in the Street: Considering the Character of the Neighborhood in Evaluating Reasonable Suspicion*, 60 OHIO ST. L.J. 99, 100 (1999).

21. Carlis, *supra* note 4, at 2010 (“Even though finding an area to be ‘high crime’ greatly reduces Fourth Amendment protections, the Supreme Court has yet to articulate what constitutes such an area and exactly how it affects the determination of whether a police stop comports with the Fourth Amendment. This lack of guidance means that there is no agreement among either state or lower federal courts as to either what constitutes a high crime area or what the effects of such a determination should be.”).

22. See Andrew Guthrie Ferguson & Damien Bernache, *The “High-Crime Area” Question: Requiring Verifiable and Quantifiable Evidence for Fourth Amendment Reasonable Suspicion Analysis*, 57 AM. U. L. REV. 1587, 1588–89 (2008).

more pointedly, will application of the technology within the existing legal doctrine create an implicit “high-crime area exception” to the Fourth Amendment? Second, how will this technology alter police-citizen encounters and liberty interests in officially designated high-crime areas? These framing questions lead to a reevaluation of the “high-crime area” terminology as understood by the courts. This Article proposes a redefinition of the term that builds on and is informed by existing crime-mapping technologies.

Part I of this Article details the history and development of GIS crime-mapping analysis.²³ Part II provides a brief overview of the technical requirements of GIS and explains how the technology works in practice, using three real-world examples. Part III examines how courts have used existing crime-mapping technologies to address the Fourth Amendment “high-crime area” question. Part IV examines the intersection of crime-mapping technologies and the Fourth Amendment, exploring how these technologies shape our understanding of reasonable suspicion and restructure police-citizen encounters in official high-crime areas. Part V proposes a new framework to address the high-crime area question. In this Article, I argue for rejecting the existing overgeneralized “high-crime area” terminology and replacing it with a more data-driven and specific understanding of crime patterns in an area. The result will be a particularized approach based on timely, accurate, and targeted crime data about crime patterns in a defined location. Part VI addresses concerns with this proposal, particularly regarding the transparency, accuracy, fairness, equality, and legitimacy of GIS crime-mapping techniques. The Article concludes with an acknowledgment of the tensions raised by the development of these new technologies, but with a proposed solution that replaces the “high-crime area” terminology with a more particularized and targeted framework for Fourth Amendment analysis.

I. THE RISE OF GIS CRIME-MAPPING TECHNOLOGIES

Crime maps have been around since the earliest days of policing.²⁴ Picture a push-pin map stuck on a police captain’s wall, with different colored pins representing different crimes. Looking at the wall, a police

23. Nina Cope, *Intelligence Led Policing or Policing Led Intelligence?: Integrating Volume Crime Analysis into Policing*, 44 BRIT. J. CRIMINOLOGY 188, 191 (2004) (“Crime analysis incorporates the collection and review of information into manageable summaries, for example crime maps or network charts, to facilitate its interpretation.”).

24. As one police chief from Lincoln, Nebraska explained, “Back at police headquarters in Lincoln, someone was sticking coloured pins in a map on the wall when Teddy Roosevelt was President. In those days the pins represented saloons, or horse thefts, stick-ups or burglaries, maybe accidents, houses of ill repute.” SPENCER CHAINEY & JERRY RATCLIFFE, GIS AND CRIME MAPPING 8 (2005) (citing a case study by Tom Casady, Chief of Police, Lincoln, Nebraska); see also HARRIES, *supra* note 7, at 1.

administrator could develop a good understanding of the crime patterns in his jurisdiction. Tracking crime along geographic lines makes sense because most crimes involve a particular physical location.²⁵ Most police departments are localized and target the specific “places” where crime occurs in their jurisdictions.²⁶ Thus, crime-mapping technologies have taken on the routine task of recording the place of a crime and have adapted sophisticated analytical tools to better understand, organize, and express the information.²⁷ The fundamental reason for collecting crime data—to understand past criminal activity in order to combat future criminal activity—remains unchanged.²⁸

A. EARLY CRIME MAPPING

1. *The Classical School*

The first crime maps predate the rise of computers and even the development of modern police administrations. Beginning in the mid-1800s, French and Belgian social ecologists undertook the first formal study of crime and place.²⁹ The “classical” or “cartographic” school was led by social ecologists Andre-Michel Guerry³⁰ and Lambert-Adolphe Quetelet.³¹ Specifically, they studied rates of “crime, suicide, alcoholism, population age structure, family structure, educational levels, and population diversity,” with the goal of understanding where crime was occurring, what populations were living in those locations, and under what social conditions.³² With their followers, these early pioneers were

25. Brenner, *supra* note 12, at 52 (“[R]eal-world crime . . . must be conducted in physical, actual space.”). The vast majority of crimes require four component parts: (1) a law, (2) an offender, (3) a target/victim, and (4) a place. See PAULSEN & ROBINSON, *supra* note 6, at 2.

26. See Debra Livingston, *Police Discretion and the Quality of Life in Public Places: Courts, Communities, and the New Policing*, 97 COLUM. L. REV. 551, 656 (1997).

27. Ronald F. Wright, *Fragmented Users of Crime Predictions*, 52 ARIZ. L. REV. 91, 92 (2010) (“Police departments have produced crime reports since the nineteenth century, but only recently did they begin to use database techniques to analyze geographic and other trends in crime.”).

28. Cope, *supra* note 23, at 188 (“Crime analysis is the process of identifying patterns and relationships between crime data and other relevant data sources to prioritize and target police activity.”).

29. See Anselin et al., *supra* note 7, at 216–17.

30. In 1833, Guerry published his findings in a book of maps that displayed a visual connection between violent crime and property crime in areas of France. See PAULSEN & ROBINSON, *supra* note 6, at 48; see also CHAINEY & RATCLIFFE, *supra* note 24, at 81.

31. Gerben J.N. Bruinsma, *Urbanization and Urban Crime: Dutch Geographical and Environmental Research*, 35 CRIME & JUST. 453, 454 (2007) (tracing the history of criminology). Quetelet used statistics to map spatial variations of “undesirable” elements of society, including concentrated pockets of beggars and smugglers. In attempting to explain the positive correlation of crime rates and social conditions, Quetelet went beyond mere statistical calculations to develop the first type of formal crime analysis. CHAINEY & RATCLIFFE, *supra* note 24, at 81; PAULSEN & ROBINSON, *supra* note 6, at 152.

32. See HARRIES, *supra* note 7, at 4 (“The social ecology school concentrated on geographic variations in social conditions under the assumption that they were related to patterns of crime.”);

among the first to document and map “the empirical regularity of crime.”³³

2. *The Chicago School*

In the United States, the first sustained scholarly project of mapping criminal activity occurred at the University of Chicago in the 1930s.³⁴ Urban sociologists Robert Park, Clifford Shaw, and Henry McKay undertook an effort to identify the link between geography and crime.³⁵ Chicago provided a fertile ground for the study because its population had doubled each decade from 1860 to 1910,³⁶ creating an urban environment with increasing levels of crime. The Chicago School initiated a study of juvenile delinquency, mapping the addresses and neighborhoods of the young men involved in the delinquency system.³⁷ The purpose was to analyze the “social disorganization” effects of the areas where these young men lived and study the distribution of crime in Chicago.³⁸ The maps and studies developed by the Chicago School demonstrated a stable delinquency pattern over time within certain areas of Chicago.³⁹ The Chicago School found that crime was positively correlated with economically disadvantaged areas and demonstrated a link between delinquency rates and “features of community structure like economic status, stability, and racial composition.”⁴⁰ These findings inspired the field of criminology and incubated new theories of “crime and place,” such as “social disorganization” theory, “routine activities” theory, and “defensible space” theory—theories which, over time, led to an interest in studying how newly developed GIS technologies could help researchers understand patterns of criminal activity.⁴¹

Anselin et al., *supra* note 7, at 217.

33. Bruinsma, *supra* note 31, at 457; see HARRIES, *supra* note 7, at 4 (“The cartographic or geographic school dominated between 1830 and 1880, starting in France and spreading to England. This work was based on social data, which governments were beginning to gather. Findings tended to center on the influence of variables such as wealth and population density on levels of crime.”); see also Anselin et al., *supra* note 7, at 216.

34. The Chicago School included scholars outside of the University of Chicago, but the name derived from the School of Sociology at the University of Chicago. CHAINEY & RATCLIFFE, *supra* note 24, at 82.

35. The Chicago School of Criminology was inspired by Park’s early studies of the parallels between “the natural distribution of plant life and the societal organization of human life.” PAULSEN & ROBINSON, *supra* note 6, at 49; see also CHAINEY & RATCLIFFE, *supra* note 24, at 1, 82.

36. PAULSEN & ROBINSON, *supra* note 6, at 49.

37. Bruinsma, *supra* note 31, at 454.

38. *Id.*

39. See Anselin et al., *supra* note 7, at 217–18.

40. Ralph B. Taylor, *Crime and Small-Scale Places: What We Know, What We Can Prevent, and What Else We Need to Know*, in CRIME AND PLACE: PLENARY PAPERS OF THE 1997 CONFERENCE ON CRIMINAL JUSTICE RESEARCH AND EVALUATION 1, 14 (1998); see also Anselin et al., *supra* note 7, at 217–18.

41. “Social disorganization theory posits the idea that increased levels of delinquency, especially

B. THE RISE OF GIS CRIME ANALYSIS

While the theories seeking to explain the link between criminal activity and physical location have a long history, the technological tools to conduct empirical studies and then translate those studies to police in the field did not arrive until the mid-1980s and only became commercially available beginning in the late 1990s.⁴² It was not until improvements in computer software developed and technology costs decreased that law enforcement began any sustained experimentation with GIS crime-mapping technologies.⁴³

What is GIS crime-mapping technology? "A geographic information system (GIS) is a set of computer-based tools that allow an analyst to modify, visualize, query, and analyze geographic and tabular data."⁴⁴ GIS includes the development of particular software programs that help researchers "visualize data, assess human behavior over geographic space, follow spatial patterns, validate theories, and examine how geography affects crime and public safety."⁴⁵ GIS is not simply an electronic version of a push-pin map. Instead, it allows for different layers of information to be superimposed so that detailed information about a location can be analyzed.⁴⁶

juvenile delinquency, exist because of the lack of a local social fabric where the structure and culture of the community are strong enough to provide a concerted influence over local residents." CHAINEY & RATCLIFFE, *supra* note 24, at 335. In routine activities theory,

[p]lace is central . . . serving as the locus where *motivated offenders* come together with *desirable targets* in the absence of *crime suppressors* (who include guardians, intimate handlers, and place managers). This convergence of crime opportunities in space and time is facilitated by various situational features, of both the physical and social variety, that provide a context or setting that is more or less conducive to crime.

Anselin et al., *supra* note 7, at 220 (citations omitted). Defensible space theory focuses on the environmental design of an area, seeking to strengthen "territoriality" and "natural surveillance" as a means to protect individuals in the area. "Areas of low defensible space (such as large cities) were thought to be more vulnerable to crime because in these areas feelings of ownership and community spirit were not generated by residents." In attempting to remedy those two weaknesses, the theory of defensible space attempted to improve visibility (and thus "surveillability," as well as aesthetic qualities in the physical environment. PAULSEN & ROBINSON, *supra* note 6, at 69-70.

42. Technically, "the first use of computerized crime mapping in applied crime analysis occurred in the mid-1960s in St. Louis." HARRIES, *supra* note 7, at 4, 92. In addition, one of the seminal research areas that spurred the larger crime-mapping discipline was environmental criminology pioneered by Paul and Patricia Brantingham. See, e.g., ENVIRONMENTAL CRIMINOLOGY (Paul J. Brantingham & Patricia L. Brantingham eds., 1981).

43. Peter M. Flannery, *How to Pry with Maps: The Fourth Amendment Privacy Implications of Governmental Wetland Geographic Information Systems (GIS)*, 29 RUTGERS COMPUTER & TECH. L.J. 447, 454-55 (2003).

44. RACHEL BOBA, INTRODUCTION GUIDE TO CRIME ANALYSIS AND MAPPING 19 (2001); see also CHAINEY & RATCLIFFE, *supra* note 24, at 38 ("A GIS is a computer system for capturing, managing, integrating, manipulating, analysing and displaying data which is spatially referenced to the Earth.").

45. Ron Wilson & Kurt Smith, *What is Applied Geography for the Study of Crime and Public Safety?*, GEOGRAPHY & PUB. SAFETY, Feb. 2008, at 1, 2.

46. HARRIES, *supra* note 7, at 92; MARKOVIC & STONE, *supra* note 11, at 4 ("A common feature of

GIS allows recorded crimes to be entered in a large database that includes information regarding different types, times, and geographic coordinates of crime, so that police administrators can study historic and current patterns of crime in any location at any time.⁴⁷ The database can be searched for statistical information, can analyze unusual clusters of crime, and can display the information on a recognizable map of the area. If an administrator wants to know how many robberies occurred on a particular street in the last week, month, or year, the administrator simply searches for the proper information. If the administrator wants to compare that street with robberies on other streets, she can do that as well.

A jurisdiction that uses GIS to map, record, and analyze crime has the ability to understand the actual level of reported criminal events in any given area. This means that a jurisdiction can analyze crime patterns and identify hotspots,⁴⁸ redraw arbitrary district or policing boundaries,⁴⁹ connect with other jurisdictions to see how crime from one area affects neighboring areas,⁵⁰ and compare crime statistics across a jurisdiction or among several jurisdictions.⁵¹

all crime mapping systems is that the data are organized into layers. Think of the layers as a series of transparencies that can be viewed in a variety of combinations. The user determines which layers to make visible at any one time.”).

47. MARKOVIC & STONE, *supra* note 11, at 2.

48. Katie Filbert, *Targeting Crime in Hot Spots and Hot Places*, GEOGRAPHY & PUB. SAFETY, Feb. 2008, at 4, 4-5 (“GIS and related mapping and analysis tools have been advancing to include sophisticated statistics software that allows rigorous analysis of crime hot spots and testing against random patterns and variation. In addition to statistical analysis, researchers use spatial analysis to devise problem-solving approaches and reduce crime and disorder.”).

49. CHAINEY & RATCLIFFE, *supra* note 24, at 9 (“The power of GIS . . . dramatically simplifies the time-consuming task of redistricting or adjusting boundaries in patrol areas.”); Christopher Bruce, *Districing and Resource Allocation: A Question of Balance*, GEOGRAPHY & PUB. SAFETY, Jan. 2009, at 1, 1 (“[T]he ‘Bud-Shell Method’ of creating police districts . . . describes a police administrator who sits down one night with a ‘six pack of Budweiser and a Shell station road map’ and uses a magic marker to draw lines down major streets. If you have a major east-west artery and a major north-south artery—*voila!*—you have four districts! Never mind that one contains mostly upper-class residential housing and another contains a hospital, a high school, and a methadone clinic. It would probably be too much to say that the ‘Bud-Shell Method’ was the predominant method of districting during the first 90 percent of the 20th century . . . but until the advent of affordable desktop geographic information system (GIS) software, the task was too difficult to accomplish any other way.”).

50. San Diego County’s Automated Regional Justice Information System became the first “multi-agency” system in the country. It was later renamed San Diego County Regional Crime Mapping Application for Public Safety (“MAPS”). See Julie Wartell, *Crime MAPS: Evolution and Revolution*, 7 CRIME MAPPING NEWS, no. 4, 2007 at 1, 1; see also Thomas Rich, *Mapping the Path to Problem Solving*, NAT’L INST. JUST. J., Oct. 1999, at 2, 4 (“In some areas of the country, law enforcement agencies have established regional systems that merge crime and other police data from several, typically adjacent, law enforcement agencies.”).

51. MARKOVIC & STONE, *supra* note 11, at 8 (“A map of a police district can show which sectors are experiencing an increase, and which a decrease, in any particular crime in the system. A map of a city or state can show the equivalent patterns across several police districts.”).

Police utilize GIS in both big cities and small towns.⁵² As of 2004, ninety percent of police departments serving jurisdictions of 250,000 or more residents used computerized mapping in some form.⁵³ Approximately sixty percent of agencies serving jurisdictions of 50,000 to 249,000 residents used computerized mapping.⁵⁴ However, in jurisdictions with less than 50,000 residents, only fourteen percent of police departments used the technology.⁵⁵ Encouraged by federal funding⁵⁶ and inspired by new computer programming and internet capabilities, more police departments have begun to adopt GIS.⁵⁷ Cheaper technologies that merge data-collection methods with data-analytical methods have made crime mapping possible for many jurisdictions.⁵⁸

Currently, GIS is used by police departments for tactical analysis, criminal investigations, statistical record keeping, strategic planning, and administrative management.⁵⁹ New criminology theories have accompanied the adoption of GIS.⁶⁰ Police departments have also created crime-analysis divisions, which are staffed by professional crime analysts.⁶¹ The rise of data-driven policing has led to a reprioritization of resources⁶²

52. See, e.g., Mark Sirois & William Galten, *Crime Mapping News Spotlight: Johnson City Police Department*, 7 CRIME MAPPING NEWS, no. 3, 2006 at 9, 9 (discussing Johnson City, Tennessee, population 56,217, and the police department's adoption of a GIS system in 2006).

53. PAULSEN & ROBINSON, *supra* note 6, at 154.

54. *Id.*

55. *Id.*

56. Funding was provided primarily by the National Institute of Justice's Crime Mapping Research Center (renamed the Mapping and Analysis for Public Safety Program in 2002). CHAINEY & RATCLIFFE, *supra* note 24, at 3.

57. PAULSEN & ROBINSON, *supra* note 6, at 154.

58. See Anselin et al., *supra* note 7, at 215 ("Technological advances, primarily in computer capabilities, are fundamental to recent analytical advances in the methods available for analyzing place-based crime data. The advent of computer mapping applications and accompanying geographic information systems (GIS) are crucial to being able to measure and represent the spatial relationships in data. Perhaps the most powerful analytical tools emerging from GIS technologies are (1) flexible spatial aggregation capabilities to facilitate the measurement of place-based crime and (2) simple contiguity matrices for representing neighbor relationships between different areal units.").

59. BOBA, *supra* note 44, at 11-14.

60. Thomas R. O'Connor, *Intelligence-Led Policing and Transnational Justice*, 6 J. INST. JUST. & INT'L STUD., 2006, at 233, 233 ("Intelligence-led policing . . . has been defined . . . as the application of criminal intelligence analysis in order to facilitate crime reduction and prevention in a criminal environment through effective policing strategies and external partnership projects." (citing Jerry H. Ratcliffe, *Intelligence-Led Policing*, TRENDS & ISSUES CRIME & CRIM. JUST., Apr. 2003, at 1)).

61. See Olivier Ribaux et al., *Forensic Intelligence and Crime Analysis*, 2 L. PROBABILITY & RISK 47, 48, 54 (2003) (detailing the increased role of intelligence-led policing through the creation of crime-analysis units, and describing the aim of crime analysis as "revealing problems, analysing their potential causes and trying to foresee their development in order to determine where best to target law enforcement resources The information itself is an integration of a broad variety of data representing, for example, crime incidents, physical environments, socio-economic and demographic features of a population, or physical traces."); Willis et al., *supra* note 10, at 148 ("Crime analysts collect, analyze, and map crime statistics to spot trends and help precinct commanders identify underlying factors that explain crime incidents.").

62. Cope, *supra* note 23, at 190 ("The process of intelligence led policing exemplifies concerns

and a restructuring of police management at the department level.⁶³ To the extent it has shifted the focus of police departments from a reactive method of responding to crimes to a more proactive method of managing societal disorder,⁶⁴ it has changed the way police departments do their jobs.

II. GIS IN PRACTICE

To understand GIS technology's effect on the Fourth Amendment, one must understand how GIS technologies work in practice. While necessarily an oversimplified summary of a complicated academic and professional discipline, this Subpart describes the basics of existing crime-mapping technologies.

A. HOW DOES GIS WORK?

Though GIS software varies in sophistication, all GIS software can run statistical programs that identify or isolate crime patterns.⁶⁵ Many software packages include a base map⁶⁶ that provides digital street information primarily based on U.S. Census data⁶⁷ as well other geographic information.⁶⁸ Some software packages merely provide data layers with street maps and a computer platform with which to manipulate and study the data.⁶⁹

with identifying, prioritizing and intervening to minimize risk. Intelligence can be understood as information developed to direct police action.”).

63. “One of the most common objectives related to the [adopted crime-mapping] system was identifying and quantifying crime hot spots, including specific addresses, streets, and sections of neighborhoods.” THOMAS RICH, *CRIME MAPPING AND ANALYSIS BY COMMUNITY ORGANIZATIONS IN HARTFORD, CONNECTICUT* 8 (Mar. 2001).

64. Willis et al., *supra* note 10, at 172 (“[This shift in focus was based on the] belief that crime can be reduced more effectively through proactive policing and an attack on underlying sources of criminal activity than through arresting perpetrators after a crime has occurred.”).

65. The Office of Justice Programs in the United States Department of Justice has collected and made available crime-mapping data from jurisdictions across the United States. See Office of Justice Programs, *Mapping and Analysis for Public Safety*, U.S. DEP’T OF JUSTICE, <http://www.ojp.usdoj.gov/nij/maps> (last visited Oct. 31, 2011).

66. MARKOVIC & STONE, *supra* note 11, at 3 (“In general, crime mapping projects rely on digital base maps created by government departments other than the police.”).

67. HARRIES, *supra* note 7, at 97 (“The history of geocoding is tied to efforts at the U.S. Census Bureau to find ways of mapping data gathered across the country, address by address.”). Geocoding is discussed later in this Part.

68. Keshav Bhattarai, *A Comparative Analysis of Crime Mapping: TIGER Files vs. High Resolution Data*, 6 J. INST. JUST. & INT’L STUD., 2006, at 99, 99. (“Topologically Integrated Geographic Encoding and Referencing (TIGER) files are digital street layers that are used in attributing census information to upgrade census records, map updating, improving emergency response (E-911) services. In addition, these layers are also used in cartographic visualization of the relative locations of both man-made and natural features from these layers.”).

69. See Interview with Dr. Timothy Hart, *supra* note 8. Any errors in explanation are this Author’s alone.

Crime data is collected from police officers and other official sources of reported crimes.⁷⁰ A GIS system requires both tabular⁷¹ and geographical data.⁷² Tabular data includes arrests, calls for service, or other reports of crime.⁷³ This data is inputted into the software system, along with the time and place of the incident, a factual report of the incident, and other relevant information.⁷⁴ The crime data primarily consists of "street crime," as opposed to corporate crime, cyber crime, or fraud. While underinclusive in terms of the total number of crimes that occur, calls for service and arrests do provide an official and verifiable record.⁷⁵ The crime data is then layered on a parcel file,⁷⁶ which includes details of the area from property records and other local features (for example, parks, rivers, highways, and shopping malls).

The result is a record of crimes reported by address and a mapping system that provides the basic geographic layout of a jurisdiction. Because each reported crime is identified with a particular place, the data can be geocoded.⁷⁷ "Geocoding" is a method of determining the absolute spatial location (cross point of latitude and longitude) of an object to locate it on a map. Locations of reported crime can be geocoded by street center-line data, by parcel, or by address, depending on the sophistication of the program.⁷⁸

70. See BOBA, *supra* note 44, at 41.

71. See CHAINEY & RATCLIFFE, *supra* note 24, at 8 ("Virtually everything we do as a police department revolves around an address or location. All our dispatch records, incident reports, citations, intelligence reports have a place, and all of these are records collected in the ordinary course of business. GIS software allows mappers to use these computerised records of such things by automatically placing the 'pins' on the map." (citing the chief of police in Lincoln, Nebraska)).

72. "A variety of geographic data types may be used as a reference layer, though street files such as the Census Bureau's TIGER/Line files are the most commonly used." BOBA, *supra* note 44, at 42.

73. Willis et al., *supra* note 10, at 172 ("The primary sources of crime data were police incident and arrest reports and CAD (computer-aided-dispatch) data."). Calls for service are understood as phone calls to police for assistance.

74. MARY VELASCO & RACHEL BOBA, *MANUAL OF CRIME ANALYSIS MAP PRODUCTION* 3 (2000) ("Crime data and calls for service data are types of tabular data most frequently mapped in law enforcement. For example, these data contain information primarily about crime incidents and calls for service activity such as the type of activity, date, time, priority, and disposition.").

75. Crime data is necessarily imperfect because many crimes are not reported, some crimes have no geographical boundaries, and the data collection systems themselves are not error proof. See HARRIES, *supra* note 7, at 77, 98-99; *infra* Part VI.

76. "A parcel file is a polygon layer used to keep track of lots, subdivisions, and ownership information primarily for planning and tax purposes." BOBA, *supra* note 44, at 44.

77. *Id.* at 40 ("Geocoding is the process of bringing tabular and geographic data together based on a common geographic unit of analysis. A geographic unit of analysis refers to a spatial characteristic within the data that is necessary to locate it on a map such as address, zip code, beat, or grid. Tabular data are contained in a table and are a list of records that, along with information about the record, contain addresses or some other type of geographic variable.").

78. The positional accuracy of the data is dependent on the level of precision used to geo-code the data. For example, looking at a map based on an address that corresponds to the center line of a road might be very different than looking at a map based on the center of a parcel of land. See Interview with Dr. Timothy Hart, *supra* note 8.

Finally, a professional crime analyst, trained in various software programs, can examine the data to develop maps useful for crime analysis. Maps may be quantitative or qualitative.⁷⁹ Maps can display different kinds of data: nominal, ordinal, ratio, and interval.⁸⁰ “Statistical maps use proportional symbols, pie charts, or histograms” to display the quantitative aspects of the data.⁸¹ Choropleth maps “show discrete distributions for particular areas such as [police] beats, precincts, districts, counties, or census blocks.”⁸² Different types of maps, such as isoline maps, surface maps, and linear maps,⁸³ provide different advantages and disadvantages to the analyst.⁸⁴

B. APPLIED GIS TECHNOLOGIES

In a few short years, GIS crime-mapping analysis has changed police strategy and policies across the nation.⁸⁵ This Subpart discusses three specific applications of GIS technologies and highlights the promise and problems in adapting these technologies in order to answer the high-crime area question.

1. *CompStat*

Perhaps the most well-publicized adoption of GIS technology occurred in New York City with the creation of the *CompStat* system.⁸⁶

79. “Quantitative maps portray numerical information, such as numbers of crimes in an area or crime rates. Qualitative maps show nonnumerical data like land use types or victim/offender characteristics, such as male or female, juvenile or adult.” HARRIES, *supra* note 7, at 23.

80. “Nominal measurement names or labels items in unordered categories, such as race.” *Id.* Ordinal measurement “classifies incidents, victim or offender characteristics, or some other attributes (perhaps areas) according to rank.” *Id.* Ratio scales, such as distance in inches, feet, yards, etc., start at zero and continue indefinitely. *Id.* “Interval scales show values but cannot show ratios between values.” *Id.*

81. *Id.* at 24.

82. *Id.*

83. *Id.* at 24–25.

84. *Id.* at 40 (“[I]f we want to see the precise locations of burglaries for the last month, then we use a point map of addresses of incidents. Or perhaps a city council member has asked the police department for a map summarizing the number of incidents of graffiti per structure by city neighborhoods. This calls for a choropleth map, with neighborhood boundaries making up the geographic units. Links between victim and offender residences demand a linear representation. A generalized picture of crime risk or incidents is seen best with an isoline or surface map, and census information depicting the relationship between poverty and race can be shown using either a statistical or choropleth map.”).

85. Adam Benforado, *The Geography of Criminal Law*, 31 CARDOZO L. REV. 823, 860 (2010) (“Computer technology now allows for the rapid production of maps that can be used not only to implement more efficient targeted policing practices at the precinct level, but also to monitor the effectiveness of different police policies. The result of such strategies is that officers tend not to be placed evenly across the physical landscape; rather, they are focused in specific areas of high crime or in areas deemed to require special protection.”).

86. Eli B. Silverman, *With a Hunch and a Punch*, 4 J.L. ECON. & POL’Y 133, 144–45 (2007); Willis et al., *supra* note 10, at 148. “*CompStat*” is an acronym for the NYPD computer and comparative

In 1994, under the leadership of Police Chief William J. Bratton, the New York Police Department (NYPD) adopted the CompStat system in a way that revolutionized the policing structure of the city.⁸⁷ CompStat created an integrated data-management system for police statistics that required weekly data updates, crime mapping, targeted police responses, and an accountability mechanism that was primarily data driven.⁸⁸ Accompanying the adoption of CompStat were additional police practices that targeted designated high-crime areas with more officers and more aggressive policing techniques.⁸⁹

The CompStat philosophy focused on evaluating police performance using crime data.⁹⁰ While some have argued that CompStat was more of a managerial change than a technological change,⁹¹ the daily operations of the police department focused on “up-to-date computerized crime data, crime analysis, and advanced crime mapping as the bases for regularized, interactive crime strategy meetings.”⁹² Chief Bratton proposed four goals to improve the police department: first, police should collect and maintain accurate, timely information on crime in the city; second, police should implement targeted police operations focused on specific crime problems; third, police should be able to rapidly deploy resources to target those specific crime problems; and fourth, police should follow up and assess all decisions.⁹³

Crime mapping and data collection became a central organizing principle for holding the police administrators and police officers accountable for reducing crime rates. Day-to-day operations proceeded as follows:

On a weekly basis, personnel from each of the Department’s 76 Precincts, 9 Police Service Areas and 12 Transit Districts compile[d] a statistical summary of the week’s crime complaint, arrest and summons activity, as well as a written recapitulation of significant cases, crime patterns and police activities. This data, which include[d] the specific

statistics system. JAMES J. WILLIS ET AL., *COMPSTAT IN PRACTICE: AN IN-DEPTH ANALYSIS OF THREE CITIES* 2 n.1 (2003) (“There is some disagreement about what the acronym ‘Compstat’ actually means. Former NYPD police commissioner William Bratton suggests that it stands for ‘computer-statistics meetings,’ but Silverman attributes the term to ‘Compare Stats’—a computer filename. Some commentators have collapsed these meanings and argue that Compstat refers to ‘computer comparison statistics.’”).

87. Silverman, *supra* note 86, at 144–45; Willis et al., *supra* note 10, at 148.

88. WILLIS ET AL., *supra* note 86, at 48.

89. *Id.* at 64.

90. *Id.* at 2–4.

91. M. Todd Henderson et al., *Predicting Crime*, 52 ARIZ. L. REV. 15, 29 (2010) (“The process of forecasting and evaluation [with CompStat] is less technical than managerial, as its use by the New York Police Department (NYPD) and departments in other cities is primarily about framing data and issues for analysis and discussion, instead of creating formulaic and computer analysis of data.”).

92. Silverman, *supra* note 86, at 144–45 (evaluating the effectiveness of the CompStat program in New York City).

93. Willis et al., *supra* note 10, at 148.

times and locations at which the crimes and enforcement activities took place, [was] forwarded to the Chief of Department's CompStat Unit where it [was] collated and loaded into a city-wide database. The data [was] analyzed by computer and a weekly CompStat Report [was] generated. The CompStat Report capture[d] crime complaint and arrest activity at the precinct, patrol borough, and city-wide levels, and present[ed] a concise summary of these and other important performance indicators. These data [were] presented on a week-to-date, prior 30 days, and year-to-date basis with comparisons to previous years' activity. Precinct commanders and members of the agency's top management [could] easily discern emerging and established crime trends as well as deviations and anomalies, and [could] easily make comparisons between commands. Each precinct [was] also ranked in each complaint and arrest category.⁹⁴

More relevant to the issue of studying high-crime areas, the NYPD used the CompStat database to create a weekly, or sometimes daily, snapshot of crime in New York City. The data was almost real time and had a real-world effect on policing decisions, resource allocation, and how the police department patrolled certain higher-crime neighborhoods.⁹⁵ In the twenty-five years since the NYPD adopted CompStat, New York City's crime rate dropped seventy-seven percent.⁹⁶

As of 2001, one third of the nation's 515 largest police forces had developed CompStat-inspired systems.⁹⁷ The result, in both large and small cities, is that police now have data about the crimes committed in particular areas. Some of these police departments also have adopted aggressive police techniques that use the data to target crime. For example, in New York City, CompStat has been used in conjunction with a "stop and frisk" policy that has resulted in hundreds of thousands of police-citizen contacts.⁹⁸ Using the CompStat data, the NYPD identified "impact zones," or areas with disproportionately high crime rates, and adopted a policy of flooding these areas with police officers who had

94. Henderson et al., *supra* note 91, at 29–30.

95. HARRIES, *supra* note 7, at 80 ("[T]he CompStat database can be used to create a precinct map depicting almost any combination of crime and/or arrest locations, crime hot spots, and other relevant information. These visual presentations are a highly effective complement to the CompStat report, since they permit precinct commanders and executive staff members to instantly identify and explore trends, patterns, and possible solutions for crime and quality-of-life problems.").

96. At the same time, there were concerns about the pressure on police to increase the number of police stops while decreasing the number of arrests in order to manipulate crime statistics. See Graham Rayman, *The NYPD Police Tapes: Inside Bed-Stuy's 81st Precinct*, VILLAGE VOICE, May 5, 2010, at 12.

97. CHANEY & RATCLIFFE, *supra* note 24, at 264–66 (describing the use of CompStat in Philadelphia, Pennsylvania); Silverman, *supra* note 86, at 144 (citing a 1999 Police Foundation survey for the National Institute of Justice); Columbia, South Carolina, *Police Department Uses GIS for Improved Policing*, ARCWATCH, July 2007, at 1, 1 [hereinafter ARCWATCH] ("The crime rate for the city of Columbia has fallen dramatically with the implementation of GIS mapping," says Chief H. Dean Crisp Jr., police chief of Columbia. "It provides a basis for commanders and analysts to come together and to identify and solve problems using what we call COMPSTAT, or computer statistics It has helped produce the lowest crime rate that Columbia has seen within the past 15 years.").

98. Ray Rivera et al., *A Few Blocks, 4 Years, 52,000 Police Stops*, N.Y. TIMES, July 12, 2010, at A1.

explicit encouragement to stop, frisk, and detain people they suspected of criminal activity.⁹⁹

2. Official High-Crime Area Designations

The second example of GIS-driven policing involves jurisdictions that have prospectively and publicly designated certain neighborhoods or locations as official high-crime areas. In some jurisdictions, police administrators have publicly released the crime data and announced that certain areas are designated as high-crime areas. In other jurisdictions, specified “hotspots” or “drug free zones” have been legislatively approved and codified.¹⁰⁰

For example, the Miami-Dade County (Intercoastal Region) proactively used GIS technology to restructure its policing services.¹⁰¹ In an effort to take advantage of crime-mapping technology, the police department reorganized its districts.¹⁰² Administrators divided the region into one-by-one square mile sections and compared the crime patterns in each section to the entire Intercoastal Region, focusing on the most serious crimes—murder, rape, aggravated assault, armed robbery, and other violent offenses.¹⁰³ The one-square-mile sections were ranked in order based on the number of serious crimes recorded in the past month. The police administrators then designated the top ten percent of sections as official high-crime areas.¹⁰⁴ They informed police officers as well as courts, prosecutors, defense lawyers, and local communities of the new designations.¹⁰⁵ So as not to have static designations, the listing of the top ten percent sections was updated every month with new crime data.¹⁰⁶ As

99. *Id.*; see *infra* Part IV.A.

100. For example, in Washington, D.C.,

[The Anti-Loitering/Drug Free Zone Act of 1996 (DC Law 11-270)] provides that, while a Drug Free Zone is in effect, it will be unlawful for a group of two or more persons to congregate in a public space or property in that area for the purpose of participating in the use, purchase or sale of illegal drugs. A Drug Free Zone may be established by the Chief of Police, provided it meets certain criteria, particularly that there have been a disproportionately high number of drug-related crimes in that area. The Anti-Loitering/Drug Free Zone will last no more than 240 hours (10 days), and the area will be clearly identified, with signs posted along the perimeter, as well as within the zone.

See *Drug Free Zones*, D.C. METROPOLITAN POLICE DEP'T (Sept. 18, 2011, 8:23 PM), http://mpdc.dc.gov/mpdc/cwp/view,a,1238,q,542244,mpdcNav_GID,1541.asp.

101. Glenn Theobald, Chief Legal Counsel, Miami-Dade Police Dep't, Presentation at the Tenth Annual Crime Mapping Conference (Aug. 2009).

102. Tucson, Arizona, a city of 200 square miles and with a population of 500,000, did the same type of redistricting. See Autumn Kistler, *Tucson Police Officers Redraw Division Boundaries to Balance Their Workload*, GEOGRAPHY & PUB. SAFETY, Jan. 2009, at 3 (detailing how the police department used GIS Mapping to divide Tucson into one-quarter of a square mile squares).

103. Theobald, *supra* note 101.

104. *Id.*

105. *Id.*

106. *Id.*

a result of this restructuring and of additional police resources directed to the identified areas, crime dropped approximately fifty percent in the region.¹⁰⁷

3. Identifying Hotspots

A third application of GIS technology is the identification of crime “hotspots.” A hotspot is an area that has a statistically higher rate of crime than an average or random area in the same jurisdiction.¹⁰⁸ A hotspot can be a single address, cluster of addresses, block, intersection, or an even larger area.¹⁰⁹ It could be created by particular environmental concerns or by particular individuals or groups.¹¹⁰ Hotspots do not necessarily correspond to set neighborhood boundaries, patrol districts, or census tracts.¹¹¹ While there is no agreed-upon definition of an official hotspot, at a minimum the area should have a geographic boundary and thresholds against which the crime rates are measured.¹¹² For example,

107. *Id.* Such designated official areas raise several problems. For example, without oversight, a data-driven approach creates a self-fulfilling prophecy: the increase in police presence in a specific high-crime area results in more arrests in that area. With more arrests taking place, analysts have more evidence that it is a higher-crime area, which means more targeting and more officers. One can create a permanent high-crime area with such a self-perpetuating, numbers-driven system.

108. 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.”).

109. Taylor, *supra* note 40, at 3; see also John E. Eck, *Crime Hot Spots: What They Are, Why We Have Them, and How to Map Them*, in *MAPPING CRIME*, *supra* note 108, at 1, 8; HARRIES, *supra* note 7, at 113–15 (“[In one case, hotspots were limited to] [n]ot more than one standard linear street block (one side of the street only). Not more than half a block from an intersection. No closer to another hot spot than one block.”).

110. Anselin et al., *supra* note 7, at 222–23 (“[A] crime hot spot is a location, or small area within an identifiable boundary, with a concentration of criminal incidents. These chronic crime places where crime is concentrated at high rates over extended periods of time may be analogous to the small percentage of chronic offenders who are responsible for a large percentage of crime.”).

111. Adding a level of complexity to the analysis, if there are hotspots, there necessarily must be “cool spots,” many of which may be in close geographic proximity to the hotspot cluster of crime. Eck, *supra* note 109, at 4 (“Although hot places often are concentrated within areas, they often are separated by other places with few or no crimes.”). See *id.* at 2 (“Though no common definition of the term hot spot of crime exists, the common understanding is that a hot spot is an area that has a greater than average number of criminal or disorder events, or an area where people have a higher than average risk of victimization. This suggests the existence of cool spots—places or areas with less than the average amount of crime or disorder. It also suggests that some hot spots may be hotter than others; that is, they vary in how far above average they are.”).

112. Anselin et al., *supra* note 7, at 223 (“Minimally, crime hot spots share the key features of a boundary and criminal events within that boundary (e.g., 911 calls, offense reports). Perhaps the easiest means of identifying hot spots is to partition a jurisdiction into a fixed set of boundaries (e.g., square grid cells, census block groups, or some other boundary set) and to develop a set of rules (a “rule base”) using threshold values. . . . Suppose that the boundaries are square grid cells of a fixed size and origin. Then a rule for hot spot *initiation* at any grid cell might be the following: If the cell

one study of hotspots in Minneapolis, Minnesota “found that 3.3[%] of street addresses and intersections in [the city] generated 50.4[%] of all dispatched police calls for service.”¹¹³

As an academic discipline, scientific statistical models are used on a regular basis to create a pattern analysis that shows a nonrandom event in space and time that is statistically significant to study.¹¹⁴ Scholars and practitioners are now able to isolate and identify crime patterns in a reliable and predictable manner.¹¹⁵ Using these scientific methods, police administrators can isolate specific trends.¹¹⁶ Hotspot identification increasingly has led to a reallocation of resources targeting specific crime problems in specific areas.¹¹⁷

These examples are just three of the potential uses of GIS technology.¹¹⁸ As will be discussed in the next Part, these developments present equally new and uncertain challenges to existing law.

III. FOURTH AMENDMENT HIGH-CRIME AREAS

This Part addresses the post-*Wardlow* use of the term “high-crime areas,” analyzing federal and state cases that rely on the term. After a brief overview of the legal context, several themes are distilled from the cases raising a concern with the generality and malleability of the term. These concerns highlight the importance of a particularized and targeted approach to making crime patterns relevant for a Fourth Amendment analysis.

While crime-mapping technology and GIS systems have been used by police departments for years, courts have all but ignored the development. In Fourth Amendment hearings, courts have relied on a

were not a hot spot in the previous time period but the number of crimes of a designated type now exceeds a specified threshold value, then the cell becomes a hot spot during the current period.”); HARRIES, *supra* note 7, at 112.

113. Anselin et al., *supra* note 7, at 221; 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) (recognizing areas of hotspots as target areas for police surveillance).

114. Ned Levine, *CrimeStat III*, 7 CRIME MAPPING NEWS, no. 2, 2005 at 8; Rich, *supra* note 50, at 7 (discussing STAC technologies).

115. See Anselin et al., *supra* note 7, at 223; HARRIES, *supra* note 7, at 112.

116. Hotspots are not limited to urban environments. Instead,

a hotspot represents an area of high crime concentration, relative to the distribution of crime across the whole region of interest. This means that regardless of whether crime patterns are being studied across a rural, urban, or suburban area, the area of high crime concentration relative to the general pattern of crime across the whole area will stand out as the problem crime area.

CHAINED & RATCLIFFE, *supra* note 24, at 147–48.

117. David Weisburd & John E. Eck, *What Can Police Do to Reduce Crime, Disorder, and Fear*, 593 ANNALS AM. ACAD. POL. & SOC. SCI. 42, 54 (2004) (“A series of randomized field trials shows that policing that is focused on hot spots can result in meaningful reductions in crime and disorder . . .”).

118. See, e.g., Kate J. Bowers et al., *Prospective Hot-Spotting: The Future of Crime Mapping?*, 44 BRIT. J. CRIMINOLOGY 641, 642 (2004) (analyzing predictive crime mapping of crimes).

protean understanding of high-crime areas without any grounding in the empirical data developed by GIS systems.¹¹⁹ In the years since *Wardlow*, there have been more than one thousand federal and state cases that have used the term “high-crime area” in the context of Fourth Amendment reasonable suspicion.¹²⁰ Yet only a few courts have addressed the issue of defining “high-crime area” with any sustained scrutiny.¹²¹ Even fewer have addressed the empirical data the government possessed about the area at the time of the stop.¹²² Crime maps are rarely used and crime analyst reports are almost never introduced in court.¹²³

Thus, decades after the Supreme Court’s first use of “high-crime area” in *Adams v. Williams*,¹²⁴ the term has become a “familiar talismanic litany” often uttered and usually conclusive in a reasonable suspicion determination.¹²⁵ High-crime areas have thus become a significant, yet undefined, factor in determining reasonable suspicion for a police stop.

A. LEGAL CONTEXT OF THE HIGH-CRIME AREA QUESTION

The Fourth Amendment “impose[s] a standard of ‘reasonableness’ upon the exercise of discretion by government officials, including law enforcement agents, in order to safeguard the privacy and security of individuals against arbitrary invasions.”¹²⁶ Three types of police-citizen encounters can occur: (1) consensual encounters, which require no objective level of suspicion; (2) investigative detentions, or stops, which must be preceded by reasonable, articulable suspicion of criminal activity; and (3) full searches and arrests, which must be supported by probable cause.¹²⁷

119. A few courts have in fact rejected the requirement of introducing crime statistics to determine a high-crime area. *See, e.g.*, *United States v. Baskin*, 401 F.3d 788, 793 (7th Cir. 2005).

120. This number comes from the Author’s search of Westlaw and Lexis and includes unpublished but reported opinions.

121. The exceptions include *United States v. Wright*, 582 F.3d 199, 222–23 (1st Cir. 2009) (Lipez, J., dissenting); *United States v. Wright*, 485 F.3d 45, 53–54 (1st Cir. 2007); *United States v. Bonner*, 363 F.3d 213, 218 (3d Cir. 2004) (Smith, J., concurring); *United States v. Montero-Camargo*, 208 F.3d 1122, 1143 (9th Cir. 2000) (en banc) (Kozinski, J., concurring).

122. In *Wardlow*, the Court had been provided the data to determine high- and low-crime areas in Chicago and essentially sidestepped analysis of the issue. *See Amicus Curiae* Brief of the National Association of Police Organizations et al. in Support of Petitioner at 7, *Illinois v. Wardlow*, 528 U.S. 119 (2000) (No. 98-1036), 1999 WL 451226 [hereinafter *Wardlow Amici Curiae* Brief].

123. However, see *United States v. Wright*, in which the defense introduced Boston Police Department reports to demonstrate the area was not designated by the police department as an area of heightened concern. 485 F.3d 45, 49 (1st Cir. 2007).

124. 407 U.S. 143, 144 (1972).

125. *Curtis v. United States*, 349 A.2d 469, 472 (D.C. Ct. App. 1975) (“[W]e eschew the notion that the above facts assume added significance because they happen to have occurred in a high crime area. This familiar talismanic litany, without a great deal more, cannot support an inference that appellant was engaged in criminal conduct.”).

126. *Delaware v. Prouse*, 440 U.S. 648, 653–54 (1979) (citations omitted).

127. *Florida v. Royer*, 460 U.S. 491, 497–98 (1983).

The high-crime area analysis generally arises only in the second type of encounter. Following the well-known *Terry v. Ohio* framework, a police officer may briefly detain a suspect if the officer has a reasonable suspicion, supported by particularized and articulable facts, that criminal activity is afoot.¹²⁸ Reasonable suspicion is an objective standard, and reviewing courts assess reasonable suspicion based on the “totality of circumstances,” including, when relevant, the crime level of the area.¹²⁹ While the character of the area can influence the totality analysis, the same objective standard of reasonable suspicion is assumed to apply in all neighborhoods and to all people.¹³⁰ In other words, the reasonable suspicion legal standard in a high-crime area should be the same as in a non high-crime area.

B. THE SUPREME COURT AND HIGH-CRIME AREAS

For almost forty years, the Supreme Court has relied on an understanding that the crime level of an area can influence the reasonable suspicion determination.¹³¹ Yet only rarely has the Court been presented with crime statistics generated from crime-mapping programs or official designations labeling a certain area.¹³² In no case has the Supreme Court analyzed crime data or the implications of crime-mapping technologies. However, a comparison of two cases provides some guidance as to how the Court might approach this issue in the future.

In *Illinois v. Wardlow*, the high-crime area designation of a stop became one of only two factors the Supreme Court used in its totality of

128. 392 U.S. 1, 21–22 (1968).

129. *Illinois v. Wardlow*, 528 U.S. 119, 124 (2000) (“[O]fficers are not required to ignore the relevant characteristics of a location in determining whether the circumstances are sufficiently suspicious to warrant further investigation.”); *Ornelas v. United States*, 517 U.S. 690, 696 (1996) (“[H]istorical facts, viewed from the standpoint of an objectively reasonable police officer, amount to reasonable suspicion or to probable cause.”); *United States v. Cortez*, 449 U.S. 411 (1981); *United States v. McKie*, 951 F.2d 399, 402 (D.C. Cir. 1991) (“[Courts] look to the record as a whole to determine what facts were known to the officer and then consider whether a reasonable officer in those circumstances would have been suspicious.”).

130. *Commonwealth v. Thompson*, 985 A.2d 928, 944 (Pa. 2009); see *United States v. Black*, 525 F.3d 359, 361, 367, 370 (4th Cir. 2008) (Gregory, J., dissenting) (“By creating zones of lower constitutional protection in poor neighborhoods, the majority, albeit unwittingly, engages in a blatant display of class discrimination of the basest variety. It has never been my understanding of the Fourth Amendment that those with less means likewise receive less constitutional protection as a result of their plight. It is written into the very fiber of our Constitution that the protections granted therein apply equally to all Americans, regardless of whether they are returning home to the grandest of mansions or the humblest of shanties. Such a broad reading of ‘reasonable articulable suspicion’ significantly limits the freedom of people who happen to be in an area deemed ‘high crime.’ Surely, the Constitution cannot support such an arbitrary and discriminatory result.”).

131. See *Pennsylvania v. Dunlap*, 129 S. Ct. 448, 448 (2008); *Brown v. Texas*, 443 U.S. 47, 49 (1979); *Adams v. Williams*, 407 U.S. 143, 147 (1972).

132. See, e.g., *Wardlow*, 528 U.S. at 124–25.

circumstances analysis.¹³³ The Court held that “unprovoked flight” in a high-crime area justified the reasonable suspicion of the officers conducting the stop of Mr. Wardlow.¹³⁴ The finding that the area was a high-crime area was based on an officer’s testimony that he was part of a special operations division focusing on “heavy narcotics trafficking.”¹³⁵ Officer Nolan testified that he was part of a four-car caravan driving through Chicago’s 11th Police District when he observed Mr. Wardlow holding a white plastic bag near 4035 West Van Buren Street.¹³⁶

The issue of whether the area surrounding this location was, in fact, a high-crime area or an “area known for heavy narcotics trafficking” had been contested during the state court proceedings.¹³⁷ The Appellate Court of Illinois found the record too vague to determine whether the area was a high-crime area:

From the record before us, we cannot discern the precise location of the area known by the officers to have a high incidence of narcotics trafficking. After he testified that he noticed defendant at 4035 West Van Buren, Officer Nolan was asked why he went to that area. He responded that it was one of the areas in the 11th District that had “high narcotics traffic.” His testimony indicates only that the officers were headed somewhere in the general area. There was no evidence that the officers were investigating the specific area where defendant had been standing or that any of the police cars had stopped at that location or that defendant had any basis for believing that police were interested in his activity.

Officer Nolan testified that he was “caravanning” down West Van Buren when he noticed defendant. He did not testify that the officers were targeting 4035 West Van Buren because it was known to be a location where drugs were sold. From the evidence elicited at the hearing on the motion to suppress, it appears that the officers were simply driving by, on their way to some unidentified location, when they noticed defendant standing at 4035 West Van Buren. The record here is simply too vague to support the inference that defendant was in a location with a high incidence of narcotics trafficking or, for that matter, that defendant’s flight was related to his expectation of police focus on him.¹³⁸

The Supreme Court of Illinois disagreed with this determination, concluding that Officer Nolan’s “uncontradicted and undisputed

133. *Id.* at 124.

134. *Id.*; see, e.g., Nelson, *supra* note 16, at 511; Amy D. Ronner, *Fleeing While Black: The Fourth Amendment Apartheid*, 32 COLUM. HUM. RTS. L. REV. 383, 384 (2001); Walsh, *supra* note 16, at 883.

135. *Wardlow*, 528 U.S. at 124 (“Nolan and Harvey were among eight officers in a four-car caravan that was converging on an area known for heavy narcotics trafficking, and the officers anticipated encountering a large number of people in the area, including drug customers and individuals serving as lookouts.”).

136. *Id.* at 121–22.

137. *People v. Wardlow*, 678 N.E.2d 65, 67 (Ill. App. Ct. 1997).

138. *Id.*

testimony, which was accepted by the trial court, was sufficient to establish that the incident occurred in a high-crime area.”¹³⁹

Wardlow thus presented the Supreme Court with the opportunity to address how to define “high-crime areas” in a Fourth Amendment case. Crime statistics and crime-mapping techniques were introduced by the parties.¹⁴⁰ As one amicus brief stated:

The reputation of an area for having substantial criminal activity can be based, not only on the objective knowledge and experience of police officers, but on verifiable and quantifiable data. Sophisticated data collection, geographical computer and other mapping, and detailed geographical analysis systems have all become an essential part of crime prevention.

....

The use of geographical factors in policing is the subject of extensive ongoing studies. In conducting these studies, researchers rely on computer mapping as a fundamental tool when working with geographical data. Aided by advancements in technology, computer mapping, which can encompass the production of a simple pin map or the complex interactive mapping for detailed geographical analysis, has become an essential part of crime prevention in larger cities.¹⁴¹

But despite the invitation to embrace GIS crime-mapping technologies, the Supreme Court declined to address the issue.

One reason why the Court might have avoided the issue is that the crime data did not necessarily support its ultimate conclusion. As I have argued elsewhere,¹⁴² the data presents a more complicated picture of crime in the area of Mr. Wardlow’s stop. For example, while the majority opinion relies on testimony that the area was in a high narcotics trafficking area, there were no statistics on drug arrests presented to the Supreme Court.¹⁴³ Further, nothing Mr. Wardlow was doing at 12:35 pm holding a white plastic bag necessarily indicated narcotics trafficking.¹⁴⁴ The crime statistics presented to the Court demonstrated that District 11 had the highest murder rate of Chicago’s twenty-five districts, and a quite high rate for sexual assault and robberies,¹⁴⁵ but was ranked right in the

139. *People v. Wardlow*, 701 N.E.2d 484, 486 (Ill. 1998).

140. See *Wardlow* Amici Curiae Brief, *supra* note 122, at *7.

141. *Id.* at *7, *20.

142. E.g., Ferguson & Bernache, *supra* note 22, at 1601–02 (describing the courts’ interpretations of the area of Mr. Wardlow’s stop).

143. *Wardlow* Amici Curiae Brief, *supra* note 122, at *25 n.27 (“These statistics do not list drug offenses.”).

144. In fact, Mr. Wardlow did not have narcotics in his possession, nor was he engaged in narcotics trafficking. *Illinois v. Wardlow*, 528 U.S. 119, 121–22 (2000).

145. *Wardlow* Amici Curiae Brief, *supra* note 122, at *7 (“Chicago Police District 11, where the Respondent fled from the police, is such a high crime area. In 1997, District 11 had a higher overall total crime rate than 13 of the 25 police districts, roughly an equal crime rate to two of the districts, and a lower crime rate than 9 of the districts. When broken down further, this data reveals that in 1997, District 11 had the highest number of murders and robberies, and the second highest number of

middle of the twenty-five districts for crime overall. The relevance of the number of murders or sexual assaults to an officer's observation of a man holding a plastic bag is not obvious. Finally, while crime statistics were presented on a district level—a district that encompassed 98,000 people¹⁴⁶—there was no specific information about the 4035 West Van Buren address or any particularized complaints about that location.¹⁴⁷ There appears, thus, to be a substantial disconnect between the existing crime data and any argument for how that data should have affected the reasonable suspicion of the officer observing Mr. Wardlow.

The Court addressed a similar issue in *Pennsylvania v. Dunlap*, in which Chief Justice John Roberts and Justice Anthony Kennedy dissented from a denial of a writ of certiorari.¹⁴⁸ In a homage to the noir fiction genre, the Chief Justice highlighted the importance of the character of the neighborhood in justifying a police stop:¹⁴⁹

North Philly, May 4, 2001. Officer Sean Devlin, Narcotics Strike Force, was working the morning shift. Undercover surveillance. The neighborhood? Tough as a three-dollar steak. Devlin knew. Five years on the beat, nine months with the Strike Force. He'd made fifteen, twenty drug busts in the neighborhood.

Devlin spotted him: a lone man on the corner. Another approached. Quick exchange of words. Cash handed over; small objects handed back. Each man then quickly on his own way. Devlin knew the guy wasn't buying bus tokens. He radioed a description and Officer Stein picked up the buyer. Sure enough: three bags of crack in the guy's pocket. Head downtown and book him. Just another day in the office.¹⁵⁰

In dissenting from the denial of certiorari, Chief Justice Roberts signaled his disapproval of the Supreme Court of Pennsylvania's holding that a single, isolated drug transaction in a high-crime area was insufficient to justify a stop of the suspect.¹⁵¹ Relying in part on the officer's specific knowledge of the area as well as the officer's specific experience in making arrests in the area, Chief Justice Roberts reasoned that such information should constitute probable cause to arrest.¹⁵²

While there remains an open question whether fifteen or twenty arrests in the general vicinity of an area is sufficiently particularized to make suspicious what Officer Devlin observed,¹⁵³ there is in fact a closer

criminal sexual assaults and aggravated assaults, of all the police districts in Chicago.”).

146. *Wardlow*, 528 U.S. at 137 n.15 (Stevens, J., dissenting).

147. *Id.* at 138 (“[The officer’s] terse testimony is most noticeable for what it fails to reveal.”).

148. 129 S. Ct. 448, 448 (2008).

149. Chief Justice Roberts and Justice Kennedy would have found probable cause on the facts before them. *Id.*

150. *Id.*

151. *Id.*; see also *Commonwealth v. Dunlap*, 941 A.2d 671, 671 (Pa. 2007).

152. *Dunlap*, 129 S. Ct. at 448–49.

153. Kit Kinports, *Veteran Police Officers and Three-Dollar Steaks: The Subjective/Objective*

nexus between what he knew about the area and what he saw. Relevantly, Officer Devlin’s purpose for being there was that the Philadelphia Police Department’s Narcotics Strike Force had authorized a “plain-clothes surveillance” for a particular corner.¹⁵⁴ Unlike in *Wardlow*, in which the Narcotics Strike Force was driving through the streets and happened to see Mr. Wardlow on West Van Buren, Officer Devlin had staked out a particularized location with a particularized crime problem because of an official decision of his police administrators.¹⁵⁵ Further, the expected type of criminal activity matched what Officer Devlin actually saw—suspected narcotics dealing.¹⁵⁶

In *Dunlap*, as opposed to *Wardlow*, an understanding of crime patterns made the officer’s observations more reasonable because the particularized knowledge of the area was tied to the particularized suspicion of the observed person. These two cases help frame the federal and state court approaches to the issue.

C. AN OVERVIEW OF FEDERAL AND STATE CASES ADDRESSING HIGH-CRIME AREAS

Most federal and state courts that have addressed the high-crime area issue post-*Wardlow* employ the term without much sustained analysis.¹⁵⁷ In many cases, the “area” is not defined by geographic location or connected to a particular type of crime.¹⁵⁸ Only a handful of

Dimensions of Probable Cause and Reasonable Suspicion, 12 U. PA. J. CONST. L. 751, 754–56 (2010).

154. Petition for Writ of Certiorari to the Pennsylvania Supreme Court, *Dunlap*, 941 A.2d 671 (No. 07-1486), 2008 WL 2305800, at *2.

155. *Dunlap*, 129 S. Ct. at 448.

156. The debate that framed *Pennsylvania v. Dunlap* continued in the Supreme Court of Pennsylvania with *Dunlap* itself being clarified by *Commonwealth v. Thompson*, 985 A.2d 928, 943–44 (Pa. 2009).

157. See, e.g., *United States v. Smith*, 594 F.3d 530, 532 (6th Cir. 2010) (“Cincinnati police officers were on uniform patrol in Over-the-Rhine, a high-crime, high-drug area just north of downtown Cincinnati . . .”); *United States v. Lopez-Garcia*, 565 F.3d 1306, 1310 (11th Cir. 2009) (justifying a stop based on a hand-to-hand transaction between the defendant and his brother-in-law in an area “well-known for narcotics activity—particularly for street-level, hand-to-hand drug dealing”); *United States v. Campbell*, 549 F.3d 364, 368, 371 (6th Cir. 2008) (holding that a car parked under a viaduct on private property was suspicious enough to justify a stop where the officer described the “location as a ‘hot spot’—a high-crime area that was the site of drug sales, prostitution, and car theft”); *United States v. Ruidiaz*, 529 F.3d 25, 30 (1st Cir. 2008) (notorious high-crime area used without explanation or analysis as one factor for reasonable suspicion); *United States v. Taylor*, 511 F.3d 87, 92 (1st Cir. 2007) (officer’s knowledge of high-crime area used as a factor to justify seizure of defendant); *State v. Collins*, 890 So. 2d 616, 619 (La. Ct. App. 2004); *State v. Moore*, 853 A.2d 903, 907 (N.J. 2004) (“[Officer] had made numerous drug arrests in the same neighborhood, which was known to the police for heavy drug trafficking”); *Commonwealth v. Blair*, 860 A.2d 567, 574 (Pa. Super. Ct. 2004); *Commonwealth v. McClearse*, 750 A.2d 320, 323 (Pa. Super. Ct. 2000); *Riley v. Commonwealth*, 412 S.E.2d 724, 726 (Va. Ct. App. 1992); *State v. Morgan*, 539 N.W.2d 887, 891–92 (Wis. 1995).

158. See, e.g., *United States v. Caruthers*, 458 F.3d 459, 468 (6th Cir. 2006) (finding that the appellant had conceded the particular intersection at issue was a “‘high crime’ area where officers expect nightly calls regarding robberies or shots fired”).

courts have referenced any statistical data for crime patterns in an area.¹⁵⁹ A few courts have narrowed the area to a more particularized address or location,¹⁶⁰ usually in keeping with the initial justifications for police suspicion.¹⁶¹ While some courts have expressed concern or confusion about what exactly a high-crime area is¹⁶² or how it should be weighed in

159. Compare *United States v. Baskin*, 401 F.3d 788, 793 (2005) (rejecting the claim that “the government must produce ‘specific data’ establishing that a location is a ‘high-crime area’”), with *United States v. Diaz-Juarez*, 299 F.3d 1138, 1145 (9th Cir. 2002) (Ferguson, J., dissenting) (“Agent Rodriguez testified that Tierra del Sol Road ‘was located in a high-crime area,’ relying on his speculative observations This testimony was a far cry from the ‘specific data’ required to support the assertion that the stop took place in a ‘high-crime’ area.”).

160. *United States v. Griffin*, 589 F.3d 148, 150 (4th Cir. 2009) (“[T]he Value-Lodge Motel in Charlotte, North Carolina, was well known to officers of the Charlotte-Mecklenburg Police Department as a location for violent crime and drug trafficking.”); *United States v. See*, 574 F.3d 309, 311 (6th Cir. 2009) (“[The officer] testified that Cedar Estates is a high-crime area and that . . . due to a series of recent robberies in the area, he was instructed to pay ‘special attention’ to the area and to remain alert for ‘[l]oud music from vehicles, loud music from the apartment building, persons loitering, the areas of drug related activity, suspicious person, persons, that is loitering that are not really residents or visiting residents in that area.’”); *United States v. Am*, 564 F.3d 25, 27, 30 (1st Cir. 2009) (“[Officers were] patrolling in a marked police cruiser a high-crime area of Lynn, Massachusetts, where there were frequent shootings and where the Department was conducting increased patrols as part of its ongoing gang suppression strategy The stop occurred in a location of known gang violence based on suspicion that Am was engaged in criminal activity related to his gang membership, namely carrying a weapon for protection from rival gangs.”); *United States v. Black*, 525 F.3d 359, 361, 365 (4th Cir. 2008) (“[The arrest occurred in] a ‘high-crime’ neighborhood . . . [and the testifying detective] knew the neighborhood to be a high-crime area, and he had made numerous arrests for drugs and trespassing in Mosby Court in his 12 years as a police officer.”); *United States v. McCoy*, 513 F.3d 405, 407, 412 (4th Cir. 2008) (limiting the definition of high-crime areas to grocery stores because “according to some Loudoun County police officers, nearly half of all the drug deals in Loudoun County occur in public parking lots of grocery stores and other retail stores”).

161. See, e.g., *United States v. DeJear*, 552 F.3d 1196, 1198 (10th Cir. 2009) (“According to the officers, that house was at an intersection that had a history of criminal activity.”); *United States v. Clarkson*, 551 F.3d 1196, 1198 (10th Cir. 2009) (“[M]onitoring a residence in Salt Lake City, Utah, due to suspected criminal conduct involving narcotics dealing, violent crime, prostitution, and gang activity [led to a stop based on traffic violations stemming from sighting of car at that location.]”); *United States v. Pearce*, 531 F.3d 374, 377 (6th Cir. 2008) (“This special police detail was intended to address a recently increased level of criminal activity—particularly narcotics trafficking—in the area, which had been evidenced by a homicide shooting near the Deli a few days earlier.”).

162. In *United States v. Wright*, Judge Lipez, in dissent, analyzed the lack of empirical data presented in the high-crime area claim:

The empirical evidence in the record also fails to connect the officers’ general perceptions about high levels of crime in the area to the specific time and location of Wright’s arrest, or show that firearms crimes were of particular concern during that period. Defense counsel requested incident reports from the Boston Police Department for all violent crimes involving a firearm that occurred in October and early November 2004 within 1,000 feet of the location of Wright’s arrest. Thirteen incidents were listed, but the ten available reports showed only two episodes (on October 12 and October 19) in which armed individuals had threatened random individuals on the street. In addition, although the Department typically prepared biweekly reports and maps showing “hot spots” throughout the city, no statistics and maps were generated between August 31 and November 8—the date of Wright’s arrest—because the format of the Department’s data collection was being revamped during that period. Defense counsel reported in an affidavit that the two most recent such reports, from August 2004, showed that the nearest hot spots were 1.5 and more than 2 miles from

the totality of circumstances, only a few federal courts of appeals have explicitly addressed the empirical basis for and constitutional problems with the term.¹⁶³ Unsurprisingly, courts have developed different standards and different solutions to resolve the issue.¹⁶⁴

From a review of the cases, three themes emerge. First, a reference to a high-crime area weighs in favor of finding of reasonable suspicion. In practical terms this means that the same activity in one neighborhood, but not in another, may rise to the level of reasonable suspicion.¹⁶⁵ On occasion, courts have even considered “known crime areas”¹⁶⁶ or “medium-to-high crime areas”¹⁶⁷ to weigh in favor of reasonable suspicion. Second, an individual’s presence in high-crime area alone is not sufficient for reasonable suspicion.¹⁶⁸ Third, courts on occasion have

the Blue Hill Avenue location of Wright’s arrest.

582 F.3d 199, 222–23 (1st Cir. 2009) (Lipez, J. dissenting) (footnotes omitted).

163. See *Black*, 525 F.3d at 367; *United States v. Wright*, 485 F.3d 45, 53 (1st Cir. 2007); *United States v. Bonner*, 363 F.3d 213, 216–19 (3rd Cir. 2004); *United States v. Montero-Camargo*, 208 F.3d 1122, 1143 (9th Cir. 2000) (en banc) (Kozinski, J., concurring).

164. See *Ferguson & Bernache*, *supra* note 22, at 1590–92.

165. For example, in *Shelton v. United States*, the District of Columbia Court of Appeals distinguished a long line of cases justifying Fourth Amendment seizures based on hand-to-hand transactions, because the observed activity *did not* take place in a high-crime area. See 929 A.2d 420, 423 (D.C. 2007). This means that the very same activity—for example, receiving an object in return for money—may be justification for a stop in a high-crime area, but not in a non high-crime area.

166. See *United States v. Luqman*, 522 F.3d 613, 619 (6th Cir. 2008) (“[D]uring the period from August 2004 until August 2005, only 24 prostitution arrests were made in an area several square miles in size surrounding the North Hill neighborhood, and only six of these arrests were in the immediate vicinity of Luqman’s arrest. Moreover, this data was confirmed by the government’s concession at oral argument that North Hill is not a high prostitution area. Regardless of what Officer Donohue may have claimed at trial, it is unclear what basis he had for viewing North Hill as rife with prostitution.”). Compare *id.* at 615 n.1 (known prostitution area distinguished from a high prostitution area), with *id.* at 618 (Clay, J. dissenting) (“Luqman was not arrested in an area noted for a high incidence of prostitution activity. Indeed, data introduced by the prosecution at trial demonstrates that over a one year period, only six prostitution arrests occurred in the vicinity of Luqman’s arrest. Nevertheless, the majority now holds that we must treat the neighborhood where Luqman was arrested as a ‘high prostitution’ area merely because a police officer tells us that it is.”).

167. *United States v. Bullock*, 510 F.3d 342, 348 (D.C. Cir. 2007) (using the fact that stop occurred in a medium-to-high crime area as a factor in the totality of circumstances to frisk as suspect for weapons); see also *United States v. Swain*, 324 F. App’x 219, 223 (4th Cir. 2009) (unreported) (“[T]he district court considered evidence that Trooper Davis had personally made drug buys within two hundred yards of the Beaver Apartments and that other officers had arranged for controlled buys either at the apartment building or in the general area. Statistical data also supported a finding that the area was disposed toward criminal activity (it ranked fourteenth of seventy-five areas in the city in terms of serious crimes).”).

168. See, e.g., *United States v. Jones*, 606 F.3d 964, 967–68 (8th Cir. 2010) (upholding suppression of a firearm and ammunition recovered from the defendant and discounting the assertion that the arrest occurred in a high-crime area because there was no allegation of criminal activity); *United States v. Neely*, 564 F.3d 346, 352 (4th Cir. 2009) (holding that fumbling for trunk switch in a high-crime area, without more, was not enough to justify a full search of the defendant’s car); *United States v. Hughes*, 517 F.3d 1013, 1015–18 (8th Cir. 2008) (holding that the claim that an area was a high-crime area due to “reputed narcotics trafficking” was not enough to create reasonable suspicion).

cautioned about the consequences of allowing the term to “tip the totality scales” in a finding of reasonable suspicion.¹⁶⁹

For our purpose, two overarching conclusions can be drawn from this review of the case law. First, the elevation of “high-crime area” to one of only two factors in the totality of circumstances considered in *Wardlow* has heightened the term’s importance in subsequent cases. Whether examined or not, its presence tips the scales to a finding of reasonable suspicion. This raises a host of fairness concerns, including issues of race, class, and place that will be discussed in later Parts.¹⁷⁰ Second, the cases show that the term “high-crime area” can be viewed with different levels of specificity with regards to type of crime and location. Connecting back to the *Wardlow* and *Dunlap* analysis, the level of specific knowledge about particular crime patterns (for instance, number of arrests) in a particular area (for example, an identifiable corner) distinguishes the cases. When narrowed to a particularized area and a particularized crime, crime patterns can be quite useful in adding to the reasonable suspicion analysis. As we will discuss in the next Part, this is precisely the type of information that GIS crime-mapping technology can now provide.

IV. THE INTERSECTION OF CRIME-MAPPING TECHNOLOGIES AND THE FOURTH AMENDMENT

Officially drawn high-crime areas are a central problem emerging from the intersection of crime-mapping technologies and the Fourth Amendment. These areas can be identified areas determined through a CompStat data system¹⁷¹ or predesignated areas like those in Miami-

169. *United States v. Wright*, 582 F.3d 199, 221 (1st Cir. 2009) (Lipez, J. dissenting) (“Establishing a link between the defendant’s observed conduct and the high crime area designation is essential in protecting individual rights because of the decisive impact of that designation in the reasonable suspicion calculus. When it applies, every observed act is viewed through a more suspicious lens.”); *United States v. Black*, 525 F.3d 359, 367 (4th Cir. 2008) (Gregory, J. dissenting) (“[I]t is an unfortunate reality that, in America today, high-crime areas are frequently poor. Thus, by making much of the fact that the events of this case transpired in a ‘high-crime’ area—notably near public housing projects—the majority embarks on the treacherous path of lowering the Fourth Amendment protection afforded to people in low-income areas.”); *Commonwealth v. Dunlap*, 941 A.2d 671, 681 (Pa. 2007) (Saylor, J. concurring) (“[I]n the absence of some particular circumstance that does not substantially overlap with legitimate behavior, I do not believe that the high-drug-activity location factor should be given the sort of weight which would tip the totality scales in favor of finding probable cause to arrest.”).

170. See, e.g., Angela Davis, *Race, Cops, and Traffic Stops*, 51 U. MIAMI L. REV. 425, 427–32 (1997) (discussing the discriminatory nature of pretextual traffic stops); Tracey Maclin, *Race and the Fourth Amendment*, 51 VAND. L. REV. 333, 333–93 (1998) (discussing the Fourth Amendment in the racial context); William J. Stuntz, *Race, Class, and Drugs*, 98 COLUM. L. REV. 1795, 1798 (1998) (recognizing that differences in policing crack and powder cocaine offenses, even if in actuality based on class differences, appear to be based on race differences, which undermines the normative force of drug laws).

171. See *supra* Part II.B.1.

Dade (Intercoastal Region).¹⁷² The areas can be publicized or unpublicized, but share the common factor that they are official, geographically defined areas known to police administrators.

Take, as an example, a scenario similar to the *Wardlow* case. Assume, hypothetically, that Mr. Wardlow was standing in a publicized, officially designated high-crime area when the police stopped him. At the suppression hearing, in an effort to justify the *Terry* stop, the prosecution presents evidence to show the area was officially designated as in the top ten percent for crime in the jurisdiction. Assuming this data is accurate,¹⁷³ how does the fact that the area is an officially designated high-crime area affect the law enforcement officer patrolling the streets? How does it affect a court’s determination of reasonable suspicion at a suppression hearing? How does it change existing Fourth Amendment doctrine? Finally, how does it affect the liberty of individuals who are living in designated high-crime areas? This Part addresses the constitutional consequences when police administrators draw high-crime area lines, creating officially designated high-crime areas.

A. EFFECT ON LAW ENFORCEMENT

Assuming the police officer was aware of the high-crime area designation, it would be reasonable to rely on this information in making a *Terry* stop. In fact, it might be unreasonable for an officer not to take into account this objective factual information.¹⁷⁴ Since allowing empirical data to influence a police officer’s reasonable suspicion determination makes that determination more objectively reasonable, such an approach would be consistent with existing Fourth Amendment practice and jurisprudence.¹⁷⁵ Location has always mattered in policing.¹⁷⁶ More perfect information about general crime patterns in an area only strengthens the level of objective suspicion. Police know that there are regular patterns to a neighborhood.¹⁷⁷ Using the official designation

172. See *supra* Part II.B.2.

173. A threshold question is whether the data is accurate. While there are concerns about data collection and analysis in this area, see *infra* Part VI, assuming the police officer relied in good faith on the administrative determination of the area, it would be hard for any court to fault this reliance.

174. There would be little reason for a police officer to ignore information provided by police administrators about a neighborhood.

175. See *Whren v. United States*, 517 U.S. 806, 813 (1996) (recognizing the objective nature of reasonable suspicion); *Kinports*, *supra* note 153, at 754–55.

176. Silverman, *supra* note 86, at 136 (“[E]ven the same citizen behavior can take on numerous meanings to the public and to the police depending on the context of the behavior. The location, time of event, number of events, aggregation of events, and condition of the victim/observer relative to the perpetrator and the previous activity/reputation of the perpetrator/actor often influence the extent to which events are viewed as threatening and offensive” (citing GEORGE L. KELLING, “BROKEN WINDOWS” AND POLICE DISCRETION 35 (1999))).

177. Benforado, *supra* note 85, at 857 (“Physical space offers cues to law enforcement officers that suggest appropriate behavior . . . at the point of deciding who seems suspicious and needs to be

about the area as a contextual factor only strengthens the officer's objective reasonableness for a stop.

B. EFFECT ON A COURT'S REASONABLE SUSPICION ANALYSIS

An accurately designated high-crime area based on objective data simplifies a court's constitutional analysis. With an official high-crime area designation, one factor of the totality of circumstances analysis for determining reasonable suspicion is essentially predetermined.¹⁷⁸ If an officer reasonably relied on this fact, and the designation was officially generated, then under *Wardlow* it would be reasonable for the court to consider the fact as part of the totality of circumstances. The judge will simply use this factor to make the ultimate legal conclusion whether the officer had reasonable suspicion. While the fact that the stop occurred in a high-crime area is by itself insufficient for a reasonable suspicion determination, some courts have been willing to accept that otherwise innocuous activities *in these areas* can justify a stop.¹⁷⁹ A predetermined high-crime area in many ways constrains the discretion of courts to evaluate reasonable suspicion. Courts are required to consider a high-crime area, and such a designation effectively lowers the threshold of reasonable suspicion in these officially designated areas.¹⁸⁰

In addition, because the predetermined area is designated by police administrators at the district level and not by the police officer at the street level, courts will be even more likely to defer to this judgment.¹⁸¹ The administrative nature of the decision removes the determination from the core concern of the Fourth Amendment, which is preventing abuses of officers in their discretionary decisions.¹⁸² This deference would

investigated further . . .").

178. Of course, such a fact can be contested at the hearing, and, as discussed in Part VI, *infra*, there may be reason to question the validity of the designation.

179. See *supra* Part III.

180. David A. Harris, *Particularized Suspicion, Categorical Judgments: Supreme Court Rhetoric Versus Lower Court Reality Under Terry v. Ohio*, 72 ST. JOHN'S L. REV. 975, 1022 (1998).

181. See Nat'l Treasury Emps. Union v. Von Raab, 489 U.S. 656, 668 (1989) ("[I]n certain limited circumstances, the Government's need to discover such latent or hidden conditions, or to prevent their development, is sufficiently compelling to justify the intrusion on privacy entailed by conducting such searches without any measure of individualized suspicion."); *Skinner v. Ry. Labor Exec.'s Ass'n*, 489 U.S. 602, 623 (1989) (recognizing the government's interest in dispensing with the warrant requirement when obtaining a warrant is likely to frustrate the governmental purpose behind the search); *United States v. Martinez-Fuerte*, 428 U.S. 543, 560-61 n.13 (1976); *United States v. Biswell*, 406 U.S. 311, 314-16 (1972).

182. *Johnson v. United States*, 333 U.S. 10, 13-14 (1948) ("The point of the Fourth Amendment, which often is not grasped by zealous officers, is . . . in requiring that . . . inferences be drawn by a neutral and detached magistrate instead of being judged by the officer engaged in the often competitive enterprise of ferreting out crime." (footnote omitted)).

likely be even stronger for legislatively designated high-crime areas due to issues of comity and democratic theory.¹⁸³

C. EFFECT ON FOURTH AMENDMENT DOCTRINE

By marking out a defined space of potentially less constitutional protection,¹⁸⁴ the use of GIS technologies exacerbates a tension in current Fourth Amendment doctrine. As will be explained below, the ability to create a recognized high-crime area opens up the possibility of also creating an implicit high-crime area exception to the Fourth Amendment. While such an exception would be in direct tension with Supreme Court cases prohibiting “general crime suppression” tactics and requiring more than mere presence in a high-crime area, it might, in the day-to-day reality of police encounters on the street, become a *de facto* reality.

1. *Standard of Reasonable Suspicion*

High-crime area designations do not change the legal standard for a *Terry* stop. Individualized “reasonable suspicion of criminal activity” is still the legal test.¹⁸⁵ In the high-crime area context, reasonable suspicion requires more than someone “look[ing] suspicious” or not belonging in the area.¹⁸⁶ Yet by predetermining a place of expected generalized criminal activity, the high-crime area designation leads to a lower standard of suspicion in practice.¹⁸⁷

183. See Robert Justin Lipkin, *Which Constitution? Who Decides? The Problem of Judicial Supremacy and the Interbranch Solution*, 28 *CARDOZO L. REV.* 1055, 1132 (2006); James B. Thayer, *The Origin and Scope of the American Doctrine of Constitutional Law*, 7 *HARV. L. REV.* 129, 144 (1893) (discussing the judicial obligation in upholding legislative acts).

184. Constitutional protection may be lessened in that the threshold is lower because otherwise innocuous acts, such as running from police or conducting hand-to-hand transactions, create reasonable suspicion.

185. The court must find reasonable suspicion based on the totality of circumstances: “[T]he essence of all that has been written is that the totality of circumstances—the whole picture—must be taken into account. Based upon that whole picture, the detaining officers must have a particularized and objective basis for suspecting the particular person stopped of criminal activity.” *Terry v. Ohio*, 392 U.S. 1, 21 n.18 (1968) (“This demand for specificity in the information upon which police action is predicated is the central teaching of [the] Court’s Fourth Amendment jurisprudence.” (internal citations omitted)); see also *United States v. Cortez*, 449 U.S. 411, 417–18 (1981) (requiring more than the mere assertion that the defendant “looked suspicious” in an area that had a “high incidence of drug traffic” to find reasonable suspicion).

186. *Brown v. Texas*, 443 U.S. 47, 49 (1979).

187. Whether this has always been the case is debatable, but what is evidenced in an official high-crime area is that the term will have a greater effect. See, e.g., David A. Harris, *Factors for Reasonable Suspicion: When Black and Poor Means Stopped and Frisked*, 69 *IND. L.J.* 659, 660, 677–78 (1994); Lewis R. Katz, *Terry v. Ohio at Thirty-Five: A Revisionist View*, 74 *MISS. L.J.* 423, 493 (2004); Raymond, *supra* note 20, at 121–22; David Seawell, *Wardlow’s Case: A Call to Broaden the Perspective of American Criminal Law*, 78 *DENV. U. L. REV.* 1119, 1130–31 (2001); Walsh, *supra* note 16, at 914. For example, handing an object to another person in one neighborhood justifies a seizure, whereas handing an object to another person in a non high-crime area does not. *Shelton v. United States*,

The clearest analogy to the situation can be seen in the application of Fourth Amendment “reasonable suspicion” to roving U.S. Border Patrol stops along the United States border. The same constitutional standard applies in this context as in police stops, but, as has been made clear along the border, the “thumbs are on the scale” of reasonable suspicion in certain targeted areas.¹⁸⁸ In *Almeida-Sanchez v. United States*¹⁸⁹ and *United States v. Brignoni-Ponce*,¹⁹⁰ the Supreme Court allowed U.S. Border Patrol agents to stop suspected illegal immigrants using a reasonable suspicion standard.¹⁹¹ The result is that border patrol agents can stop individuals if they have reasonable suspicion to suspect illegal status and can question those stopped about citizenship and immigration status.¹⁹²

As written, the legal standard appears to provide protection against arbitrary or abusive stops and seizures of individuals. Yet as applied along the southern border of the United States, the reasonable suspicion standard has proved less protective of civil liberties. Scholars have criticized the way in which it has been abused,¹⁹³ citizens have been arbitrarily detained,¹⁹⁴ and courts have commented on the ease with which the term has been manipulated to justify a finding of reasonable suspicion. As Judge Jacques Wiener of the Fifth Circuit observed, judges have been willing to uphold vehicle stops along the border based on innocuous and contradictory findings.¹⁹⁵ Among the findings, courts have justified stops when:

929 A.2d 420, 423 (D.C. 2007).

188. See *United States v. Montoya de Hernandez*, 473 U.S. 531, 538 (1985); see also Cameron W. Eubanks, *Laptops, Airports, and the Border: Expanding Technology and the Shrinking Fourth Amendment in United States v. Arnold*, 64 U. MIAMI L. REV. 1117, 1129 (2010) (“[S]earches conducted at the border are generally reasonable simply because they occur at the border.”); Anil Kalhan, *The Fourth Amendment and Privacy Implications of Interior Immigration Enforcement*, 41 U.C. DAVIS L. REV. 1137, 1157–58 (2008) (discussing the expansion of immigration enforcement activities into the interior of the country).

189. 413 U.S. 266 (1973).

190. 422 U.S. 873 (1975).

191. See Renata Ann Gowie, *Driving While Mexican: Why the Supreme Court Must Reexamine United States v. Brignoni-Ponce*, 23 HOUS. J. INT’L L. 233, 236 (2001) (discussing Supreme Court precedent allowing a roving border patrol to stop vehicles based on specific articulable facts and rational inferences from those facts).

192. See *id.*

193. *Id.* at 237.

194. Kevin R. Johnson, *The Case Against Racial Profiling in Immigration Enforcement*, 78 WASH. U. L.Q. 675, 697 (2000) (citing James Pinkerton, *Border Patrol Twice Stops U.S. Judge on Way to Court*, HOUS. CHRON., Oct. 1, 2000, at 1; Leonel Sanchez, *Latinos Protest Ethnic Profiling*, SAN DIEGO UNION-TRIB., July 24, 2000, at A1).

195. *United States v. Zapata-Ibarra*, 223 F.3d 281, 281–82 (5th Cir. 2000) (Wiener, J. dissenting). This is similar to Justice Marshall’s dissent in *United States v. Sokolow*, which analyzed drug-courier profiles. See 490 U.S. 1, 13–14 (1989) (Marshall, J., dissenting).

The vehicle was suspiciously dirty and muddy, *or* the vehicle was suspiciously squeaky-clean; the driver was suspiciously dirty, shabbily dressed and unkept, *or* the driver was too clean; the vehicle was suspiciously traveling fast, *or* was traveling suspiciously slow (*or* even was traveling suspiciously at precisely the legal speed limit); the [old car, new car, big car, station wagon, camper, oilfield service truck, SUV, van] is the kind of vehicle typically used for smuggling aliens or drugs; the driver would not make eye contact with the agent, *or* the driver made eye contact too readily; the driver appeared nervous (*or* the driver even appeared too cool, calm, and collected); the time of day [early morning, mid-morning, late afternoon, early evening, late evening, middle of the night] is when “they” tend to smuggle contraband or aliens; the vehicle was riding suspiciously low (overloaded), *or* suspiciously high (equipped with heavy duty shocks and springs); the passengers were slumped suspiciously in their seats, presumably to avoid detection, *or* the passengers were sitting suspiciously ramrod-erect; the vehicle suspiciously slowed when being overtaken by the patrol car traveling at a high rate of speed with its high-beam lights on, *or* the vehicle suspiciously maintained its same speed and direction despite being overtaken by a patrol car traveling at a high speed with its high beam lights on; and on and on ad nauseam.¹⁹⁶

These are not atypical findings. Nor can they be explained simply as the result of the particular facts of the cases. Instead, the result stems from the ease with which reasonable suspicion evaluations can be swayed by the place in which the event occurs. The reality is that on the U.S.-Mexico border, reasonable suspicion means something different than in other parts of the country.

Does the roving border-patrol analogy mean that there is an exception to the Fourth Amendment reasonable suspicion standards for those individuals travelling near the border? No. But the “thumbs on the scale” are real and must be considered in evaluating how a pre-designated high-crime area will affect the Fourth Amendment in practice. As has been seen in the ad hoc approach in federal court decisions on the subject, a high-crime area designation can have a considerable weight.

2. *Tension with “General Crime Suppression” Techniques*

At the same time, however, the Supreme Court has made clear that “general crime suppression techniques” cannot be used to circumvent the protections of the Fourth Amendment.¹⁹⁷ In a series of cases involving checkpoints, the Supreme Court has disallowed “general crime

196. *Zapata-Ibarra*, 223 F.3d at 282–83 (alteration in original).

197. *See, e.g.*, *Ferguson v. Charleston*, 532 U.S. 67 (2001) (holding that a state hospital’s administration of a urine test without the patient’s consent was an unreasonable search); *Indianapolis v. Edmond*, 531 U.S. 32 (2000) (holding that Indianapolis’ drug interdiction checkpoints were an unreasonable search); *Chandler v. Miller*, 520 U.S. 305 (1997) (holding that Georgia’s drug-testing requirement for state electoral candidates was an unreasonable search).

suppression” tactics, even in high-crime areas.¹⁹⁸ These cases allow us to explore a counterweight in the doctrine to see how the Court might address seizures in a predesignated high-crime area.

The legal framework for checkpoints differs from the analysis for reasonable suspicion. In checkpoint cases, the issue is whether the seizure is reasonable based on a balancing of interests.¹⁹⁹ The question is not whether the police officers have individualized reasonable suspicion, but whether the seizure itself is justified based on the type of checkpoint or the place of the roadblock. Despite the different legal framework, the Court’s approach to checkpoints offers some insight into how it might address reasonable suspicion in an area with an empirically validated, localized, and targeted crime problem.

In each of the checkpoint cases, the Court has balanced the public interest necessitating the seizure against the liberty interests of the individuals seized. In *Michigan Department of State Police v. Sitz*,²⁰⁰ the Court held that sobriety checkpoints were constitutional because the public interest in preventing drunk driving outweighed the brief stops at issue.²⁰¹ Relevant to our data-driven focus, the *Sitz* Court had been presented with empirical data showing the effectiveness of these sobriety checkpoint practices.²⁰² The Court used this data to distinguish the unconstitutional checkpoints in *Delaware v. Prouse*,²⁰³ in which no data had been presented.²⁰⁴ While the *Sitz* data showed only a 1.6% success rate in identifying drunk drivers,²⁰⁵ the Court held that on balance, the specific goal of preventing drunk driving was weighty enough, citing the “magnitude of the drunken driving problem” and statistical basis for that concern.²⁰⁶ The Court seemed comfortable allowing a particularized seizure for a particular purpose in a particular place (even if not targeting a particular individual).

198. *E.g.*, *Edmond*, 531 U.S. at 32.

199. *Brown v. Texas*, 443 U.S. 47, 50–51 (1979). The Supreme Court has analyzed seizures by balancing the gravity of the public concerns served by the seizure against the degree to which the seizure advances the public interest.

200. 496 U.S. 444 (1990).

201. *Id.* at 451. Drunk driving and the tracking of drunk-driving incidents has also been the focus of crime-mapping efforts. See Tom Beretich, *Mapping Programs Target Alcohol Impaired Driving*, GEOGRAPHY & PUB. SAFETY, July 2008, at 5, 5; Jeff Kaufmann, *Creating a Safer Houston Through Crash Mapping*, GEOGRAPHY & PUB. SAFETY, July 2008, at 2, 3; Ned Levine, *On Traffic Safety and Law Enforcement*, GEOGRAPHY & PUB. SAFETY, July 2008, at 1, 1.

202. 496 U.S. at 451.

203. 440 U.S. 648 (1979) (holding that random stops violate the Fourth Amendment because such stops provide officers with “unbridled discretion”).

204. Leslie P. Butler, *City of Indianapolis v. Edmond: An Unprecedented Use of “Primary” Purpose Leaves Wide Open the Door for “Secondary” Problems*, 46 ST. LOUIS U. L.J. 175, 189, 194 (2002).

205. 496 U.S. at 454–55. The sobriety checkpoint at issue only lasted for seventy-five minutes. Only 126 vehicles passed through the checkpoint, two were stopped and one person was arrested.

206. *Id.* at 451.

The question then arises, if empirical analysis from an official high-crime area demonstrated that sobriety-checkpoint-like stops in an area were effective or that the crime problem in an area was so severe as to outweigh the intrusion of brief investigative stops, does the logic of *Sitz* allow brief seizures to address a targeted high-crime problem? This is not a hypothetical situation, as certain jurisdictions have made exactly that argument.

In *Mills v. District of Columbia*,²⁰⁷ police checkpoints were erected in a targeted high-crime area that had experienced a series of violent crimes and shootings in a short period of time. Police sought to identify the names and purposes of individuals entering this area in an effort to prevent future crimes.²⁰⁸ A federal district court upheld the checkpoints but the D.C. Circuit declared them unconstitutional.

The D.C. Circuit based its decision on *City of Indianapolis v. Edmond*.²⁰⁹ In *Edmond*, the Supreme Court held that checkpoints established for the primary purpose of general crime suppression were an unreasonable violation of the Fourth Amendment. The checkpoints in *Edmond* were understood to be drug interdiction roadblocks, created to “[interrupt] the flow of illegal narcotics throughout Indianapolis.”²¹⁰ Even though those roadblocks were more effective than those in *Sitz*, with a five-percent hit rate for drugs recovered and a nine-percent hit rate for arrests stemming from the roadblocks, the court still found them unconstitutional.²¹¹ The court required a “quantum of individualized suspicion” beyond the general concern for drugs.²¹² In other words, the public interest in stemming the flow of illegal drugs in an area known for illegal drugs could not outweigh the liberty interests of those stopped without suspicion.

Clearly, the same logic could be used to push back against the creation of a high-crime area exception to the Fourth Amendment. *Edmond* and other cases²¹³ have drawn the line at generalized approaches to crime. Even in response to targeted and empirically validated crime

207. 571 F.3d 1304, 1306 (D.C. Cir. 2009) (“The neighborhood safety zone (NSZ) program was created by the Metropolitan Police Department (MPD) in response to the violence that has plagued the Trinidad neighborhood in Northeast Washington, D.C., for many years. Before this case arose, Trinidad had recently been the scene of twenty-five assaults involving firearms, five of which resulted in deaths, and six of which involved the use of vehicles. Shortly after a triple homicide in the Trinidad neighborhood on May 31, 2008, the MPD designated a portion of the neighborhood an NSZ.”).

208. *Id.* at 1307 (“[O]fficers were required to identify themselves to motorists and inquire whether the motorists had ‘legitimate reasons’ for entering the NSZ area.”).

209. 531 U.S. 32 (2000).

210. Butler, *supra* note 204, at 175 (quoting the Indianapolis Police Department’s written guidelines for drug interdiction checkpoints, which were also cited in *Edmond v. Goldsmith*, 38 F. Supp. 2d 1016, 1018 (S.D. Ind. 1998)).

211. *Id.* (1161 cars stopped, 55 drug related arrests, 49 other arrests).

212. *Edmond*, 531 U.S. at 47.

213. See cases cited *supra* note 197.

problems, courts have deemed unreasonable those overbroad responses that do not include an individualized basis for suspicion.²¹⁴

The question remains, however, what if instead of establishing a checkpoint in a targeted high-crime area, the police simply flooded the neighborhood with officers and had these officers ask for identification or ask residents to state their purpose for walking through the area. Assuming seizures could be made only on reasonable suspicion, these high-crime area roving patrols might well be upheld. Even though the officers would be doing generalized crime-suppression work in checking the residents (and arguably in a manner more arbitrary than a checkpoint), they would not be violating the Fourth Amendment because they would be able to point to some other activity to justify a seizure (due to the heightened suspicion created by the high-crime area designation). This practice, legitimated by empirical data, would create a de facto high-crime area exception in certain high-crime areas. In such a targeted high-crime area, deference to police suspicion might begin looking like the roving border patrol example discussed earlier. Again, this is not a hypothetical as such tactics are being deployed today in New York City in conjunction with its CompStat program. As will be discussed in the next Subpart, these tactics have a direct effect on the liberty interests and civil rights of residents of the area.

D. EFFECT ON LIBERTY OF CITIZENS: WHY IT MATTERS

For citizens living in designated high-crime areas, the Supreme Court's checkpoint jurisprudence may not offer much comfort. The reasonable suspicion analysis is elastic enough for certain police departments to announce targeted "stop and frisk" tactics, whereby officers are encouraged to make contact with citizens in the hopes of creating justification for a full seizure or frisk.²¹⁵ The legal standard is the

214. *Edmond*, 531 U.S. at 45–56 (“[P]rogrammatic purposes may be relevant to the validity of the Fourth Amendment intrusions undertaken pursuant to a general scheme without individualized suspicion.”). This has been a consistent theme in the Court’s Fourth Amendment jurisprudence. Some form of particularized suspicion is required to justify a stop. *Edmond*, thus, offers some comfort to those concerned that high-crime areas might be treated like sobriety concerns on the nation’s highways.

215. David Hinson, Note, *Pressure Points: How a Combination of Methods Employed to Reduce Urban Firearm Crime Threatens the 4th Amendment and Proposed Solutions*, 43 *NEW ENG. L. REV.* 869, 883 (2009) (“In 1988, Boston police, faced with a rising ‘gang problem,’ assigned the City Wide Anti-Crime Unit to Boston’s most violent neighborhoods. . . . In 1989, a Boston precinct commander publicly referred to the tactics as a ‘stop and frisk campaign,’ . . . further strengthening the public’s distrust of the Boston Police Department.”); Andrew Maykuth, *Philly Cops Ready to Up Stop-and-Frisk Tactics*, *PHIL. INQUIRER*, Apr. 14, 2008, <http://www.policeone.com/patrol-issues/articles/1683965-Philly-cops-ready-to-up-stop-and-frisk-tactics> (“Police Commissioner Charles H. Ramsey wants officers to increase the number of legal searches they conduct as part of a strategy the department calls aggressive but intelligent policing. ‘We’re not asking you to do anything illegal or unconstitutional in any way,’ Lt. Francis T. Healy, a department lawyer, says in a training video being shown to patrol

same, but in practice, citizens in targeted high-crime areas have less robust Fourth Amendment protections.

A vivid example of such a tactic took place in Brownsville, Brooklyn, an eight-square-block high-crime area. From 2006 to 2010, police officers conducted 52,000 stop and frisks among a population of 14,000.²¹⁶ That means one stop per year for each of the residents in the area.²¹⁷ One man, a twenty-six-year-old legal assistant, had been stopped over thirty times.²¹⁸ Out of those stops, only about one percent of the suspects were arrested.²¹⁹ However, Brownsville is statistically a higher-crime area—one that deservedly has drawn the attention of police administrators.²²⁰

How did the designation of the neighborhood as a high-crime area affect the liberty interests of its citizens? First, it has to be acknowledged that from a traditional Fourth Amendment perspective, there is no protection from heightened police presence in public.²²¹ Additional police on the street, additional surveillance techniques, and even additional consensual police contacts do not infringe upon a reasonable expectation of privacy, because what one knowingly exposes to the public, including one’s presence, is not protected.²²² While the Court did acknowledge in *Katz v. United States* that the Fourth Amendment may protect information that we “seek[] to preserve as private, even in an area accessible to the public,”²²³ most denizens of higher crime areas cannot take measures to signal such an expectation of privacy.²²⁴

officers. “We just want you to do what you’re doing today, but step it up a bit.” (internal quotation marks omitted)).

216. Rivera et al., *supra* note 98 (“[B]etween January 2006 and March 2010, the police made nearly 52,000 stops on these blocks and in these buildings.”).

217. *Id.*

218. *Id.*

219. *Id.*

220. *Id.*

221. See, e.g., Florida v. Riley, 488 U.S. 445, 451–52 (1989); Katz v. United States, 389 U.S. 347, 351 (1967).

222. Marc Jonathan Blitz, *Video Surveillance and the Constitution of Public Space: Fitting the Fourth Amendment to a World that Tracks Image and Identity*, 82 TEXAS L. REV. 1349, 1357 (2004); Daniel J. Solove, *A Taxonomy of Privacy*, 154 U. PA. L. REV. 477, 496 (2006) (“When surveillance occurs in a public place, however, the Court has refused to recognize a reasonable expectation of privacy.”); see, e.g., United States v. Drayton, 536 U.S. 194, 207 (2002); United States v. Mendenhall, 446 U.S. 544, 557–60 (1980); Schneckloth v. Bustamonte, 412 U.S. 218, 222 (1973); Katz, 389 U.S. at 352.

223. 389 U.S. at 351.

224. Christopher Slobogin, *The Poverty Exception to the Fourth Amendment*, 55 FLA. L. REV. 391, 401 (2003) (“[T]he Court has signaled that the reasonableness of privacy expectations in such areas is contingent upon the existence of ‘effective’ barriers to intrusion. In other words, one’s constitutional privacy is limited by one’s actual privacy. That stance ineluctably leads to the conclusion that Fourth Amendment protection varies depending on the extent to which one can afford accoutrements of wealth such as a freestanding home, fences, lawns, heavy curtains, and vision and sound proof doors and walls.” (footnote omitted)).

Yet, while there may not be a Fourth Amendment violation, broader Fourth Amendment values affecting the expectation of privacy need to be evaluated in considering the effect of predesignating high-crime areas.²²⁵ An intensive and visible police presence affects behavior.²²⁶ Police walking on the street, inquiring about the reason for being in a certain area, or monitoring the travel of residents will regulate freedom of movement.²²⁷ Some of this is explicit, such as when individuals are ordered not to congregate together.²²⁸ In Washington, D.C.'s "drug free zones," more than two people may not walk or talk together after being ordered to disperse.²²⁹ Such associational rights may be significantly impacted in high-crime areas.²³⁰ Citizens may be concerned about retaining informational privacy, revealing intimate facts, or a loss of autonomy, even in a public space.²³¹ Police regulation and self-regulation can have an effect on individual expression, creativity, and freedom to travel.²³²

An increased police presence also means an increased likelihood of interpersonal police-citizen encounters.²³³ For example, a high percentage of the stop and frisks in New York City turned out to be mistaken (meaning no contraband was recovered), resulting in an unnecessary infringement on personal liberty.²³⁴ Scholars have recognized that these

225. Ronald J. Bacigal, *The Right of the People to Be Secure*, 82 KY. L.J. 145, 186 (1993) ("Because the Fourth Amendment exists to limit and regulate the exercise of governmental power, its coverage properly extends to any unilateral governmental action that infringes upon a citizen's protected right of privacy." (footnote omitted)); Tracey Maclin, *The Central Meaning of the Fourth Amendment*, 35 WM. & MARY L. REV. 197, 209-12 (1993); Scott E. Sundby, "Everyman's" Fourth Amendment: *Privacy or Mutual Trust Between Government and Citizen?*, 94 COLUM. L. REV. 1751, 1777 (1994) (discussing the constitutional value of "trust" underlying the Fourth Amendment); see Thomas Y. Davies, *Recovering the Original Fourth Amendment*, 98 MICH. L. REV. 547, 624-723 (1999) (offering a comprehensive history of the Fourth Amendment); Tracey Maclin, *The Complexity of the Fourth Amendment: A Historical Review*, 77 B.U. L. REV. 925, 925-73 (1997) (same).

226. See Blitz, *supra* note 222, at 1407.

227. Solove, *supra* note 222, at 492-94 (discussing surveillance as one aspect of the taxonomy of privacy).

228. D.C. CODE §§ 48-1002-48-1003 (2011); see also Kathleen Beckett & Steve Herbert, *Penal Boundaries: Banishment and the Expansion of Punishment*, 35 LAW & SOC. INQUIRY 1, 9 (2010) (discussing the exclusion of convicted persons from "drug-free zones" and "prostitution-free zones").

229. D.C. CODE §§ 48-1002-48-1003.

230. Blitz, *supra* note 222, at 1410.

231. *Id.* at 1408-09.

232. Tracey Maclin, *The Decline of the Right of Locomotion: The Fourth Amendment on the Streets*, 75 CORNELL L. REV. 1258, 1262 (1990) (discussing the right to travel as a liberty interest).

233. Ronald Weitzer, *Racialized Policing: Residents' Perceptions in Three Neighborhoods*, 34 L. & SOC'Y REV. 129, 130 (2000) ("Because crime rates tend to be higher in both black and white lower-class communities than in middle-class areas, residents of lower-class areas have more contacts with police and, hence, a greater number of contacts that might go awry and result in conflict.").

234. Bacigal, *supra* note 225, at 194 ("By refusing to place constitutional restrictions on an officer's initial approach to a citizen, the Court has decreed that police officers need not justify their desire to single out and confront a particular individual. The hapless, though presumptively innocent, individual must suffer this form of police scrutiny as part of the cost of walking on a public street.").

largely negative police-citizen encounters may affect dignity rights of citizens,²³⁵ may involve a stigmatic harm,²³⁶ and may be interpreted as a lack of respect²³⁷ that can itself undermine core constitutional principles. This restructuring of power undercuts the “right to be let alone”²³⁸ that informs our Fourth Amendment protections. Whether they embrace it as a positive protective presence or reject it as an unnecessary interference, residents in these areas are forced to think about police surveillance as an ever-present reality.

Finally, citizens may perceive inequality in the application of the law based on class or race. The correlation between high-crime areas and low income communities is strong.²³⁹ The correlation between low-income communities and communities of color is similarly strong.²⁴⁰ Neighborhoods may become a proxy for racially biased law enforcement.²⁴¹ Residents in those neighborhoods may believe that different rules apply because of race.²⁴² This perceived discriminatory treatment both undermines the belief that the legal system is fair, and disrupts other social organizing structures in a community.²⁴³

235. John D. Castiglione, *Human Dignity Under the Fourth Amendment*, 2008 WIS. L. REV. 655, 660–61.

236. Kristin Connor, *Updating Brignoni-Ponce: A Critical Analysis of Race-Based Immigration Enforcement*, 11 N.Y.U. J. LEGIS. & PUB. POL’Y 567, 607–10 (2008); William J. Stuntz, *Privacy’s Problem and the Law of Criminal Procedure*, 93 MICH. L. REV. 1016, 1066 (1995).

237. Andrew E. Taslitz, *Respect and the Fourth Amendment*, 94 J. CRIM. L. & CRIMINOLOGY 15, 23 (2003) (“What is lost in the mere technicality vision of the Fourth Amendment, therefore, is an appreciation for the ways that it affects the fate of communities of identity. The Fourth Amendment protects core interests essential to human flourishing, interests in privacy, property, and freedom of movement.” (footnotes omitted)).

238. *Olmstead v. United States*, 277 U.S. 438, 478 (1928) (Brandeis, J., dissenting).

239. Benforado, *supra* note 85, at 846–48 (“[K]ey factors correlated to high rates of crime—like the level of male unemployment and the prevalence of single-adult households—are not constant across neighborhoods; in fact, quite the opposite. Poverty itself is embedded spatially, which has powerful implications given its well-documented connection to crime.”); Raymond, *supra* note 20, at 128; Slobogin, *supra* note 224, at 404.

240. Harris, *supra* note 187, at 660; Stuntz, *supra* note 170, at 1810 (“An early 1990s study of census data found that the population of extremely poor neighborhoods in America’s hundred largest cities was 57% black, 24% Hispanic, and 16% white.”).

241. Sheri Lynn Johnson, *Race and the Decision to Detain a Suspect*, 93 YALE L.J. 214, 233–36 (1983); Weitzer, *supra* note 233, at 141 (“Police may discriminate not only against individuals but also against neighborhoods populated by different racial groups.”).

242. David A. Harris, *The Stories, the Statistics, and the Law: Why “Driving While Black” Matters*, 84 MINN. L. REV. 265, 290–91 (1999); Johnson, *supra* note 241, at 236; Randall S. Suskind, Note, *Race, Reasonable Articulate Suspicion, and Seizure*, 31 AM. CRIM. L. REV. 327, 347 (1994); see also Taslitz, *supra* note 237, at 21–22; Anthony C. Thompson, *Stopping the Usual Suspects: Race and the Fourth Amendment*, 74 N.Y.U. L. REV. 956, 965 (1999).

243. Jeffrey Fagan et al., *Reciprocal Effects of Crime and Incarceration in New York City Neighborhoods*, 30 FORDHAM URB. L.J. 1551, 1566 (2003) (“Neighborhood is important in the social regulation of both legal and illegal behavior; also because of this, it is the locus at which criminogenic factors exert their influence on the everyday lives of neighborhood residents.”).

E. LANGUAGE AND LINE-DRAWING CONCERNS

To summarize, the use of crime-mapping technologies to create official high-crime areas significantly impacts Fourth Amendment freedoms. Whether viewed positively or negatively from a policy perspective, the term “high-crime area” does have real, and perhaps unintended, constitutional consequences. If police administrators create official high-crime areas using the Supreme Court’s suggested terminology, then reviewing courts will simply defer to that designation in their analysis. The result will be the creation of an implicit high-crime area exception to the Fourth Amendment based on crime-mapping data.

The problem is initially one of language. Even on its face, the “high-crime area” term is overgeneralized. Usually, an officer is suspicious not of crime in general, but rather a particular type of crime. Reasonable suspicion develops because the officer is observing some ongoing activity that relates to an identifiable criminal act.²⁴⁴ GIS technology itself demonstrates that the generalized “high-crime area” terminology is outdated. Police in jurisdictions that use GIS know far more about the level, rate, and location of particular crimes than the generic label suggests.²⁴⁵ In collecting and coding the crime reports, the information is not simply recorded as undifferentiated crime, but as particular types of crimes in particular locations. Jurisdictions identify the location of high-drug areas, high-murder areas, and high auto-theft areas as separate and distinct places. A generic high-crime area label is thus an unnecessarily sloppy term, but one that can be improved by GIS technology.

Similarly, the terminology is vague about how “high” in crime an area must be to be constitutionally significant. Courts’ struggle to define the term results in large measure from the difficulty in comparing one area to another. There is a denominator problem—meaning it is impossible to judge a relative comparison without a set denominator.²⁴⁶ Should the crime rate be calculated by population,²⁴⁷ block,²⁴⁸ or

244. What an officer observes in a hand-to-hand drug deal is different than what an officer observes when watching a person case a store for a robbery attempt. To know that the observed hand-to-hand transaction is happening in a generic high-crime area is less useful than knowing that the area is a high-drug area. A hand-to-hand transaction even in the highest auto theft and robbery areas means little in terms of any relevance to reasonable suspicion for a stop.

245. Matthew White & Todd Wiles, *Jacksonville Sheriff's Office: Mapping with Text Analysis*, 8 CRIME MAPPING NEWS, no. 1, 2009 at 1, 1.

246. HARRIES, *supra* note 7, at 105 (“[W]hat is the crime rate? To answer this we have to know the base of the rate. Do we want it per 1,000 persons, per reporting area, or per patrol district? To calculate this rate we must know how many crime incidents have occurred, and, if we are calculating a population-based rate, how many persons there are per unit area. This value, the base of our rate, is also known as the denominator, because it is the bottom of the fraction used to calculate the rate.”).

247. Eck, *supra* note 109, at 32 (“Analysts often use population counts as denominators for calculating rates for these other crime types. This approach, however, may merely create hot spot mapping output that misleads by exaggerating the crime problem in town centers that have few residents but a concentration of crimes such as robbery and vehicle crime. Ideally, it is preferable to

district?²⁴⁹ Does it depend on the type of crime?²⁵⁰ Does it depend where you are in the country? Even with almost perfect information about crime patterns and with sophisticated data-analysis programs, these line-drawing questions have no easy answers.

To solve the twin problems of language and line drawing, it is necessary to change our terminology and our focus. Courts should recognize that the existing "high-crime area" terminology is too generalized to be useful and is not consistent with the specific GIS data available to police administrators. A more particularized approach that focuses on the specific crimes in specific areas is both more consistent with the current use of crime-mapping technology as well as more responsive to Fourth Amendment tensions.

V. A NEW FRAMEWORK: REDRAWING HIGH-CRIME AREAS

With advancements in GIS technology, data-collection mechanisms now allow for a more particularized understanding of crime patterns in Fourth Amendment suppression hearings. Courts no longer need to rely on overbroad terminology or generalized neighborhood labeling. Programs such as CompStat²⁵¹ and other daily and weekly reporting mechanisms mean that officers can be provided with up-to-date data on particular locations.²⁵² Hotspot technology can identify specific locations by crime and even time of day.²⁵³ In some jurisdictions, new crime maps are generated every twenty-four hours and can be shared with officers and staff and even emailed to officers on the beat.²⁵⁴ With modern

use denominators that are directly relevant to the crime type for which the analysts wish to create a rate. In the case of residential burglary, analysts usually have this with census tract household counts.").

248. "Wide interjurisdictional and intrajurisdictional variations in environments also make the application of absolute definition criteria tricky." HARRIES, *supra* note 7, at 113.

249. The difficulty is that without understanding the base line population, it is hard to compare the significance of the amount of crime. Derek Paulsen explains:

For example, if two different areas within a city both have clusters of 10 crimes but one has a population three times higher than the other, the magnitude of the crime concentrations is very different. Specifically, the less populous area would have a much higher magnitude crime problem despite both areas experiencing the same absolute amount of crimes.

PAULSEN & ROBINSON, *supra* note 6, at 183.

250. Eck, *supra* note 109, at 32 ("For robbery, a suitable denominator for calculating rates would be pedestrian counts for the area; for vehicle crime, a suitable denominator would be vehicle counts.").

251. CHAINEY & RATCLIFFE, *supra* note 24, at 270.

252. Willis et al., *supra* note 10, at 172 ("Members of each department's Crime Analysis Unit (CAU) selected the data on those crimes regularly presented at COMPSTAT meetings and entered them into a database using a data management program. These data were generally available the following day.").

253. *Id.*

254. Tom Casady, *Automating Briefings for Police Officers*, in CRIME MAPPING CASE STUDIES: PRACTICE AND RESEARCH 27, 28 (Spencer Chainey & Lisa Tompson eds., 2008). For example, Lincoln, Nebraska, home to a police force of 317 officers, 105 civilian employees, 242,000 citizens, has a process

technology, daily reporting has improved to almost real-time data collection.²⁵⁵ Police officers can be deployed²⁵⁶ to respond to reports of crimes within minutes.²⁵⁷ Personal crime maps can be created for individual beats.²⁵⁸ With centralized databases available on mobile police computers, information about areas, persons, and even mug shots can be uploaded and provided to officers on their beats.²⁵⁹ Adding global positioning system (GPS) data and locating information to the systems provides even more real-time data capture capabilities.²⁶⁰ Similarly, the geographic location²⁶¹ and time can be narrowly defined.²⁶²

whereby when a certain level of crime in a given area reaches a stated threshold, there is an automatic report generated and emailed to the officers. The email includes a map and details of the incidents. *Id.*; see also Tom Casady, *Case Study: Crime Mapping in Lincoln, Nebraska*, in CHAINÉY & RATCLIFFE, *supra* note 24, at 8–9; Rich, *supra* note 50, at 3 (“[T]hrough [the Cambridge, Massachusetts police department’s Daily Crime Bulletin] the department shares maps and crime analysis so that all officers and staff are more aware and knowledgeable of crime trends in various neighborhoods.”); Willis et al., *supra* note 10, at 172 (observing that in Minneapolis the COMPSTAT analysts would map the new crimes within twenty-four hours of entering a police report).

255. Douglass, *supra* note 10, at 6 (“With the advancement of computer aided dispatch (CAD) and record management systems (RMS) however, officers began to perform sophisticated strategic and tactical crime analysis. This kind of analysis provides real-time information, which allows law enforcement to virtually locate crimes as they occur and respond with the resources necessary to make a difference.”).

256. In Overland Park, Kansas, this real-time policing is happening.

At Overland Park, plans include the creation of a desktop application that would allow a patrol sergeant to view the hot spots identified by our crime analysis unit and use the application’s “drag-and-drop” function to deploy patrol units to these areas. These deployments could change from place to place and hour to hour based on the volume of criminal activity. As a result, a patrol officer could be assigned to any number of deployments throughout his or her shift.

Id. at 7; see also Allison Mayer, *Geospatial Technology Helps East Orange Crack Down on Crime*, GEOGRAPHY & PUB. SAFETY, Jan. 2009, at 8, 8–9 (describing the success of crime-mapping technologies that reduced crime levels by half during 2003–2008).

257. ARCWATCH, *supra* note 97, at 2 (“Crime analysts produce continuously updated crime maps that are distributed via e-mail throughout Columbia PD including to law enforcement commanders, investigators, and police officers working on patrol. With just a few mouse clicks and within minutes, crime intelligence sergeants send out information about suspects in the form of prepared Be-On-the-Lookout (BOLO) reports, which are crime notifications that go to police staff after an incident, or series of related incidents, occurs.”).

258. PAULSEN & ROBINSON, *supra* note 6, at 157.

259. In San Diego County, there is a new program that will share information including detailed local crime data and mug shots of probationers and parolees among seventy-one agencies. Wartell, *supra* note 50, at 4.

260. PAULSEN & ROBINSON, *supra* note 6, at 171 (“A pilot program between the Kentucky State Troopers and Eastern Kentucky University in 2002 tested the usefulness of GPS and GIS. All troopers in one post were provided with GPS receivers and were instructed to radio basic crime and location information to their post after taking a crime report. These crime data were then used to create daily, weekly, and monthly tactical crime maps. Preliminary results have shown that crime data that used to take as long as 15 days to process and map are accurately being created and disseminated within a 24-hour period.”).

261. Usually the area will be defined by blocks, because the crimes are coded by block. In discussing the crime rates of Baltimore County, Maryland, one researcher articulated the decision to

Faced with these technological changes, courts should embrace this innovation as a way to provide analytical rigor to the high-crime area question. Courts need not limit themselves to generalized understandings of undifferentiated crimes or to overbroad official labels. Problem areas of a particular crime can be identified, targeted, and reported in court as part of any Fourth Amendment suppression hearing. This crime-mapping data can inform a new particularized approach to replace the current high-crime area analysis.

A. THE PARTICULARIZED APPROACH

A particularized approach to high-crime areas is centered on the collection and distribution of particularized crime data, including crime type, time, and location. By necessity, the approach assumes that the technology exists in the jurisdiction, the police officer is aware of this data, and the information affects the officer's observations.

The particularized approach focuses on the nexus between a particularized crime pattern in a defined area and a police officer's observations on the street. In a Fourth Amendment suppression hearing, if a police officer relied on current data about a particular type of crime at a specific location,²⁶³ it would be appropriate to factor it in the reasonable suspicion analysis. A court would look at the objective data available to the officer and its relevance to the observation of alleged criminal activity, and factor that objective information into the reasonable suspicion analysis. If the officer did not base his decision on

use blocks as the measure of comparison:

Crime densities per block were calculated by dividing the count for each block by the area of the block. The density metric was selected as the best measure of the spatial distribution of crime, particularly when calculated for small areas such as the census blocks used here. Density within larger units, such as census tracts, would be less meaningful owing to the possibility of substantial intra-unit variation. Blocks tend to be smaller in areas with high population density where the probability of crimes is also theoretically highest, thus reinforcing the suitability of crime density by blocks as the most appropriate metric for the present purpose.

Other possible metrics were rejected. These were *crime frequencies* and *population-based rates*. Frequencies are unsuitable as they incorporate no information about the size of the geographic unit. Rates would be more appropriate in that they provide an adjustment for population, but none for the size of geographic unit. However, rates are inappropriate for small areas such as blocks owing to the possibility of zero or near-zero values in the denominator, producing rates that approach infinity.

Keith Harries, *Extreme Spatial Variations in Crime Density in Baltimore County, MD*, 37 GEOFORUM 404, 406 (2006).

262. "For drug markets in Jersey City, New Jersey, hot spots were defined by intersections and the four connected street blocks, and hot times were from noon to midnight." Anselin et al., *supra* note 7, at 224 (citing Weisburd & Green, *Defining the Street Level Drug Market*, in *DRUGS AND CRIME: EVALUATING PUBLIC POLICY INITIATIVES* (MacKenzie & Uchida eds., 1994)).

263. The geographic limits should be similar to the limits of a hotspot, usually being no larger than a block, or several blocks. *See supra* Part II.B.3.

specific data about a specific crime problem in a specific area, or if the data relied upon did not demonstrate a specific and relevant crime problem, then reliance on this information should not be considered.

Such a particularized approach to high-crime areas means modifying our terminology. A court should not accept testimony or evidence that a particular location was a generic high-crime area when more particularized and specific information about the location is available.²⁶⁴ Nor should claims based on officially designated, overbroad designations be allowed. The test should be whether the officer acted on a particularized understanding of the specific crime patterns of a particular area.²⁶⁵ This will avoid relying on the “talismatic litany” of a high-crime area as a cover for impermissible hunches or generalized suspicion about a neighborhood.²⁶⁶

In practical terms, instead of asking the question, “was the area at issue objectively a high-crime area,” the court would ask whether a reasonable officer with the same crime data would reasonably believe the area was known for a particular type of crime.²⁶⁷ The data would have to be up-to-date, localized to a few blocks or less, and specific to a particular type of crime. A court would have to verify the data and that the police officer knew of the data, but if verified and relevant, such reliance would likely be reasonable.²⁶⁸

Of course, some areas will have a number of different crimes occurring in the same location. This fact does not obviate the need for a particularized understanding. A location with several different types of

264. Thus, for example, instead of referring to a generic high-crime area, the officer would refer to the report that there were six recent robberies in the five blocks he was patrolling over the past three weeks, or a usual uptick of six car thefts from a particular downtown development in the last week.

265. As a real world example, in Columbia, South Carolina, the adoption of GIS allowed the police department to concentrate on a series of automobile thefts. Data had been compiled that showed a rise in car thefts in a particular part of downtown Columbia that had been undergoing economic development. *ARCWATCH*, *supra* note 97, at 2. A targeted unit was sent to the area within days. *Id.* The unit focused on the days and times that had been identified through the data. Officers made several arrests based on this targeted approach. *Id.* Assuming that any of these arrests generated a Fourth Amendment issue, the officers would well be position to argue that they had particularized information about a particular crime pattern. Their targeted approach would justify relying on this information about the area to justify any reasonable suspicion.

266. As an example, instead of a police officer testifying that an area was a high-crime area or even a high-drug area, the officer would testify that there had been seven drug arrests in a two-block area in the last month. The officer would then relay why what he saw on the street made that information relevant. Assuming the police officer saw a hand-to-hand transaction of money for small objects, this data would be factored into the court’s reasonable suspicion analysis.

267. This approach is somewhat similar to Judge McKee’s dissent in *United States v. Bonner*, with the modification that the officer’s belief be based on statistical data and not just a generic reasonable belief. 363 F.3d 213, 222 n.5 (3d Cir. 2004) (McKee, J., dissenting).

268. The important analytical shift is that the focus is why the officer would have believed the specific actions in that specific neighborhood were suspicious. After all, the reason why this information is relevant at all is that it affects the officer’s suspicions of an observed action in the context of the area.

crime provides the police more flexibility to apply their particularized understandings to the observations at issue. If the officer is aware of current data that shows a block is known for drug dealing, prostitution, and robbery, then observations consistent with any one of those activities might give rise to reasonable suspicion. The point is to let the technology and data, as opposed to a generalized sense about an area, guide the officer.²⁶⁹

B. WHY THE PARTICULARIZED APPROACH IS NECESSARY

This particularized approach to crime areas has six distinct advantages. First, it embraces current technology. While police administrators and courts have moved along two divergent paths in terms of using the technology, there is no good reason to continue this divide. Sophisticated crime-mapping technologies are being used by crime-mapping professionals on a daily basis.²⁷⁰ Particularized information needs only to be provided to courts. On occasion, experts may be called to resolve a dispute in the data, but such adversarial testing would neither be time consuming nor complicated.²⁷¹

Second, a particularized approach avoids the denominator problem. Courts no longer have to ask if this particular area is “higher” in crime in a general sense than another area. Instead, courts would look at particular data and how that data affected the officer. Of course, questions about whether courts should evaluate absolute numbers or comparisons will remain, as will questions about the proper geographical area to compare. However, a shift to more particularized information maintains an objective, data-driven focus on the crime realities of an area. Police officers will be required to know the crime information about an area and courts will need to demand objective verification, but the focus will be on the particular data guiding the officer in a particular setting.

Third, an emphasis on particularized information is consistent with the admonition from the Supreme Court in *Terry* to demand individualized and particularized suspicion for a Fourth Amendment stop.²⁷² Of course, even in an area of particularized crime, there still must

269. *United States v. Montero-Camargo*, 208 F.3d 1122, 1143 (9th Cir. 2000) (Kozinski, J., concurring) (“Just as a man with a hammer sees every problem as a nail, so a man with a badge may see every corner of his beat as a high crime area.”); *see also* *C.E.L. v. State*, 995 So. 2d 558, 564 (Fla. Dist. App. 2008) (Northcutt, J., dissenting) (“This neighborhood is classified as a ‘high-crime neighborhood’ not by some objective statistical measurement, but by the subjective testimony of individual law enforcement officers.”).

270. Filbert, *supra* note 48, at 4–5.

271. This is not to minimize the difficulties. In many cases the line between levels of crime will be close.

272. This particularized approach is consistent with Justice Stevens’ dissent in *Wardlow*, in which he stated, “Of course, it would be a different case if the officers had credible information respecting

be individualized suspicion *of the person*, but requiring an additional demand of particularized knowledge of the location reinforces this constitutional limiting principle against general police power.²⁷³

Fourth, a particularized understanding of crime patterns limits the “thumbs on the scales” concern from the “roving border patrol” analogy. Now, instead of starting from a place of generic criminal suspicion and bootstrapping arguably innocent actions into individualized suspicion, courts will focus on specific crime concerns linked to specific observations in a particular area. The thumbs are not necessarily off the scale, but the focus shifts from an area’s past reputation to current and empirically based crime patterns in an area.

Fifth, a particularized approach minimizes the negative effects of officially labeling an entire neighborhood. The focus is instead on the particular type of crime at a precisely defined location. This both respects the liberty of individuals living in high-crime neighborhoods and minimizes the reputational damage done by an overbroad generalization.

Sixth, the approach provides the flexibility to target crime in non higher-crime areas. One of the problems with the overreliance on the generalized high-crime area terminology is that it disadvantages officers in otherwise crime-free areas. For example, if there is suddenly a rash of robberies, the fact that the area is not a high-crime area would cut against the police in justifying reasonable suspicion.²⁷⁴ However, if the officer could point to the data of a spike in robberies, the officer would have extra reason to be suspicious of certain activities in that area.

While not perfect, a more data-driven approach is an improvement over the police “war stories”²⁷⁵ that have essentially served as the basis of prior designations of high-crime areas. In fact, analysis of crime data has shown that subjective opinions about high-crime areas are often erroneous.²⁷⁶ Studies show that police officers perceive a greater crime problem in their area than may actually exist from a comparative perspective²⁷⁷ and officers also misperceive the relative dangerousness of

that specific street address which reasonably led them to believe that criminal activity was afoot in that narrowly defined area.” *Illinois v. Wardlow*, 528 U.S. 119, 138 n.16 (2000) (Stevens, J., dissenting); *see also Montero-Camargo*, 208 F.3d at 1138 (“We must be particularly careful to ensure that a ‘high crime’ area factor is not used with respect to entire neighborhoods or communities in which members of minority groups regularly go about their daily business, but is limited to specific, circumscribed locations where particular crimes occur with unusual regularity.”).

273. *Vernonia Sch. Dist. 47J v. Acton*, 515 U.S. 646, 670 (1995) (O’Connor, J., dissenting); *Florida v. Bostick*, 501 U.S. 429, 440 (1991) (Marshall, J., dissenting) (“The general warrant, for example, was certainly an effective means of law enforcement. Yet it was one of the primary aims of the Fourth Amendment to protect citizens from the tyranny of being singled out for search and seizure without particularized suspicion *notwithstanding* the effectiveness of this method.”).

274. *Shelton v. United States*, 929 A.2d 420, 423 (D.C. 2007).

275. *Montero-Camargo*, 208 F.3d at 1143 (Kozinski, J., concurring).

276. *See* RICH, *supra* note 63, at 8.

277. In Nina Cope’s analysis of police understanding in Britain, she recognized that a tension can

their patrol areas.²⁷⁸ A data-driven approach may even counteract some of the underlying causes of the misperceptions about an area.²⁷⁹

Thus, at least as a basis for moving the discussion forward, courts should accept that when crime data is available, it should form the basis of the Fourth Amendment determination.

VI. POTENTIAL CONCERNS

A particularized approach based on GIS technology raises serious concerns of law and policy. First, there are concerns with the accuracy, transparency, and reliability of crime-mapping data and analysis. Second, there are concerns with application of this approach to police-citizen encounters in these areas. These concerns center on the perceived discriminatory effect of police policies that appear to target communities of color or low-income communities for increased enforcement. Finally, there are collateral concerns about the economic effect of a high-crime area designation on communities that are already low income.

A. CRIME DATA

Any successful adoption of GIS technologies requires data that is accurate and complete.²⁸⁰ A system is only as good as the data included,

result when the police officer’s subjective understanding of crime does not match with the objective numbers:

[T]his macro picture of crime may not correspond to officers’ micro experiences of crime in their area. For example, in one borough officers suggested there was a significant robbery problem near a large transport interchange. The analyst, based on reviews of crime data and crime mapping, suggested that while the station locality was problematic, the problem was not significant enough compared to three other locations situated further south of the borough. In such situations officers face a dilemma; rely on their own experiential knowledge . . . or respond to the information developed by an analyst with no experience of “working on the streets.”

Cope, *supra* note 23, at 200.

278. Interestingly, the degree of familiarity and knowledge of an area does not necessarily correlate to a more accurate understanding of crime patterns. PAULSEN & ROBINSON, *supra* note 6, at 38 (“In addition to citizens’ perceptions of crime patterns, other researchers have studied the spatial perceptions of police officers as they relate to crime patterns within a city and found that they, too, are incorrect.”).

279. In Chicago in the late 1980s, the police officials shared crime data with citizens. As described by Brandon Garrett, “residents often [had] very different ideas of where trouble spots exist in their neighborhoods. With better computer technology, mapping was for the first time providing a powerful tool for community members to visualize crime patterns and to evaluate police response.” Brandon Garrett, *Remedying Racial Profiling*, 33 COLUM. HUM. RTS. L. REV. 41, 112 (2001); see also Shawn Monterastelli, Note, *Using Law and Law Enforcement to Prevent Violence and Promote Community Vibrancy near Bars, Clubs, and Taverns*, 16 NOTRE DAME J.L. ETHICS & PUB. POL’Y 239, 259 (2002) (“[C]ommunity defined hot spots may be quite different from police defined hot spots.” (quoting Taylor, *supra* note 40, at 2 (1998) (internal quotation marks omitted))).

280. Cope, *supra* note 23, at 193 (“As the computer intelligence databases were the primary source of information for analysts, the quality of analysis was integrally linked to the quality of information on intelligence systems.”).

and because that data is collected, inputted, and analyzed by human beings, there exists the potential for errors. These data errors range from miscoding or misspelling street names, to using the wrong abbreviations, to providing the wrong numerical address.²⁸¹ Data must be inputted in a timely fashion, it must be reliable, and it must be organized in such a way that crucial information is not lost in the data-transfer process.²⁸² The quality of data underlying crime-mapping technologies can be easily compromised through ignorance, overwork, poor training, or error.²⁸³

At a more fundamental level, crime mapping does not address all crime because not all crime is reported.²⁸⁴ Unreported crime will not be mapped or analyzed. Some crimes do not have geographic points of reference,²⁸⁵ while other crimes do not have victims.²⁸⁶ Because crime mapping focuses primarily on “street crime,” it creates a disproportionate emphasis on those types of violations. Thus, even with a fully functioning crime-mapping program, crime analysts are creating an imperfect proxy for the level of crime in a society.²⁸⁷ While a particularized approach makes better use of the existing data, it is still dependant on the accuracy and completeness of that data.

B. CRIME ANALYSIS

In addition to concerns about data collection methods, there are concerns about whether the information is analyzed and presented in a complete and unbiased manner. Incomplete analysis or inaccurate comparisons can result in misleading statistics.²⁸⁸ By changing the analytical parameters, or adjusting the algorithms, crime-mapping analysts can make

281. HARRIES, *supra* note 7, at 98; *see also* BOBA, *supra* note 44, at 38–39.

282. BOBA, *supra* note 44, at 38–39.

283. Cope, *supra* note 23, at 193 (“Data quality affected the development of analysis. Analysts frequently found crucial details missing from intelligence reports for their products.”).

284. CHAINEY & RATCLIFFE, *supra* note 24, at 65 (“Crime data recorded in police information systems offer only a partial view of crime in society, and not all crime reported to the police ends up being recorded as crime.”).

285. *See, e.g.*, Markovic & Stone, *supra* note 11, at 2 (“Financial fraud, extortion, and many forms of conspiracy do not occur at fixed locations and are therefore rarely mapped.”).

286. For example, in a possession offense there is no specific victim, and the criminal would not usually report his or her own possession to have the crime recorded.

287. Good crime analysis is by its nature overinclusive, whereby even in high-crime areas there are low crime blocks. Data might show a spike in crime at a particular location, such as at a nightclub or bar, surrounded by no other crime. Comparisons from a particular area might therefore be inexact, even with perfect record keeping and data management. Taylor, *supra* note 40, at 2 (“Even in a high crime neighborhood, most blocks will have low crime rates, and most addresses will have no reported crimes. Links between crime and community do not provide the data on specific places needed to guide deployment of police officers.”).

288. “The importance of selecting appropriate time periods for mapping cannot be overemphasized. For example, a map covering a month may mask noteworthy week-by-week variations. Or weekly maps could hide day-to-day changes.” HARRIES, *supra* note 7, at 12.

statistics seemingly support misleading conclusions.²⁸⁹ How maps are displayed can also influence the impact of the data. As one expert stated: “[B]ecause we can lie with statistics, we can also lie with statistical maps. Indeed, maps have been used throughout history as propaganda tools.”²⁹⁰

Reliance on crime analysis must, therefore, be accompanied by an understanding of the political and administrative pressures that can affect the analysis.²⁹¹ Local politics and involved community groups can influence how crime patterns are interpreted and how crime-fighting resources are deployed.²⁹² A particularized approach to crime analysis reduces the ability to influence decisionmakers, but does not eliminate it.

Furthermore, there is no systemic process for oversight or transparency in the data analysis. One of the realities in adopting a crime-mapping analysis system organized and administered by law enforcement is that there is no outside “check” on the data or analysis. Without external oversight and expert audits, the integrity of the system could degrade. While police administrators have every incentive to keep up-to-date information, political and bureaucratic pressures exist that could affect the analysis. Much of the testing of this data will take place in court hearings, in which defense counsel will either challenge the data itself or use the data in challenging a Fourth Amendment stop. In those cases, courts, through expert testimony, will need to address the validity and accuracy of the data.

A particularized approach does not directly address this oversight problem. While the particularized data can be explored relatively easily during a suppression hearing, the underlying data system cannot.²⁹³

289. *Id.* at 53.

290. *Id.* (citation omitted).

291. See Harries, *supra* note 261, at 406 (“Baltimore County has shown that residents of low crime neighborhoods are extremely sensitive to real or perceived changes in crime incidence, and their sensitivity is politically potent, since such residents tend to be more affluent, better connected politically, and more active in the political arena, compared to residents of high crime areas. With the police chief serving at the pleasure of the elected county executive, it is possible that disproportionate resources may be allocated to nominally low crime areas, thus reducing resources available for application to more serious problems.”); Willis et al., *supra* note 10, at 158 (“[P]olice and citizens’ perceptions of crime may differ from what is presented in official sources. Although crime rates might not have increased dramatically, city residents, politicians, or police could have decided that crime levels were unacceptably high or not declining fast enough.”); *id.* at 171 (“City politics powerfully influenced officer deployment.”).

292. Willis et al., *supra* note 10, at 163 (“Other[] [officers] felt COMPSTAT denied residents equal access to police services by allocating more patrols to high crime areas, thereby reducing patrols in other areas.”). One can also imagine the reverse if, for example, high-crime areas were weighted by auto thefts or burglaries, then upscale neighborhoods might appear to have a higher level of crime than other areas with more street crime.

293. This pressure will come primarily from trial courts, which will require accurate data to serve as the basis of the court decisions.

C. APPLICATION

Recognizing an existing crime pattern does not dictate the solution to that problem. Running parallel to the development of CompStat is a debate about police tactics, pitting those in favor of “community policing”²⁹⁴ against the more data-oriented approach. The statistics from New York City help fuel the debate.²⁹⁵ In 2009 alone, 575,000 people were stopped and frisked.²⁹⁶ Ninety percent of those people were African American or Latino. Only 1.3% of those detained were caught with weapons, and only 6% were arrested.²⁹⁷ Some critics of the New York approach have commented that the need for data motivated the high number of stops.²⁹⁸ Data-focused administrators demanded arrest data from the officers. To get more statistics, police stopped more people. A few New York City police officers even admitted that in some areas there was a quota of sorts, such that they were encouraged to report at least ten recorded stops a month.²⁹⁹

A particularized approach must acknowledge the reality that police stops involve physical and sometimes intrusive interactions. Even if targeted to particular problem areas, stops will still generate police-citizen tension. Distrust and resentment can build up over perceived police misconduct.³⁰⁰ Whether data driven or not, a perception of mistreatment serves to undermine the legitimacy of the front line responders in the criminal justice system.³⁰¹ Tension from an overintrusive

294. Livingston, *supra* note 26, at 562–63 (1997) (discussing the rise of community-oriented policing, which involves a focus on police-community partnership and problem-solving strategies).

295. Notwithstanding the overall numbers from CompStat in New York, the tactic of flooding a designated area with officers does not always work. Taylor, *supra* note 40, at 2 (“Increasing patrol deployments to higher crime neighborhoods without knowing where and when crimes are likely to occur within those neighborhoods appears to produce only modest gains in crime control.” (citing George L. Kelling & Catherine M. Coles, *Fixing Broken Windows: Restoring Order and Reducing Crime in Our Communities* (1996))). More police presence does not necessarily mean less crime. Weisburd & Eck, *supra* note 117, at 51.

296. Editorial, *Lingering Questions About ‘Stop-and-Frisk,’* N.Y. TIMES, Feb. 19, 2010, at A26.

297. *Id.*

298. Silverman, *supra* note 86, at 145 (“[In New York City], [n]umbers, sometimes any numbers, rule the day. [COMPSTAT], in the words of one participant, is ‘wound up too tight.’ A white Brooklyn detective, a twenty-year veteran, put it this way, ‘COMPSTAT is everything. People are tired of being harassed, searched and frisked, and run off the streets. People are fed up; the cops are, too.’” (citing ELI B. SILVERMAN, *NYPD BATTLES CRIME: INNOVATIVE STRATEGIES IN POLICING 212* (2001))).

299. See, e.g., W. Rees Davis & Bruce D. Johnson, *Criminal Justice Contacts of Users and Sellers of Hard Drugs in Harlem*, 63 ALB. L. REV. 877, 917 (2000).

300. Former Attorney General Janet Reno stated, “[t]he perception of too many Americans is that police officers cannot be trusted . . . Especially in minority communities residents believe the police have used excessive force, that law enforcement is too aggressive, that law enforcement is biased, disrespectful and unfair.” Erik Luna, *Transparent Policing*, 85 IOWA L. REV. 1107, 1117 (2000) (footnote omitted); see also Weitzer, *supra* note 233, 129–30 (“At the neighborhood level, blacks are more likely than whites to believe that blacks living in the respondent’s own community are treated unfairly by the police, and that black neighborhoods receive inferior treatment by the police.”).

301. K. Babe Howell, *Broken Lives from Broken Windows: The Hidden Costs of Aggressive Order-*

police presence can result in less community cooperation with law enforcement.³⁰² The hope is that a more particularized approach will minimize and legitimize these contacts and focus attention on the real problem areas rather than the broad stop and frisk policies in practice today.

D. CONSTITUTIONAL EQUITY

Issues of class discrimination and racial profiling have arisen in regard to high-crime areas since their inception.³⁰³ To have low-income communities of color officially designated as “problem” neighborhoods invites charges of unequal application of the law.³⁰⁴ A particularized approach minimizes the perception of generalized police surveillance but it cannot eliminate the problem. Further, inequality concerns are not always clear cut, as many residents of high-crime areas welcome additional police presence.³⁰⁵ Tensions between citizens who perceive intrusive police treatment are sometimes offset by perceptions of citizens who feel a lack of police protection.³⁰⁶

While a particularized approach does not prevent the perception of unequal treatment, it does prevent police officers and courts from applying (in practice) a different legal standard in higher-crime areas than in lower-crime areas. It demands a rigor of analysis between data

Maintenance Policing, 33 N.Y.U. REV. L. & SOC. CHANGE 271, 271 (2009); Luna, *supra* note 300, at 1119 (“Mistrust of the police not only undermines the perceived authority of the law and agent in question, but also the legitimacy of all laws and all officials. In the end, mistrusting community members are less likely to cooperate with law enforcement, less likely to voluntarily provide information to police, and less likely to comply with legal commands.”).

302. Benforado, *supra* note 85, at 898 (2010) (“If one of our important normative goals is equal treatment and equal protection of our citizens by the law, the fact that police—as a result of official policy and individual discretion—treat people differently depending on the neighborhood in which they are encountered should disturb us. And it is not just out of a sense of fairness that we should be concerned. When people in a particular area feel that police mistreat them, individuals are far less likely to provide the cooperation that police desperately need to clear cases and reduce crime.”).

303. Mia Carpiniello, *Striking a Sincere Balance: A Reasonable Black Person Standard for “Location Plus Evasion” Terry Stops*, 6 MICH. J. RACE & L. 355, 358 (2001); Ronner, *supra* note 134, at 385; Slobogin, *supra* note 224, at 405.

304. Richard R.W. Brooks, *Fear and Fairness in the City: Criminal Enforcement and Perceptions of Fairness in Minority Communities*, 73 S. CAL. L. REV. 1219, 1246, 1256–57 (2000) (finding that high-income African Americans, more so than lower-income African Americans, perceived the legal system as unfair, and that the difference in perception was the result of the low expectations of poorer African Americans and heightened sensitivity of wealthier African Americans); Garrett, *supra* note 279, at 57 (2001) (“[P]olice often defend their conduct by arguing that they merely stop people in high crime neighborhoods—protecting residents and responding to disruptive street activity—or simply respond to calls where suspects are described as ‘black.’ However, police are often accused of relying on ‘flimsy’ evidence in deciding that certain neighborhoods are crime-prone.”).

305. Brooks, *supra* note 304, at 1221 (“Frustrated and overwhelmed by gangs, drugs and crime, blacks in high-crime neighborhoods welcome disproportionately tough criminal sanctions and expanded police discretion.”).

306. *Id.*

and observation that has so far not been applied to the high-crime area question. If the concern is to prevent the creation of an implicit high-crime area exception to the Fourth Amendment, then a particularized approach that focuses on specific locations and data, rather than neighborhood labels, is a move toward constitutional equity.

E. COLLATERAL CONCERNS ABOUT HIGH-CRIME AREA LABELING

The stigma attached to generalized or particularized high-crime areas goes beyond criminal consequences. There are direct economic costs, including less economic development, lower real estate values, increased social disorganization, and reduced opportunities for employment.³⁰⁷ “[R]esearch has shown that ‘high crime’ labels create a destructive feedback loop in which property values decline, causing areas to become less viable socially. Still other research has shown that increasing crime rates follow the wide-scale application of ‘criminal area’ labels to specific neighborhoods, almost encouraging crime.”³⁰⁸

The counterintuitive result is that a greater police presence can, in fact, foster the social conditions that increase crime.³⁰⁹ Disrupting existing social connections through arrest, incarceration, or intrusive surveillance causes normal social connections break down.³¹⁰ The breakdown of social capital³¹¹ can undermine community bonds and pride. While difficult to quantify, the stigma of living on the “wrong side of the tracks” becomes amplified if the police have designated your neighborhood as one of the worst.

An official high-crime area designation may also affect institutions anchoring a neighborhood. Universities might see decreased enrollment, and fewer supermarkets and restaurants might decide to open in the

307. Howell, *supra* note 301, at 271; Tracey L. Mears, *Place and Crime*, 73 CHI.-KENT L. REV. 669, 695 (1998) (“Law enforcement policies that generate high levels of incarceration of geographically concentrated offenders will inevitably lead to family disruption, unemployment, and low economic status. These are the factors that disrupt the community-level social processes that provide law-abiding individuals with incentives to build the important networks that reinforce the crime-fighting potential of law-enforcement policies.”); Jonathan Simon, *Governing Through Crime Metaphors*, 67 BROOK. L. REV. 1035, 1069 (2002) (“[Certain labels resulted in] whole communities [that] remained isolated from the economic growth of the past three decades in large part because of the stigma of being high crime areas.”).

308. PAULSEN & ROBINSON, *supra* note 6, at 38 (citation omitted).

309. Fagan et al., *supra* note 243, at 1554 (2003) (“[N]eighborhoods with high rates of incarceration invite closer and more punitive police enforcement and parole surveillance, contributing to the growing number of repeat admissions and the resilience of incarceration, even as crime rates fall. Incarceration begets more incarceration, and incarceration also begets more crime, which in turn invites more aggressive enforcement, which then re-supplies incarceration.”).

310. See, e.g., Todd R. Clear et al., *Coercive Mobility and Crime: A Preliminary Examination of Concentrated Incarceration and Social Disorganization*, 20 JUST. Q. 33 (2003).

311. ROBERT D. PUTNAM, *BOWLING ALONE: THE COLLAPSE AND REVIVAL OF AMERICAN COMMUNITY* 46, 55–57 (2000).

area.³¹² Insurance rates and premiums might rise.³¹³ In contrast, a particularized designation, limited to blocks and particular crimes, and presumably changing over time, would lessen the stigma on certain neighborhoods.

CONCLUSION

A particularized use of crime-mapping techniques for Fourth Amendment reasonable suspicion analysis embraces the promise of data-driven policing, while at the same time minimizing the intrusions on core liberty interests. It not only adopts the utility of crime-mapping techniques, but pushes those techniques to be more precise. In doing so, it recognizes that the high-crime area language courts have been using for almost forty years is outdated in comparison with the data now available about a given location. Carving out areas of lesser Fourth Amendment protection through official high-crime area designations is not necessary when more targeted information exists about particular crime types and locations. While such an approach burdens police administrators with the requirement to educate their officers, in return it provides police officers with a better understanding about the crime patterns in a given area. It also cabins the stigmatizing effects of labeling entire neighborhoods as "high-crime areas."

A particularized approach also encourages many of the future-thinking policing advances realized by GIS technology. Targeted policing can reduce crime. Further, by encouraging police-citizen communication about discrete crime problems, police can avoid much of the community backlash about overbroad police tactics.³¹⁴ In sharing the data, police can empower citizens to participate in solving some of those real problems,³¹⁵ creating trust and strengthening community policing strategies.³¹⁶

Finally, a particularized approach provides a measure of constitutional protection for citizens living in crime-prone areas. If police are required to act based on the specific crime patterns in an area and are limited by that particularized information, there will be less chance that individuals will be stopped based on generalized suspicion. Courts also

312. B.A. Glesner, *Landlords as Cops: Tort, Nuisance & Forfeiture Standards Imposing Liability on Landlords for Crime on the Premises*, 42 CASE W. RES. L. REV. 679, 774 (1992).

313. John T. Schuring, *Detroit's Renaissance Zones: The Economics of Tax Incentives in Metropolitan Location Decisions, the Results of the Zones to Date, and Thoughts on the Future*, 38 U. DET. MERCY L. REV. 329, 358 (2006).

314. Garrett, *supra* note 279, at 114 (discussing how, when the Chicago Police made the crime data public and encouraged citizens to participate in the crime-identifying process, citizens were able to design maps to show police the problem areas, which resulted in successful crime prevention).

315. See Luna, *supra* note 300, at 1120 ("Empowering citizens through access to government information and by giving them a voice in the decisionmaking process is not only more democratic, but has the potential to establish a basis for trust in otherwise distrusting communities.").

316. RICH, *supra* note 63, at 11.

will be more empowered to test the connection between the particularized information of the officer and the police officer's actual observation on the street.

Thus, it is time to bid farewell to the "high-crime area" term used in Fourth Amendment analysis and introduce a more particularized, data-driven approach to the same problem. In doing so, courts can stay faithful to the existing crime-mapping technology and core Fourth Amendment values.