PRIORITY Criminal Justice NEEDS INITIATIVE

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Better Measures of Justice

Identifying High-Priority Needs to Improve Data and Metrics in Policing

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EXECUTIVE SUMMARY

To inform efforts to improve data and metrics in policing, RAND and the Police Executive Research Forum, on behalf of the National Institute of Justice, convened a panel of subject-matter experts, representing police practitioners, researchers, private vendors, and community advocates, to discuss the current state of police data collection programs. Through a series of virtual interviews with panel participants and a group workshop held in June 2022, we sought to learn about key challenges with extant police data and what is needed to overcome them.

These discussions resulted in the identification and prioritization of a list of needs related to police data collection programs. In the context of our discussions and this report, a need refers to a specific solution to address a salient problem or opportunity. The workshop participants identified a total of 24 needs, five of which were considered to be of highest priority, across three main themes:

- law enforcement data collection and measures more broadly
- understanding the application of policing
- understanding justice outcomes of policing activities, in context.

In this report, we discuss all these needs and provide additional context on the problems or opportunities and potential solutions for the five needs that participants ranked as having the highest priority.

WHAT WE FOUND

Participants agreed that data are crucial to fair and effective policing to inform and evaluate decisions, as well as to promote transparency around those decisions. They further acknowledged that a revolution in police data is necessary to keep pace with law enforcement agencies' rapid move to adopt proactive, problem-oriented, and evidence-based practices that address

SELECTED PRIORITY NEEDS

RESULTS

Law enforcement data collection and measures more broadly

- Top-to-bottom changes throughout law enforcement agencies (LEAs) are needed to foster a fundamental data culture to improve data initiatives in policing.
- LEAs should hire individuals with strong analytic skills into permanent positions and provide them training with law enforcement officers in the field.
- LEAs should engineer data collection environments and tasks to create *intelligent workflows*, which automate validation checks that identify where additional data collection would be useful, and to prevent and reduce the potential for human error.

Understanding the application of policing

- Data collection must be mandated. Engaging Peace Officer's Standards and Training or other state-level agencies may be the most effective solution.
- LEAs should work with information technology vendors to develop data collection systems with built-in functions that facilitate information linkability, sharing, and analysis. States can create laws requiring data collection and minimum data system standards and provide funding to assist LEAs with implementing such systems.

Understanding justice outcomes of policing activities, in context

- Federal guidelines should be developed on the best approaches for determining a person's race and ethnicity to ensure that LEAs collect race/ethnicity data in a manner that is comparable to sources of baseline population data. These guidelines should also include methodological guidance on how to use and compare such data and identify outliers.

a broad set of social problems that are of greatest concern to the communities they serve. In general, police data systems must go beyond simply counting police activities to focus on a broader range of elements that span from problem definition to evaluation of efforts. Modern policing requires data that can help identify and define problems, including the root causes of those problems; inform tailored solutions that may include law enforcement or involve a range of other relevant government responses; track response implementation, including its fidelity, quality, and equity; and evaluate successes beyond changes in general, legally defined categories of crime.

Although the objective of the workshop was initially to determine opportunities and needs for identifying and developing these new data points in police work, the conversation largely focused on the need to improve fundamental aspects of police data collection programs. Addressing problems that have long plagued the field (and have been identified in several previous efforts to determine how to improve criminal justice data), these needed improvements encompass basic data collection and management processes, as well as data infrastructure. Such improvements would allow agencies to fully capitalize on the vast amount of information that is already collected and to facilitate the collection of new, more insightful data points. Because of the decentralized nature of policing in the United States, the profession would benefit from a common set of clearly defined and operationalized metrics that all agencies can, and perhaps *should*, collect. Research has an important role to play in identifying and validating these metrics for the police profession. In addition, guidance for agencies on policies and procedures to formalize data collection tasks into day-to-day operations would be helpful to the field. Beyond standards and policies, agencies require the requisite human resources—trained and experienced in data collection and analytical tasks—to achieve a true data-driven orientation.

In addition to the selected priority needs shown on the cover page, participants agreed on the importance of

- comprehensive and intentional plans for how data are to be integrated into the tasks of each person and unit throughout the organization
- meaningful career pathways, certification and accreditation programs, and a set of standards to foster the professionalization of law enforcement data roles
- mechanisms that intentionally integrate civilian data stewards into the larger sworn culture to help agencies leverage data to inform operations and advise on ways to improve data-related processes and procedures throughout the organization
- new metrics that capture unmeasured but important aspects of police work, such as what police do with their time, whether public safety resources are equitably allocated and applied, and public perceptions about policing services
- modern, efficient, and user-friendly data tools that agencies can acquire for a reasonable cost
- regular data entry checks or data auditing processes to ensure data validity and reliability.

Participants agreed that data are crucial to fair and effective policing to inform and evaluate decisions, as well as to promote transparency around those decisions.

INTRODUCTION

Data provide the critical foundation on which police agencies make informed decisions, evaluate the impact of those decisions, and promulgate transparency to the public. Law enforcement agencies (LEAs) collect data on many aspects of their work, such as calls for service, crime incidents, response times, and enforcement actions (e.g., citations, arrests). Technological advancements in computer-aided dispatch (CAD) and record management systems (RMS) have enabled many agencies to digitize information, which streamlines data collection and storage, enables the capture of a broader range of increasingly detailed data points, and fosters the improved manipulation, analysis, and sharing of data.

Despite these innovations, the usability of police data remains significantly limited. For example, data are often stored across multiple systems and are difficult to export or link; contain incomplete or inaccurate information; and are practically impossible to compare between agencies (and sometimes within a single agency) over time because of a lack of standardization (Arnold Ventures, 2021). Furthermore, while extant data are generally helpful in capturing the *outputs* of police work, they remain limited in the insight that they provide into the *nature*, *quality*, or *outcomes* of policing and public safety (Moore and Braga, 2003). As government institutions that are accountable to the public, police agencies must collect the right data in a valid and reliable way to (1) calculate the public's return on public safety investments and (2) ensure that policing aligns with community expectations.

Professionalization and the Emergence of Data in Policing

Routine collection of data in policing dates back to the early 20th century during the move to "professionalize" law enforcement (Gaines and Kappeler, 2008). Prior to the 1920s, policing was highly informal, based on a broad set of priorities, and deeply influenced by the preferences of local political leaders. During this period, policing focused less on addressing crime and was instead largely a tool leveraged by political leaders to remain in power by serving the interests of socially powerful communities. To eradicate the widespread corruption and inefficiencies generated under this system, the professionalization movement sought to reform policing via the implementation of modern management principles and the establishment of law enforcement as experts in crime prevention and control. August Vollmer, widely considered the leader of the profes-

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sionalization movement, advocated for higher educational standards for officers, the adoption of novel technologies, and the use of science-based practices (Gaines and Kappeler, 2008). A key component of this new philosophy involved using data to deploy resources and solve crimes, and Vollmer was among the first to implement a centralized records system that would inform operational decisionmaking. Vollmer later helped create the Uniform Crime Report (UCR) program, the nation's first official crime statistic program (Crank and Langworthy, 1992). Nearly a century later, police agencies continue to keep records of reported crimes, which often serve as the dominant measure of police performance, along with other metrics tied to the professional model of policing, such as response times, number of arrests, and clearance rates. The professionalization movement refocused policing on law enforcement's official public safety mandate of addressing crime. Counting crimes and calculating clearance rates helped the public determine whether police were meeting their crime control responsibilities. However, this approach was reactive by nature, focusing on solving crimes after they had happened and apprehending offenders.

These historical data points have and continue to serve a useful purpose. For example, these data have provided the inputs for CompStat. CompStat, which proliferated in police agencies in the 1990s, is a management tool based on four core principles: (1) timely and accurate information or intelligence, (2) rapid deployment of resources, (3) effective tactics, and (4) relentless follow-up (Police Executive Research Forum [PERF], 2013; Weisburd et al., 2004). The CompStat process generally involves two key components. First, regular reports are produced that describe the frequency and percentage change (e.g., over a 28-day or year-to-date period) in key crimes over discrete areas (e.g., precincts or beats). Second, command staff meet regularly to explain the reasons why certain crimes have increased and what is being done to reverse that trend or to discuss what was done to achieve crime reductions. CompStat has been used by police agencies to monitor agency performance and hold mid-level managers accountable across multiple policing domains, such as crime, use of force, staffing, and citizen complaints (PERF, 2013). Although still a reactive system, CompStat introduced elements of crime *prevention* to police work by forcing mid-level managers to determine and address the underlying causes of crime incidents in their beats in order to reverse upward trends in crime incidents. Doing so required new data sources (e.g., information and intelligence) and methods of analysis (e.g., relentless follow-up) to craft solutions and ensure that they worked.

The CompStat tool has evolved substantially into a host of new programs since it was originally developed. For example, in 2016, the National Police Institute and the Vera Institute of Justice partnered to develop CompStat360. CompStat360 builds on the performance management principles of the original CompStat program by providing a more comprehensive view of public safety beyond a focus on crime incidents alone (National Policing Institute, undated). The model is designed to cover accountability, community partnerships, organizational effectiveness, and officer wellness (Police Foundation, undated). Shah, Burch, and Neusteter (2018) describes in detail how community measures, specifically, can be incorporated into a performance management model like CompStat. A similar program, COMPSTAT for Justice (C4J), developed by the Center for Policing Equity, seeks to leverage the fundamental performance management principles of CompStat to identify sources of inequity in policing and inform fairer, more effective law enforcement (Center for Policing Equity, undated).

Community Policing and Calls for Change

Institutionalization of data regimes as part of the professionalization of policing enabled agencies to demonstrate productivity and improve operational decisionmaking via the allocation of resources based on concrete public safety concerns rather than on hunches or political interests. However, shortcomings of traditional police performance measures were evident as far back as the 1960s. In 1967, for example, the President's Commission on Law Enforcement and the Administration of Justice identified "the lack of firm data" as one of the greatest challenges in

ABBREVIATIONS

AVL	Automatic Vehicle Location
CAD	computer-aided dispatch
COP	community-oriented policing
FBI	Federal Bureau of Investigation
GPS	Global Positioning System
IT	information technology
LEA	law enforcement agency
NIBRS	National Incident-Based Reporting System
NIJ	National Institute of Justice
PCJNI	Priority Criminal Justice Needs Initiative
PERF	Police Executive Research Forum
POP	problem-oriented policing
POST	Peace Officer's Standards and Training
RMS	record management system(s)
UCR	Uniform Crime Report

conducting a comprehensive investigation of the criminal justice system, undermining the development and implementation of new and promising strategies (Katzenbach et al., 1967, p. 13). The commission noted that it was impossible to document critical aspects of policing, such as the amount of time officers spend on different activities. As a result, the commission relied on "fragmentary information, combined with the experienced judgment of those who have worked in this field" to develop a series of recommendations for improvement (Katzenbach et al., 1967, p. 13).

Not only were data on important measures of policing and criminal justice missing, but also the commission raised broader concerns about what traditional metrics said about public safety. Because these measures largely reflect outputs of policing rather than outcomes, their use creates an asymmetrical relationship between what police do and what they are intended to achieve (Blumstein, 1999). In other words, more arrests and quicker response times may not lead to better public safety. Low crime rates may simply be an artifact of low reporting, which may reflect low community trust and confidence in the police force. And arrests may indicate a failure to properly resolve a situation before it gets out of hand (Kelling, 1992). Focusing on serious crime excludes measures that are most important to communities and impedes the development of strategies better suited to address those measures. As Kelling (1999, p. 28) noted, traditional measures "not only fail to keep an accurate score, they confuse everyone about the objective of the game."

Calls for better data arose with the emergence of new models of policing in the 1980s, such as community-oriented policing (COP) and problem-oriented policing (POP). These models were designed to reorient the focus of policing away from fundamental tenants of police professionalization to prioritize community partnerships instead as a way to identify myriad problems of concern and develop tailored solutions to address them (Office of Community Oriented Policing Services, 2014). The basic idea of both COP and POP is to address issues that communities care about most, which often cause more-significant public safety issues (Eck, 2006; Skogan, 2006). The emergence of COP and POP represents a major shift in policing from responding to crime after it has occurred to addressing conditions, circumstances, or other situations that generate public safety problems. Furthermore, these strategies move away from the tenet that police have a monopoly on maintaining public safety and instead prioritize the police and the community as "co-producers" of public safety.

Community feedback is notably difficult to collect in a way that is comprehensive, accurate, and cost-effective.

Therefore, COP and POP required police agencies to develop new data sources and methods for learning about and tracking community concerns, such as fear of crime, perceptions of disorder, and quality-of-life issues. These strategies also required a host of new performance metrics for police, such as community satisfaction and perceptions of police legitimacy (Skogan, 2006). However, police are less likely to learn about such concerns through standard reporting structures that are designed to capture only legally defined incidents, such as crime (Skogan, 2006). Whereas community surveys have served as a common tool to gather broader information, technological advancements offer new methods for understanding the community perspective. For example, a recent landscape report describes various ways to measure community sentiment through such tools as text messaging, QR codes, and audio and video data collected via body-worn cameras (Camello et al., 2023). Community feedback is notably difficult to collect in a way that is comprehensive, accurate, and cost-effective. In 2023, the National Institute of Justice (NIJ) launched a challenge to identify innovative methods for collecting this kind of feedback and made several awards to achieve this goal (NIJ, 2023).

The shortcomings of police data and the incompatibility of extant performance measures with those needed to foster successful COP and POP approaches have long been recognized. In the 1990s, NIJ and the Office of Community Oriented Policing Services organized a series of meetings that led to the publication of *Measuring What Matters* (Langworthy, 1999). These published proceedings include 15 articles written by leading police scholars and practitioners about ways to "reconceptualize" police data in a way that aligns with both COP and POP philosophies. Nearly three decades later, similar efforts have been dedicated to improving police and criminal justice system data. Between 2014 and 2016, the National Academy of Sciences, Engineering, and Medicine convened multiple work-

> *Better* refers to the introduction of new metrics that can better capture key aspects of policing and public safety that matter most to members of the community.

shops to discuss ways to modernize crime statistics and released two reports (National Academies of Sciences, Engineering, and Medicine, 2016; National Academies of Sciences, Engineering, and Medicine, 2018). In 2021, Arnold Ventures released a report detailing six key recommendations for modernizing criminal justice data from its roundtable of experts.

Reimagining Police (and Criminal Justice) Data

Despite the growth and evolution of data in policing over the past several decades, calls for better data continue to grow. In this context, *better* refers not only to improved validity, reliability, timeliness, and usefulness of information already collected by police agencies but also to the introduction of new metrics that can better capture key aspects of policing and public safety that matter most to members of the community. Numerous efforts, programs, and initiatives have been dedicated to the goal of developing better data in policing. At the federal level, such efforts include the introduction of the National Incident-Based Reporting System (NIBRS), which was launched in 1989, to provide a greater level of detail on crime incidents, victims, and offenders than is offered in the summary statistics collected by the UCR (Federal Bureau of Investigation [FBI], undated-a). However, as with the UCR program, participation in NIBRS is voluntary, and increasing agency participation has been a challenge. A working group of experts, convened by the Council on Criminal Justice on several occasions during 2023, identified several key challenges to NIBRS participation, such as staffing challenges at the state level, issues with agencies' RMS, and a lack of federal coordination (Council on Criminal Justice, 2023a; Council on Criminal Justice, 2023b; Council on Criminal Justice, 2023c). In January 2021, the FBI retired the UCR program to encourage agencies to transition to NIBRS, but only about half of police agencies reported data to NIBRS (Congressional Research Service, 2022). Widespread adoption of NIBRS by police agencies across the country would lead to drastic improvements in data insights about crime incidents, especially across the nation, and would provide a richer data source to promote data-driven practices in police agencies (National Crime Statistics Exchange Team, 2021). However, NIBRS does not necessarily provide the localized metrics that agencies may need to carry out proactive, tailored, and community-driven interventions (e.g., POP) or offer insight into a broad range of relevant public safety issues beyond crime.

Another major federal data collection initiative was the creation of the National Use-of-Force Data Collection program, which the FBI launched in 2015. This program aims to provide national estimates of serious force used by police officers and the circumstances of those incidents (Criminal Justice Information Services Division, Information Technology Management Section, Law Enforcement Technology Services Unit, 2023). This data collection is designed to go beyond simply counting serious use-of-force incidents and gathers information from agencies using a variety of officer, subject, and situational metrics. Examples include officers' demographic characteristics, years of experience, and duty status; subjects' demographic characteristics, impairments, threats and behaviors, and weapon possession; and such situational characteristics as the number of officers and subjects involved, offense type, location information, and whether a senior officer was consulted during the incident (FBI, undated-b). Before this program, no formal efforts were in place to provide national data on police use of force outside informal initiatives maintained by news media outlets (and these tracked only fatal shootings) (e.g., Washington Post, 2015–2023). To provide additional context on use-of-force incidents and other law enforcement data collection initiatives, the FBI launched the Law Enforcement Public Contact (LEPC) Data Collection program in 2017. LEPC seeks to develop national estimates of police contact with members of the public based on calls for service (FBI, 2024). Finally, a 2022 report from the Priority Criminal Justice Needs Initiative (PCJNI) highlighted ongoing challenges with adequate data collection related specifically to deaths in law enforcement custody (Banks et al., 2022).

During the same time frame, the Biden administration has focused on improving criminal justice data in a way that fosters transparency, enhances public trust in police, and promotes

racial equity. In January 2021, the President signed Executive Order 13985, "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government." Section 9 of Executive Order 13985 required the establishment of the Equitable Data Working Group, which was tasked with developing a federal strategy for improving data transparency and measuring disparities (Biden, 2021). In May 2022, the President signed Executive Order 14074, "Advancing Effective, Accountable Policing and Criminal Justice Practices to Enhance Public Trust and Public Safety." Executive Order 14074 states that building trust in policing and criminal justice requires "transparency through data collection and public reporting" (Biden, 2022, p. 2). Among other priorities, Executive Order 14074 seeks to develop a national law enforcement accountability database, improve use-of-force data collection, assess the effect of police use of force on communities, and collect comprehensive criminal justice statistics (Biden, 2022).

As a result of Executive Order 14074, in 2023, the Criminal Justice Statistics Interagency Working Group issued a detailed report about the state of police data in the United States and a detailed plan of action for improving the validity and reliability of that information. The working group recommended five specific actions:

1. Local leaders should encourage law enforcement to collect detailed data, use it to design more equitable policies, and regularly share data to promote accountability.
2. States should mandate and support detailed data collection and sharing about police activities.
3. Federal agencies should collaborate to simplify, standardize, and modernize the collection of law enforcement data.
4. State, Tribal, local, and territorial law enforcement agencies should build the technical capacity to consistently report data to federal collections and share data publicly.
5. All levels of government should consult with data and technical experts and civil society, as appropriate, to inform decision-making about law enforcement data collection and sharing. (Criminal Justice Statistics Interagency Working Group of the National Science and Technology Council, 2023, pp. 2–3)

In 2021, the Bureau of Justice Assistance funded the Justice Counts initiative. This program, led by the Council for State Governments in partnership with more than 20 leading criminal justice organizations, is developing and implementing more-accurate and more-accessible criminal justice data metrics in law enforcement, prosecution, defense, courts, jails and prisons, and community supervision, for practitioners and policymakers (Callahan, 2022). A broad group of state, county, and municipal criminal justice stakeholders create metrics through a consensus-driven process. Participants enter data into a national data infrastructure and receive tools and resources from Justice Counts to derive meaningful insights. Law enforcement metrics include measures of budgets, staffing, calls for service, arrests, reported crime, uses of force, and complaints (Council of State Governments Justice Center, undated). Initiative participants are developing more-consistent and more-reliable metrics to understand how individuals move through the entire criminal justice system so that better decisions can be made about how to improve public safety.

METHODS

To help inform a research agenda for developing better metrics in policing and the criminal justice system, PERF and RAND, on behalf of NIJ, convened a virtual workshop of subject-matter experts, representing police practitioners, researchers, community advocates, and private-sector representatives. PERF conducted the workshop via an online video conferencing application over three, two-hour working sessions held on July 12, 2022, and July 14, 2022. A total of 18 experts participated in the workshop (see the Participants box on p. 3 for their names and affiliations).

We conducted seven pre-workshop virtual interviews with groups of participants between June 15, 2022, and June 29, 2022, to identify an initial list of needs and problems or opportunities for creating better metrics in policing. In the context of this workshop, a *need* refers to the pairing of a potential solution to a problem or opportunity for improving police data collection. During the workshop sessions, participants engaged in semistructured discussions co-facilitated by PERF and RAND team members. During the first session, expert discussions focused on finalizing the list of needs, which required participants to add and remove items from the list and revise language to ensure that the group sufficiently and accurately captured all relevant needs. Once the needs list was complete, the experts participated in a voting exercise to rank the needs in order of importance. Throughout the second and third sessions, partici-

pants focused on determining salient problems or opportunities related to each need, beginning with the needs identified as most important. They were able to include as many problems or opportunities for each need as they deemed appropriate. Finally, experts participated in a second voting exercise to generate a prioritized set of needs based on their perceived importance and likelihood of success. Importance was defined on a scale of 1 to 9 as a measure of the impact a need would have on the associated problem. Probability of success was defined on a scale of 1 to 9 as a measure of how likely the need could be met and implemented, given a variety of potential concerns (see the technical appendix for a detailed description of the Delphi voting exercise and prioritization process).

RESULTS

Workshop participants identified 24 high-priority needs—five of which were categorized as having the highest priority—during the ranking process. We organized the needs determined through workshop discussions under three broad categories based on the type of problems that they were intended to address:

- law enforcement data collection and measures more broadly
- understanding the application of policing
- understanding justice outcomes of policing activities, in context.

Of the five top-tier needs, two relate to understanding the application of policing, and three relate to law enforcement data collection and measures more broadly. Although the category of understanding justice outcomes of policing activities, in context had no top-tier needs, it has several third-tier needs.

Top-Tier Needs

Five of the 24 needs were considered to be of the highest priority based on their importance and likelihood of success. Tier 1 needs are summarized in Table 1. In general, these high-priority needs relate to basic data collection and management processes, as well as human and technical resources. Addressing these needs would position police agencies to create and leverage novel metrics and make more useful the vast amount of information already collected by police and other public safety partners. Participants suggested that mandates would be needed to motivate police leaders to improve data initiatives. Professional public safety organizations could serve as key partners in identifying priorities to inform such mandates, promote adherence to them, and foster the development of communities of practice to facilitate implementation.

However, the top-tier needs reflect fundamental problems that must be addressed before any mandate would be successful. For example, one need reflected issues with data infrastructure in police agencies. Currently, most information is stored across different systems, making it difficult or impossible to merge, link, or otherwise integrate the data into a common dataset for analysis. In other cases, data are collected informally in spreadsheets, word documents, or even on paper. These systems also often lack basic tools that facilitate analysis or visualization. Even if the right tools are in place, other top-tier needs point to the problems with the quality of information being entered into police databases. Basic data governance policies and procedures are missing in most police agencies. Experts expressed concern about the validity, reliability, and completeness of many police records. One possible solution might be to develop more intelligent workflows and regular validation checks (perhaps automated) to mitigate human errors.

Police agencies also require the proper human resources to pursue any plans to significantly improve or overhaul their data initiatives. The expert participants agreed that staff capacity was a major gap because personnel in police agencies often lack knowledge about and experience with data and measurement. Often, officers develop analytic skills during their careers, but as officers move up the ranks, their analytical skills are removed from positions that need them. Continuously hiring individuals with strong skills in data analytics would decrease this problem. A truly data-driven public safety organization requires several types of analysts, including researchers and practitioner academics (i.e., *pracademics*).

Tier 2 Needs

Ten of the 24 needs were classified as Tier 2, shown in Table 2. Most of these needs pertain to guidance that could support agencies in improving their data functions. Such guidance includes federally led training and technical assistance programs; the development of a network of learning sites for data leaders to disseminate best practices, as well as guidebooks and other practitioner-friendly references for police leaders to use when developing plans to improve organizational structure and processes around data; and model training programs on data hygiene for police officers. Two needs in the Tier 2 category seek to simplify data collection and reporting processes. In workshop discussion, experts described the need for more

Table 1. Tier 1 Needs

Problem or Opportunity	Potential Solution
Law enforcement data collection and measures more broadly	
LEAs lack a culture of data and measurement. Officers do not understand the reasons for required data collection and reporting, so they lack buy-in and are not invested in doing good data collection. This lack of a data culture leads to inadequate data governance policies, procedures, and processes; insufficient analytic capacity and data fluency; and too few connections between officers and analysts. Agencies are not conducting data audits and do not always know the quality and contents of their data. As a result, the value of data for measures of justice outcomes is often limited by poor quality, consistency, and usability.	• Hire individuals with strong analytic skills for permanent positions in law enforcement agencies, such as certified crime analysts, trained researchers, and pracademics, and provide them training with law enforcement officers in the field. • Continue to professionalize analytic roles in policing through training, education, and certifications.
There are no effective strategies, informed by human psychology, for incentivizing officers to capture needed data in a consistent and useful manner. Engineer environments that incentivize quality reporting by officers. Look for ways to automate data collection to ease the burden on officers, such as automated GPS [Global Positioning System] recording or AVL [Automatic Vehicle Location] data for officers at a scene; automate data extraction from narratives. Better, more useful data collection will often require changing how police officers collect and record that data.	• Engineer data collection environments and tasks to create intelligent workflows (automated validation checks that identify where additional data collection would be useful) and to prevent and reduce the potential for human error.
LEAs lack a culture of data and measurement. Officers do not understand the reasons for required data collection and reporting, so they lack buy-in and are not invested in doing good data collection. This lack of a data culture leads to inadequate data governance policies, procedures, and processes; insufficient analytic capacity and data fluency; and too few connections between officers and analysts. Agencies are not conducting data audits and do not always know the quality and contents of their data. As a result, the value of data for measures of justice outcomes is often limited by poor quality, consistency, and usability.	• Implement regular data entry checks or data auditing processes to ensure validity and reliability of data. • Technical guides, exception reports based on data from national entities (e.g., FBI), and scripts could be developed and provided to LEAs by vendors.
Understanding the application of policing	
Despite the transition to more-comprehensive data reporting programs (e.g., NIBRS), LEAs still do not consistently collect data on key incidents, law enforcement activities, and other important measures (e.g., stops, searches, use of force, misconduct, diversions, public sentiment, calls for service and 911 calls) in a standardized manner. This nonuniformity of data makes it challenging to understand critical details about policing methods, such as how they are used and applied.	• Data collection must be mandated. • Engaging Peace Officer's Standards and Training (POST) or other state-level agencies may be the most effective solution. • PERF, IACP [International Association of Chiefs of Police], MCCA [Major Cities Chiefs Association], and other professional organizations can also help push mandates and standards by providing legitimacy "close to the ground" and create communities of practice around how to use and analyze the data that are being collected. • Incorporating the community voice will help prioritize and triage what the data priorities are. • Will also need to get police unions on board with priorities.

Table 1—Continued

Problem or Opportunity	Potential Solution
Many LEAs collect an abundance of data, but those data are stored across multiple systems (e.g., RMS/CAD, Microsoft Access database management application and Microsoft Excel spreadsheet, printed records) and often used by different teams, making them difficult to extract, link, and leverage for analysis and development of new outcome measures. Data systems do not systematically or uniformly support analysis, data interoperability, or data extractions.	• Develop data collection systems with built-in functions that facilitate information linkability, sharing, and analysis (e.g., interoperability, exportability, APIs [application programming interfaces], visualizations). • Data collection systems also need to be able to handle and incorporate historic data. • Information technology (IT) vendors are most likely to build these systems, and they should make sure their systems have these capabilities. • States can create laws requiring data collection and minimum data system standards and provide funding to assist agencies with implementing such systems.

Table 2. Tier 2 Needs

Problem or Opportunity	Potential Solution
Law enforcement data collection and measures more broadly	
LEAs lack a culture of data and measurement. Officers do not understand the reasons for required data collection and reporting, so they lack buy-in and are not invested in doing good data collection. This lack of a data culture leads to inadequate data governance policies, procedures, and processes; insufficient analytic capacity and data fluency; and too few connections between officers and analysts. Agencies are not conducting data audits and do not always know the quality and contents of their data. As a result, the value of data for measures of justice outcomes is often limited by poor quality, consistency, and usability.	• Develop guidebooks sensitive to agency size and other factors on implementation of data-driven decisionmaking systems across all levels in LEAs. Guidebooks should contain clear instruction on how to align data use with position-specific workflows so that personnel understand how to routinely use data to inform and evaluate their activities, procedures for sharing data and developing data partnerships, communicating with data, and how data programs align with organizational values.
LEAs lack a culture of data and measurement. Officers do not understand the reasons for required data collection and reporting, so they lack buy-in and are not invested in doing good data collection. This lack of a data culture leads to inadequate data governance policies, procedures, and processes; insufficient analytic capacity and data fluency; and too few connections between officers and analysts. Agencies are not conducting data audits and do not always know the quality and contents of their data. As a result, the value of data for measures of justice outcomes is often limited by poor quality, consistency, and usability.	• Through POST and other training organizations, develop preservice and in-service training programs for officers and midlevel managers that train them on the use of data and empower them with the skills to use data.
There is no clear long-term road map. Even if consensus is reached on what standard measures should be, it is not clear how to achieve the long-term goal of overcoming the significant institutional and technological barriers to getting those measures adopted, used, and sustained more broadly over time.	• Create a model for producing a forward-looking, comprehensive strategic plan that defines key domains, KPIs [key performance indicators], milestones, goals, and processes for implementation. The strategic plan model should be written for police chiefs and sheriffs and include a mechanism for obtaining community feedback.

Table 2—Continued

Problem or Opportunity	Potential Solution
There is no clear long-term road map. Even if consensus is reached on what standard measures should be, it is not clear how to achieve the long-term goal of overcoming the significant institutional and technological barriers to getting those measures adopted, used, and sustained more broadly over time.	• At the federal level, provide training and technical assistance to agencies looking to implement or expand their data collection initiatives. • Tie federal funding to specific data collection requirements.
Much of the data collected by LEAs is for business purposes, to fulfill reporting requirements (e.g., NIBRS), or geared toward short-term tactical or intelligence-driven activities rather than with research, evaluation, or other "big picture" analyses in mind. Agencies do not collect or use their data for performance management or for an understanding of what their officers are actually doing, how timely reporting is, etc. This narrows what data is collected or stored, thus limiting the development of new measures and novel analyses.	• Conduct research on novel data sources (e.g., natural language processing of body-worn camera videos) to determine utility for driving operations and strategies.
There is no clear long-term road map. Even if consensus is reached on what standard measures should be, it is not clear how to achieve the long-term goal of overcoming the significant institutional and technological barriers to getting those measures adopted, used, and sustained more broadly over time.	• Develop a network of "learning sites" among LEAs that are leaders in data collection and analysis. • Identify a coordinating organization that can facilitate partnerships between LEAs and learning sites to foster the development and implementation of better data practices. The program could be modeled on similar efforts, such as Strategic Site Liaisons.
Understanding the application of policing	
Despite the transition to more-comprehensive data reporting programs (e.g., NIBRS), LEAs still do not consistently collect data on key incidents, law enforcement activities, and other important measures (e.g., stops, searches, use of force, misconduct, diversions, public sentiment, calls for service and 911 calls) in a standardized manner. This nonuniformity of data makes it challenging to understand critical details about policing methods, such as how they are used and applied.	• Use existing research findings for guidance on metrics and data standards. Where gaps exist, conduct case study research to identify which metrics LEAs should collect and how those measures should be implemented. Newer research may provide guidance on new topics, such as diversion and public sentiment. Newer research may also identify current barriers and challenges to implementing new metrics.
Despite the transition to more-comprehensive data reporting programs (e.g., NIBRS), LEAs still do not consistently collect data on key incidents, law enforcement activities, and other important measures (e.g., stops, searches, use of force, misconduct, diversions, public sentiment, calls for service and 911 calls) in a standardized manner. This nonuniformity of data makes it challenging to understand critical details about policing methods, such as how they are used and applied.	• Support agencies in implementing data standards by providing funding and also creating and providing a singular structure or solution to collecting required data across multiple jurisdictions to avoid multiple different solutions to a similar problem. Allow flexible incentives and standards to make such standards applicable to different sizes and types of agencies.

Table 2—Continued

Problem or Opportunity	Potential Solution
Many LEAs collect an abundance of data, but those data are stored across multiple systems (e.g., RMS/CAD, Microsoft Access database management application and Microsoft Excel spreadsheet, printed records) and often used by different teams, making them difficult to extract, link, and leverage for analysis and development of new outcome measures. Data systems do not systematically or uniformly support analysis, data interoperability, or data extractions.	• Federal government can help improve private-sector practices by developing standards for data systems and providing agencies with funding for upgrading their data systems to a system that meets those standards. • Federal government can also look for ways to streamline and speed up the procurement process, possibly with approved vendors who meet minimum standards. This will incentivize IT vendors to create systems that better support agency needs. Standards could incorporate interoperability of systems. • Standards and funding could also include or require an integrator or implementer who will oversee the process to ensure that best practices are followed with setting up data systems.
Despite the transition to more-comprehensive data reporting programs (e.g., NIBRS), LEAs still do not consistently collect data on key incidents, law enforcement activities, and other important measures (e.g., stops, searches, use of force, misconduct, diversions, public sentiment, calls for service and 911 calls) in a standardized manner. This nonuniformity of data makes it challenging to understand critical details about policing methods, such as how they are used and applied.	• Communicating about these standards and requirements to agencies should be presented as an agile task that can be updated over time. Most agencies can probably get 80 percent of the way there in a way that is not too onerous. Erring on the side of simplicity and implementability is always the right way to go.

standardization among data systems. Developing minimum standards and incentivizing vendors to meet them would make it easier for agencies to procure more-functional tools that aid data collection. Finally, participants suggested that existing research may already provide guidance for collecting key metrics in policing. A scan and consolidation of insights from the literature would be useful. New research could address any remaining gaps. Research is also needed to identify the potential of obtaining insight from novel data sources, such as body-worn cameras, or from innovative tools and methods to better leverage existing sources, such as natural language processing.

Tier 3 Needs

Nine needs were classified as Tier 3, shown in Table 3. Two of these needs relate to the improvement of data collection systems. In general, existing systems lack customization or require skilled IT professionals to manage. Simplifying systems to facilitate their usability would help. Procuring new data systems can also be challenging; the process often takes a long time, and it is difficult to determine whether solutions will address an agency's needs. Two other Tier 3 needs reflect additional data governance issues in police agencies, specifically at the data entry stage. For example, identifying methods to automate data collection tasks may be useful for mitigating human error and reducing the burden of data entry on officers. Where automation is not possible, human factors research on the data entry process may yield valuable insights that can inform improvements to the reporting structure or procedures.

The remaining Tier 3 needs pertain to improving existing metrics or developing new ones. For example, much could be learned from calls-for-service data; however, requirements and standards are needed to facilitate the meaningful analysis and comparison of data within and between jurisdictions. Participants also suggested needs aimed at creating new metrics to gauge the performance of police officers, including work outputs and outcomes, as well as better racial/ethnic metrics to measure equity. Experts agreed that community perspectives are needed in the development of these new metrics. Finally, they suggested exploring ways in which oversight entities (e.g., civilian review boards) may facilitate new data collection activities.

Table 3. Tier 3 Needs

Problem or Opportunity	Potential Solution
Law enforcement data collection and measures more broadly	
There are no effective strategies, informed by human psychology, for incentivizing officers to capture needed data in a consistent and useful manner. Engineer environments that incentivize quality reporting by officers. Look for ways to automate data collection to ease the burden on officers, such as automated GPS [Global Positioning System] recording or AVL [Automatic Vehicle Location] data for officers at a scene; automate data extraction from narratives. Better, more useful data collection will often require changing how police officers collect and record that data.	• Identify and leverage emerging tools and technologies that can automate data collection tasks to provide insights into policing in a way that minimizes data collection burdens on officers.
Much of the data collected by LEAs is for business purposes, to fulfill reporting requirements (e.g., NIBRS), or geared toward short-term tactical or intelligence-driven activities rather than with research, evaluation, or other "big picture" analyses in mind. Agencies do not collect or use their data for performance management or for an understanding of what their officers are actually doing, how timely reporting is, etc. This narrows what data is collected or stored, thus limiting the development of new measures and novel analyses.	• Law enforcement leadership must understand and embrace performance management systems, examine internal work processes to identify relevant data points and metrics to be measured, including both work outputs and organizational outcomes. • Institutionalize data efforts and performance metrics through administrative changes.
Much of the data collected by LEAs is for business purposes, to fulfill reporting requirements (e.g., NIBRS), or geared toward short-term tactical or intelligence-driven activities rather than with research, evaluation, or other "big picture" analyses in mind. Agencies do not collect or use their data for performance management or for an understanding of what their officers are actually doing, how timely reporting is, etc. This narrows what data is collected or stored, thus limiting the development of new measures and novel analyses.	• Explore the potential for other entities, such as civilian review boards, external oversight agencies, or private-sector actors (e.g., insurance industry) for managing the collection and analysis of data on police activities.
There are no effective strategies, informed by human psychology, for incentivizing officers to capture needed data in a consistent and useful manner. Engineer environments that incentivize quality reporting by officers. Look for ways to automate data collection to ease the burden on officers, such as automated GPS recording or AVL data for officers at a scene; automate data extraction from narratives. Better, more useful data collection will often require changing how police officers collect and record that data.	• Conduct human factors research to understand how officers and analysts code data and identify more-effective options for data entry.
Understanding the application of policing	
Many LEAs collect an abundance of data, but those data are stored across multiple systems (e.g., RMS/CAD, Microsoft Access database management application and Microsoft Excel spreadsheet, printed records) and often used by different teams, making them difficult to extract, link, and leverage for analysis and development of new outcome measures. Data systems do not systematically or uniformly support analysis, data interoperability, or data extractions.	• Agencies need specialized IT personnel and IT departments that understand the needs of law enforcement, and analysts need training from vendors on how to use their systems. IT personnel and analysts should be able to use the system without relying on vendor helpdesks.

Table 3—Continued

Problem or Opportunity	Potential Solution
Many LEAs collect an abundance of data, but those data are stored across multiple systems (e.g., RMS/CAD, Microsoft Access database management application and Microsoft Excel spreadsheet, printed records) and often used by different teams, making them difficult to extract, link, and leverage for analysis and development of new outcome measures. Data systems do not systematically or uniformly support analysis, data interoperability, or data extractions.	• Develop vendor standards or best practices for working in the public sector. • Agencies need smart procurement processes that incorporate clear expectations and capabilities for handling the inevitable changes in the data system that happen.
Understanding justice outcomes of policing activities, in context	
Given current approaches to collecting data about police-public interactions, measuring racial bias in police activity can be challenging. For example, at the most fundamental level, official reports do not always capture the race and ethnicity of the people with whom officers have interacted. In other cases, there are methodological challenges with how encounters should be documented (e.g., a traffic stop that involves four persons of differing races and ethnicities).	• Develop federal guidelines on the best approaches for determining a person's race and ethnicity that LEAs can follow. • Ensure that race/ethnicity data are collected in a manner that is comparable to sources of baseline population data. • Guidelines should also include methodological guidance on how to use and compare such data and identify outliers. • Determine the strengths and weaknesses of different tools that already exist.
LEAs collect data from many types of incidents and policing activities. However, the way in which data are recorded can make it challenging to understand what happened during those incidents (e.g., mental health–related calls are coded as "trespassing" in CAD systems), what the police intervention achieves, and what intervention would have ultimately or best resolved the situation.	• Leverage professional organizations to convene working group discussions about how the structure of 911 systems can vary and how to create uniform standards for incidents, response (e.g., calls for service, 911 calls), and non-criminal police activity data. • IT vendors should develop systems that allow agencies to meet these uniform standards.
Given current approaches to collecting data about police-public interactions, measuring racial bias in police activity can be challenging. For example, at the most fundamental level, official reports do not always capture the race and ethnicity of the people with whom officers have interacted. In other cases, there are methodological challenges with how encounters should be documented (e.g., a traffic stop that involves four persons of differing races and ethnicities).	• Best practices and recommendations exist. Elevate community voices in discussions about how race and ethnicity metrics are captured, recorded, and used by LEAs.

DISCUSSION

The purpose of the July 2022 workshop was to convene a panel of policing data subject-matter experts—practitioners, researchers, private-sector personnel, and community advocates—to identify short-term (i.e., in the next five years) problems or opportunities and potential solutions for informing new and better data collection activities, metrics, and analyses. These needs reflect deeper and more-meaningful conceptions of criminal justice. The 24 needs identified by the expert panel address nine salient problems. In general, these problems have been categorized under three main themes: (1) law enforcement data collection and measures more broadly, (2) understanding the application of policing, and (3) understanding justice outcomes of policing activities, in context. As we explain further in the technical appendix, these 24 needs were ranked into three tiers to determine which needs were the highest priority, based on importance and likelihood of success, for informing the development of better measures of justice.

Although the workshop was initially intended to focus on problems or opportunities and potential solutions for identifying and developing new data points that are consistent with the field's rapid move toward evidence-based practices and broader calls for greater community input and transparency and accountability in policing, the participants agreed that there is a greater need to improve fundamental aspects of police data collection programs first. The experts identified several problems, many of which have been identified in previous research

efforts and have long plagued the field. To develop better measures that support modern policing practices, it is critical to support agencies with the resources necessary to resolve these long-standing issues.

Creating a Data Culture

One of the most significant barriers to improving data initiatives in policing is the lack of a fundamental data culture. Our expert panel agreed that leadership plays a key role in cultivating a data culture by setting the tone for their agency and promoting the value of leveraging high-quality data and evidence to inform operational, strategic, and tactical decisions. However, experts cautioned that police leaders' lack of knowledge or experience with data can make it difficult to foster data collection initiatives, even when they recognize their inherent value. According to participants, police leaders "don't know what they don't know" and often lack the know-how to push their organizations in a direction that can produce data and analyses that provide answers to questions that stakeholders—such as the public, policymakers, researchers, and police themselves—have about policing practices. Sometimes, this knowledge gap results in good-faith efforts that are unnecessary or focused on the wrong goals.

Experts suggested that guidebooks could be a useful tool for assisting police leaders interested in integrating best practices for data collection and analysis within their agencies. Effective guidebooks should be written with agency-specific needs in mind (e.g., small versus large agencies) and provide clear instruction on such fundamental activities as aligning data with organizational and community values, using data to inform and evaluate activities, sharing data with key partners, and communicating data-derived insights to the public. Experts also suggested that data audits, perhaps led by federal government entities, could be a useful tool to assist agencies with assessing the quality and comprehensiveness of data, and specific areas for improvement.

Although strong leadership is essential to cultivating a data culture, police officers bring about that culture as the primary conduit for data collection efforts (and, ideally, consumption) in police agencies. Thus, it is critical that officers are equipped with the requisite skills to carry out core tasks and activities in a data-oriented culture. Participants emphasized the need for training on basic data concepts, especially training that familiarizes officers with why certain data are collected and how those data can be used to increase organizational and individual productivity and effectiveness.

One of the most significant barriers to improving data initiatives in policing is the lack of a fundamental data culture.

Familiarizing officers with data will help to generate buy-in and motivation among officers to be good data stewards and ensure the accuracy and completeness of the information that they enter into reports, databases, or other data platforms. Experts suggested that training should begin in the academy to establish the importance of data from the start of an individual's policing career. However, in-service training is equally critical because it signals organizational priorities about data and reinforces a data-oriented culture. In-service training also regularly exposes officers to new data collection procedures and can correct any errors discovered during the data entry process. Participants mentioned the potential usefulness of engaging POST commissions to develop model curriculums or professional standards for data competency in law enforcement personnel.

Participants also emphasized the need to integrate data into the way in which police officers and their supervisors go about their day-to-day jobs. Police agencies must make thoughtful and intentional efforts to consider how data fit in with the responsibilities and obligations of each role within the organization. Agencies should develop plans for each role, from line-level officer to the organizational executive, that identify relevant data points and how they can be integrated into regular workflows. One expert specifically identified mid-level managers as an important focus for this kind of effort because of their influence over street-level decisions. For on-the-ground police practices to become data-driven, mid-level managers must be empowered to use and make decisions with data.

Another expert proposed that a more efficient strategy for bringing about a culture of data could be to simply engineer one. This expert explained that police officers are busy and trying to make them data stewards may not be the best use of their time or energy or of finite organizational resources. Furthermore, human error will always be a factor despite best efforts to promote the importance of data accuracy. This expert suggested that many of the aforementioned needs may be achieved through smart improvements in user interface/user experience

Many agencies already employ analysts of some variety, but efforts must be made to integrate their outputs into operational decisionmaking.

design that naturally integrate data tasks into officers' workflows to produce high-quality information.

Because of top-to-bottom deficits in data expertise among police agencies, one of the most important needs identified by the expert panel was to invest in onboarding individuals with strong backgrounds and skill sets in data governance and analytics to permanently serve in roles solely dedicated to those functions. Experts identified several relevant position types, such as tactical analysts (e.g., crime, investigative, intelligence), analysts who conduct broader organizational analysis (e.g., strategic, performance, administrative), and analysts who focus on research and evaluation. Each of these analysts plays a distinct but critical role in fostering a data culture by ensuring that activities across the entire organization are data-driven. Furthermore, personnel in these positions provide knowledge and experience that can inform organizational changes in support of a data culture.

Experts discussed how these roles are usually best filled by civilians because sworn officers typically do not have the requisite data background and are often promoted out of data-related roles within a short time frame. Thus, agencies should develop mechanisms to ensure that analysts understand patrol work, police culture, and law enforcement needs. For example, ride-alongs can be a useful tool to help develop relationships between analysts and police officers while familiarizing both with the value of their respective roles. Analysts can learn about how patrol officers go about their jobs, what information collected by police officers in the field actually represents, and how to overcome salient data-related challenges. Many agencies already employ analysts of some variety, but efforts must be made to integrate their outputs into operational decisionmaking. Experts suggested that it would be helpful to continue to professionalize law enforcement analyst roles by developing certifications, accreditation programs, and standards. Finally, one expert recommended that agencies invest in developing *pracademics* within their agencies—members of the agency with police experience (sworn or civilian) who are also trained in research.

Leveraging Existing Data to Derive New Insights

Police agencies already collect a considerable amount of data—on calls for service, crime incidents, stops, and arrests—that can (and sometimes do) offer valuable insights to improve practice. However, those data are often characterized by limitations that mitigate their usability and value. These limitations are, in part, by design. As one expert stated, "the narrative of every police department is different," given the decentralized nature of policing in the United States. This gives the public more control over how problems are defined and what actions police are authorized to take to manage them. As a result, there is great diversity in police work, even if policing generally deals with a common set of problems. Calls-for-service data offer a relevant example. Experts explained how the structure and organization of 911 call centers can vary considerably from one municipality to the next. The field lacks uniform rules for how calls for service are coded and processed after the initial response. As a result, it can be difficult for agencies to derive meaningful insight from calls-for-service data and nearly impossible for researchers to compare demands on policing across jurisdictions. Experts highlighted software tools, such as ProQA, that may offer models or frameworks for standardization (Priority Dispatch, undated).

Another major issue is that data are often stored across multiple platforms that do not communicate with each other. Disparate systems include, for example, CAD, RMS, Microsoft Excel files, or even paper records. These systems often do not support data analysis, interoperability, or even data extraction. One particular difficulty noted by experts was that when switching platforms, agencies often find it difficult or impossible to integrate historical data. Systems also rarely offer the flexibility or customization needed to accommodate new metrics or alternative data formats as the needs of an agency change. The panel largely agreed that this issue must be resolved by dominant purveyors of data systems (public-sector IT vendors). One possible solution would be for the federal government to estab-

lish minimum specifications for vendors to meet when designing and building their platforms for police data, similar to how the National Institute of Standards and Technology Federal Information Processing Standards are sometimes mandated for vendors serving government customers (National Institute of Standards and Technology, 2019). Funding could be offered to agencies to support their transition to systems that meet these requirements. Another expert suggested that states may play an important role here, given their authority to pass laws mandating certain data collection requirements (see, for example, the Traffic Stop Database [National Conference of State Legislatures, 2021]). Vendors will be similarly motivated to develop systems that comply with legislative requirements.

The experts identified the procurement process as another pain point. This process can be lengthy, cumbersome, and confusing, especially for agencies without data experts who can help identify needs and determine which systems meet those requirements. Oftentimes, agencies purchase and transition to a product only to later learn that it cannot do everything they want or need it to do. The experts recommended developing procurement-related guidance to help agencies learn about the vendors that they consider and what their products can and cannot do. Experts suggested that a list of "approved" or "trusted" vendors, perhaps based on the federally established minimum specifications (as noted above), would be helpful to agencies navigating a complicated market of products. Having such a vendor list would have the additional benefit of speeding up the procurement process for police agencies and vendors. Alternatively, a "checklist" that outlines a comprehensive set of considerations (substantive and technical) for agencies preparing to implement or upgrade systems could be valuable in reducing procurement timelines.

Experts described how agencies can sometimes struggle to both manage and fully leverage data platforms because their complex software usually requires someone with technical or programming experience.

Ultimately, even a perfect data platform cannot overcome fundamental issues pertaining to the validity, reliability, and completeness of the underlying data. Again, the many challenges in this area that experts raised all boil down to human error, which could be mostly overcome through engineering, automation, and the smart redesign of processes based on basic principles of human psychology. For example, one expert described intelligent workflows to aid officers in reporting a crime. Rather than filling out a standard form for a crime incident, reports could be engineered to walk the responding officer through a series of questions about the event. The goal is to find small or subtle data capture processes that can reduce the burden on officers and collect information in a way that improves the quality of the submitted report. Experts recommended exploring the untapped potential of novel analytic tools, such as narrative analysis, which could extract meaningful insights from text-based reports.

> One particular difficulty noted by experts was that when switching platforms, agencies often find it difficult or impossible to integrate historical data.

Looking Ahead

Instilling a culture that values data and building the infrastructure to support it are important steps toward achieving better measures of justice. A data culture would position LEAs to more effectively harness the vast amount of information already at their disposal to derive more accurate, timely, and meaningful insights that can lead to better public safety in the short term. However, long-term improvements will necessitate careful thought about the development of new metrics that capture unmeasured but important aspects of police work, such as what police do with their time, whether public safety resources are equitably allocated and fairly applied, and public perceptions about policing services.

The experts agreed that consensus is needed on how better measures of justice are defined. As a starting point, participants suggested that agencies take the lead by annually producing strategic plans that include goals and milestones for achieving them. They also emphasized the importance of ensuring that the communities that agencies serve have a chance to review these plans and provide meaningful input on them.

Calls for improvements to data and measurement and policing are not new, and participants expressed frustration that many of the needs identified in earlier reform efforts have not yet been heeded (e.g., Langworthy, 1999). One expert lamented that much research and guidance already exists on this subject but "just gathers dust." Experts recommended that the field

Experts agreed that efforts to identify, operationalize, and capture new data elements should involve the perspectives of community members.

take stock of these available resources and assess their strengths and weaknesses to determine what additional guidance may be needed. Part of the problem is that many community-based metrics are difficult to operationalize and implement in practice. The experts assessed that clear methodological guidance is needed to bridge this gap. Participants also suggested that additional workshops may be needed to investigate and develop recommendations around specific measures more thoroughly, such as the race and ethnicity of persons who come into contact with police and the criminal justice system. Experts agreed that efforts to identify, operationalize, and capture new data elements should involve the perspectives of community members.

CONCLUSION

Routine collection of data in policing began during the early 1900s as part of the broader movement to professionalize law enforcement. Today, nearly a century after the establishment of the UCR program, police agencies continue to rely on reported crimes as the primary measure of performance, along with other metrics tied to the professional model of policing, such as response times, arrests, and clearance rates. With the introduction of COP and POP practices in the 1980s, calls for more community-focused metrics in policing naturally arose—these models were intended to identify concerns that communities care about most and inform tailored solutions to address them. Such concerns include fear of crime, perceptions of disorder, quality of life issues, citizens' satisfaction with police services, and public perceptions of police legitimacy. Despite the growth and evolution of data in policing over the past several decades, calls for *better* data continue. Better data refers both to improved validity, reliability, and timeliness of information already collected by police agencies and to the introduction of new metrics that can better capture key aspects of policing and public safety that matter most to members of the community.

To help inform efforts to continuously improve policing data, RAND and PERF, on behalf of NIJ, organized a workshop of subject-matter experts to discuss current police data collection programs and identify the highest priority needs to address. Through a series of interviews and group discussion sessions, the research team and participants identified and prioritized a total of 24 needs related to policing data. Of these 24 needs, five were identified as having the highest priority. These highest-priority needs address problems related to creating a culture of data and measurement in policing, finding ways to standardize data collection efforts across key measures, automating data collection and analysis processes, auditing data to ensure validity and reliability, and improving data collection systems.

Acknowledging that movements to improve data and measurement in policing are not new, our panel of experts suggested that lessons learned from earlier efforts could still provide a road map to address long-standing barriers. However, achieving better measures of justice will require significant improvements across several domains, including culture, technology, and human resources.

TECHNICAL APPENDIX

This appendix presents additional details on the workshop and our process for identifying and prioritizing research and technology needs and turning them into the research agenda that is presented in the main report. The descriptions here are drawn and adapted from those in previous PCJNI publications and reflect adjustments to the needs identification and prioritization process implemented at this workshop.

Workshop Scope and Panel Selection

The topics for PCJNI workshops are selected by reaching a consensus among the action officers and subject-matter experts at NIJ and research staff at the organizations that will facilitate the workshop. Multiple topic areas, accompanied by brief scoping descriptions, are typically suggested months before the workshop by one or more of the parties involved, and staff engage in group deliberations with NIJ to reach consensus on the topic. We then engage in further scoping of the workshop to craft a discussion agenda through literature review, informal

discussions with other practitioners and subject-matter experts, or both. Once the topic and scope have been determined, we recruit participants by identifying knowledgeable individuals through existing professional and social networks (e.g., LinkedIn) and by reviewing literature published on the topic. We then extend an invitation to those individuals and provide a brief description of the workshop's focus areas.

The process of expert elicitation described here was designed to gather unbiased, representative results from experts and practitioners in the field. However, several limitations could affect the findings. The process typically elicits opinions from a relatively small group of experts. To limit the effect of group size on the representativeness of the results, we strove to make the group as representative as possible of different disciplines, perspectives, and geographic regions. However, the final output of the workshop likely is significantly influenced by the specific group of experts invited to participate. It is possible that the workshop's findings would be different were a different group of experts selected. Moreover, although the discussion moderators make every effort to act as neutral parties when eliciting opinions from the convened group of experts, the backgrounds and experiences of the moderators have the potential to influence which questions they pose to the group and how they phrase those questions. This could also introduce bias that could influence the findings.

Identification and Prioritization of Needs

To develop and prioritize a list of technology and policy issues that are likely to benefit from research and investment, we followed a process similar to ones that we used in previous PCJNI workshops (see, for examples, Jackson et al., 2015; Jackson et al., 2016; and references therein). Participants discussed and refined problems and identified potential solutions (or *needs*) that could address each problem. In addition, needs could be framed in response to opportunities to improve performance by adopting or adapting a new approach or practice (e.g., applying a new technology or tool in the sector that had not been used before). After identifying and refining the needs, we use a voting process based on the Delphi method, a technique developed by RAND, to elicit prioritization information from the group about the identified needs (RAND Corporation, undated).

Prior to the coronavirus disease 2019 (COVID-19) pandemic, PCJNI workshops were conducted in person in a group setting. However, under the restrictions and mitigations implemented in response to the COVID-19 pandemic, our participants and staff were unable to travel. Our typical in-person format involves a two-day, 14-hour in-person meeting (eight hours the first day, six hours the second day). However, drawing on other organizations' and individuals' experience in running and participating in high-intensity virtual events, we determined that it would not be advisable to try to directly replicate this meeting format using virtual conferencing tools. Instead, we prepared a multi-stage process comprising

- interviews with each participant, either individually or in small groups, for approximately an hour to build an initial picture of their views and ideas
- a set of shorter, more-focused virtual sessions to provide the group with the opportunity to react to and shape the consolidated picture that came from our synthesis of the individual interview input
- a final voting stage, after the last interactive session, in which participants provided their final assessment of the rankings of the different needs.

Interviews

Prior to the workshop, we conducted remote interviews with the participants to discuss the challenges that they saw as relevant to the workshop's focus area. We also asked them to identify areas in which additional investment in research and development could help to alleviate those challenges. During these discussions, participants suggested additional areas that were potentially worthy of research or investment. We consolidated and integrated the problems, opportunities, and potential solutions described by the participants in the separate interviews into a single summarized list. Then, in advance of the virtual workshop sessions, we provided this summarized list to participants via email.

Virtual Sessions

Once each participant had been interviewed and the needs were consolidated, we held three two-hour virtual meetings using Zoom, a virtual meeting platform. These meetings were configured such that the participants could see each other's video feeds and individually collaborate on refining and editing the consolidated needs that were shared from a moderator's desktop.

During the workshop, we asked participants to collectively review, discuss, and revise the wording of the consolidated list of problems, opportunities, and potential solutions that they had identified during our interviews. Each identified problem was placed on a Microsoft PowerPoint slide and displayed one by one on the screenshare portion of Zoom for discussion. Once participants reached consensus on a group of needs for

each category, we conducted a real-time voting prioritization exercise using Delphi techniques. We asked them to anonymously vote on each need, using a scale of 1 (low) to 9 (high), on two dimensions—importance and probability of success—with a handheld device (specifically, the Anywhere Polling feature from PointSolutions).

For the *importance* dimension, participants were instructed that 1 was a low score and 9 was a high score. Participants were further told to score a need's importance with a 1 if it would have little or no impact on the problem and with a 9 if it would reduce the impact of the problem by 20 percent or more. Anchoring the scale with percentage improvements in the need's performance is intended to help make rating values more comparable from participant to participant.

For the *probability of success* dimension, participants were instructed to treat the 1–9 scale as a percentage chance that the need could be met and broadly implemented successfully. That is, they could assign the need's chance of success between 10 percent (i.e., a rating of 1) and 90 percent (i.e., a rating of 9). This dimension was intended to include not only technical concerns (i.e., whether the need would be hard to meet) but also the effect of factors that might cause practitioners to not adopt the new technology, policy, or practice even if it were developed. Such factors could include, for example, cost, effect on practitioner workloads, other staffing concerns, and societal concerns.

After the participants provided their individual ratings using the web-based polling system (i.e., for *importance* or *probability of success*), we then displayed a histogram-style summary of participant responses within the polling system's interface. If there was significant disagreement among the participants (the degree of disagreement was determined by our visual inspection of the histogram), they were asked to verbally discuss or explain their votes at one end of the scale or the other. If a second round of discussion occurred, participants were given an opportunity to adjust their rating on the same question. This process was repeated for each question and dimension at the end of each topic area.

Post-Session Prioritization

Once the participants had completed this rating process for all of the topic areas, we put the needs into a single prioritized list. We ordered the list by calculating an expected value using the method outlined in Jackson et al. (2016). For each need, we averaged the median problem importance with the median potential solution importance (using only the second-round vote if there was one). This formed the overall importance score for each need. This score was then multiplied with the median probability of success for each need to produce an expected value. We then calculated the median of that product across all of the ratings and used that as the group's collective expected value score for the need.

Next, we clustered the resulting expected value scores into three tiers using a hierarchical clustering algorithm. (We used the "ward.D" spherical algorithm from the "stats" library in the R statistical package, version 4.1.3.) We chose this algorithm to minimize within-cluster variance when determining the breaks between tiers. We chose to use three tiers, in part, to keep the methodology consistent across the set of needs-prioritization workshops that we have conducted for NIJ. Also, the choice of three tiers provides a manageable system for policymakers. Specifically, the Tier 1 needs are the priorities that should be the primary policymaking focus, the Tier 2 needs should be examined closely, and the Tier 3 needs are probably not worth much attention in the short term (unless, for example, they can be addressed with existing technology or approaches that can be readily and cheaply adapted to the identified need). The output from this process became the final ranking of the panel's prioritized needs.

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Justice Policy Program

RAND Social and Economic Well-Being is a division of RAND that seeks to actively improve the health and social and economic well-being of populations and communities throughout the world. This research was conducted in the Justice Policy Program within RAND Social and Economic Well-Being. The program focuses on such topics as access to justice, policing, corrections, drug policy, and court system reform, as well as other policy concerns pertaining to public safety and criminal and civil justice. For more information, email justicepolicy@rand.org.

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About This Report

On behalf of the U.S. Department of Justice, National Institute of Justice (NIJ), RAND, in partnership with the Police Executive Research Forum (PERF), RTI International, and the University of Denver, is carrying out a research effort to assess and prioritize technology and related needs across the criminal justice community. This research effort, called the Priority Criminal Justice Needs Initiative (PCJNI), is a component of the Criminal Justice Requirements and Resources Consortium (RRC) and is intended to support innovation within the criminal justice enterprise. For more information about the RRC and the PCJNI, please see www.rand.org/well-being/justice-policy/projects/priority-criminal-justice-needs.

This report is one product of that effort. In July 2022, PERF and RAND researchers conducted an expert workshop on better measures for justice in law enforcement. This report documents the proceedings of that workshop, topics considered, needs that the panel participants developed, and overarching themes that emerged from the panel's discussions. This report should be of interest to law enforcement administrators, analysts, and researchers and community stakeholders. Other RAND publications based on research from the PCJNI that might be of interest are as follows:

- John S. Hollywood, Dulani Woods, Samuel Peterson, Michael J. D. Vermeer, and Brian A. Jackson, *Using Data Governance and Data Management in Law Enforcement: Building a Research Agenda That Includes Strategy, Implementation, and Needs for Innovation*, RAND Corporation, RR-A108-22, forthcoming.
- Duren Banks, Michael G. Planty, Madison Fann, Lynn Langton, Dulani Woods, Michael J. D. Vermeer, and Brian A. Jackson, *Reducing Deaths in Law Enforcement Custody: Identifying High-Priority Needs for the Criminal Justice System*, RAND Corporation, RR-A108-16, 2022.
- Michael J. D. Vermeer, Jeremy D. Barnum, Siara I. Sitar, Dulani Woods, and Brian A. Jackson, *Amplifying the Speakers: Identifying High-Priority Needs for Law Enforcement Public Information Officers*, RAND Corporation, RR-A108-15, 2022.

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