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Exploring Crime Analysis and Operational Efficiency in the South African Police Service with a Focus on Challenges and Opportunities

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Abstract: Crime analysis has evolved from the basic identification of crime patterns to a sophisticated and systematic discipline that plays a critical role in crime prevention, case resolution, and community safety. This study investigates the development, practical application, and challenges of crime analysis within the South African Police Service by emphasising its integration into various policing models and its contribution to strengthen law enforcement strategies. Given the complex and ever-changing crime landscape in South Africa, data-driven policing is increasingly relied on to develop more informed and effective responses to criminal activity. Adopting a qualitative case study approach, the researchers explore crime analysis and the operational efficiency of the South African Police Service by focusing on challenges and opportunities. Data collection involved an in-depth literature review and interviews with various stakeholders, including South African Police Service officials; crime information management and analysis centre personnel; provincial and national Crime Registrar representatives; and international crime analysis experts. This study aims to identify key obstacles to the effective use of crime analysis, compare South African practices with international benchmarks, and evaluate how crime analysis informs and supports policing strategies such as standard policing, Intelligence-Led Policing (ILP), hotspot policing, Problem-Oriented Policing (POP), and community-based policing.

The findings of this paper indicate that although crime analysis is widely acknowledged as a vital tool for operational and strategic decision-making, several challenges limit its application. Foremost among these are issues related to data integrity, a lack of adequately trained personnel and technological resources, inefficiencies in management practices, and weak communication channels between analysts and operational personnel. Despite these challenges, crime analysis remains an essential mechanism for guiding proactive policing approaches, detecting crime patterns, identifying high-crime areas, and measuring the effectiveness of police interventions. One of the most persistent problems is the inconsistent application of crime analysis findings at operational level. Because analytical outputs are not always integrated into frontline policing, their influence on tactical and strategic actions is minimal. Additionally, a lack of formalised feedback mechanisms means that valuable insights often go unutilised, which diminishes the relevance and impact of analysts' work. Another challenge is the shortage of structured career development pathways for crime analysts, which affects staff morale, retention, and the long-term institutionalisation of analytical expertise within the South African Police Service.

To address these issues, this paper makes several recommendations. These include strengthening the integration of crime analysis into everyday policing practices, improving communication and collaboration between analysts and operational staff, enhancing training and professional development opportunities, and addressing data quality and management concerns. Furthermore, establishing clearly defined career progression frameworks for analysts, cross-departmental collaboration, and sufficient resourcing are essential for sustaining and advancing the discipline. This paper underscores the strategic value of crime analysis in modern policing and the necessity of

overcoming organisational, communicative, and resource-related challenges to enhance its effectiveness. By implementing these recommendations, the South African Police Service will be able to leverage crime analysis in its decision-making, crime reduction efforts, and attempts to improve public safety.

Keywords: Crime analysis, community-based policing, hotspot policing, intelligence-led policing, problem-oriented policing

Introduction

Crime analysis, in its most elementary form, can be traced back to the earliest instances of criminal activity. Although primitive crimes, initially, may not have required structured interpretation, the recurrence of criminal acts over time has led to the recognition of patterns and trends marking the origins of rudimentary crime analysis (Anon, sa.:1). With the formalisation of policing, similarities between incidents were identified, giving rise to the systematic study of crime and laying the groundwork for analytical approaches to criminal investigation (Buck, Austin, Cooper, Gagnon, Hodges, Martensen & O'Neal, 1973:1).

In modern policing, crime analysis has evolved into a data-driven practice that is increasingly regarded as the cornerstone of strategic decision-making. Authors such as Ratcliffe (2007:13), Horne (2009:69–70), Santos (2014:149), and Bruce (2017:6), and the International Association of Crime Analysts (IACA, 2014:2) define crime analysis as a systematic process of examining criminal incidents, victim profiles, and complaints, as well as broader issues of disorder. This process includes internal police assessments and incorporates spatial, temporal, and socio-demographic factors. Crime analysis involves the structured application of analytical techniques to identify patterns in criminal behaviour, support investigative efforts, and inform prevention strategies (Wortley & Mazerolle, 2008:1–2; Carter, 2015:4). It facilitates efficient resource allocation and enhances public safety by providing actionable intelligence for tactical and strategic operations (Poblete, 2013:16; Maboa & Horne, 2024b:141).

In the South African Police Service (SAPS), crime analysis plays a multifaceted role in evidence-based policing and guides operational activities. Tshishonga (2022:147-148) maintains that crime analysis seeks to answer the who, what, where, when, why, and how questions of reported crimes to uncover the suspects' modus operandi and construct a comprehensive crime picture. These insights shape crime prevention models and evaluate the effectiveness of law enforcement interventions. Despite its growing importance, the integration of crime analysis within the SAPS is not without its obstacles. Piza and Feng (2017:340) argue that crime analysis must be empirically evaluated to determine whether or not it contributes to measurable crime reductions. However, several challenges limit the impact of crime analysis. These include inadequate technological infrastructure, poor data quality, lack of analytical capacity, and the limited incorporation of crime analysis outputs into frontline operations (Poblete, 2013:16). Moreover, the disconnect between analysts and operational officers often hampers the timely and effective use of intelligence products in daily policing decisions.

Because of South Africa's complex crime landscape and its legacy of social inequality, the SAPS faces the dual challenge of addressing high crime rates and improving its institutional effectiveness. This article explores the evolution, implementation, and operational challenges of crime analysis within the SAPS, considering South Africa's unique socio-political and crime environment. By examining historical trajectories and contemporary applications, this article aims to elucidate the critical role of crime analysis in enhancing the operational efficiency and strategic responsiveness of the police service. It will identify the systemic shortcomings that affect crime analysis outcomes and make recommendations to address these challenges. These include strengthening analyst-officer collaboration, institutionalising crime analysis in command structures, and leveraging technology to improve data collection and analysis. Additionally, the article will emphasise the necessity of structured career pathways for crime analysts to professionalise the discipline and ensure long-term institutional capacity.

Literature review

The historical background of crime analysis

The protection of life and property has, historically, underpinned the mandate of law enforcement agencies worldwide (Matties & Chiu, 2014:2–3). Even though the core objective of law enforcement has remained relatively constant, the philosophical underpinnings and practical approaches to achieve it have evolved over time (Gottlieb & Arenberg, 1992:v; Maboa & Horne, 2024a:531). The history of the concept of crime analysis, which was formally recognised only a few decades ago, extends across centuries (Bachner, 2013:7). Although the term was not commonly used before

the 1960s, the practice of systematically examining crime patterns and linking offences can be traced back to the nineteenth century (Grana & Windell, 2021:196).

A notable early example of analytical thinking in crime investigation is found in the fictitious character of Sherlock Holmes. The late 1800s in Europe were marked by high crime rates, and in Arthur Conan Doyle's novels, Holmes employs deductive reasoning and forensic-like techniques to reconstruct events and solve complex criminal cases, although no such scientifically grounded methods existed at the time (Gottlieb & Arenberg, 1992:6; Tshishonga, 2022:149). The establishment of the London Metropolitan Police in 1829 by Sir Robert Peel was a milestone in the institutionalisation of policing and, by extension, in the early forms of crime analysis (Stevenson, 2013:3; Grana & Windell, 2021:197). In the 1840s, some officers within the force were appointed as detectives and tasked with identifying and analysing patterns in criminal activity across London (Bachner, 2013:7). Although their methods were rudimentary by today's standards, these early detectives laid the groundwork for what would later become structured crime analysis. The classification of crimes and the application of the *modus operandi* concept started in the latter half of the nineteenth century (Grana & Windell, 2021:197).

The early twentieth century witnessed more formalised efforts in crime analysis thanks to the pioneering work of August Vollmer, then Chief of the Berkeley Police Department. Vollmer advocated for the systematic review of police reports, the use of coloured-pin maps to visualise crime locations, and the utilisation of crime information in patrol planning (Santos, 2017:10). Orlando Winfield improved Vollmer's approach by introducing weighted analysis of crime categories and service calls to improve the allocation of police resources (Gottlieb & Arenberg, 1992:7). These contributions laid the foundation for analytical policing strategies and operational resource management.

By the late 1960s, crime analysis started to gain institutional traction. Globally, many police departments established crime analysis units tasked with detecting *modus operandi*, analysing geographic crime patterns, and linking offences to known suspects (Gottlieb & Arenberg, 1992:7; Tshishonga, 2022:150). In the United States, the Omnibus Crime Control and Safe Streets Act led to the creation of the Bureau of Justice Administration (BJA), which significantly increased awareness of the value of data-driven evaluation in policing (Santos, 2017:10; Stevenson, 2013:8). This legislative development coincided with Wilson's analytical contributions and the introduction of the Integrated Criminal Apprehension Program (ICAP), which targeted career and habitual offenders as a strategic crime reduction measure (Santos, 2017:10). Between 1973 and 1977, the Law Enforcement Assistance Administration (LEAA) produced numerous manuals on crime analysis, highlighting its growing importance within law enforcement circles (Grana & Windell, 2021:197).

A significant conceptual advancement occurred in 1978 with Herman Goldstein's introduction of Problem-Oriented Policing (POP), which reinforced the role of crime analysis in proactive and solution-focused policing strategies. The institutionalisation of crime analysis continued into the 1980s and 1990s. In 1979, the Commission for Accreditation for Law Enforcement Agencies (CALEA) was established, followed by the founding in 1982 of the Colorado Crime Analysis Association, one of the first regional bodies to foster collaboration among practitioners. In 1989, the California Crime Analysis Association was established. Later renamed the California Crime Analysts and Intelligence Association (CCAIA), its focus was intelligence sharing and professional development (Anon, sa:6; Stevenson, 2013:9-11).

The formation of the IACA in 1990 started the increasing professionalisation of the discipline. Initially comprising a small group of American and Canadian analysts, the IACA has grown into a globally recognised organisation that facilitates knowledge exchange, training, and the advancement of analytical standards (Stevenson, 2013:11). Between the mid-1980s and the 1990s, crime analysis began to shift from centralised units within police headquarters to more decentralised operations within precincts to enable real-time tactical support to officers in the field (Santos, 2017:12; Stevenson, 2013:14). This shift marked the evolution of strategic crime analysis as a core operational function, particularly in small to medium-sized law enforcement agencies.

The crime analysis discipline and the purpose of crime analysis

Within the spheres of government, policing and academia, crime analysis is widely acknowledged as a critical discipline that enhances the capacity of law enforcement agencies to respond to criminal activity in a strategic and informed manner (Santos, 2017:18). Crime analysis involves the systematic study of crime-related data and associated information to support law enforcement officials in the prevention and reduction of crime, the apprehension of offenders, and the assessment of institutional policies and practices. The discipline contributes to improved decision-making and is positively associated with lower crime rates, efficiency in the allocation of police resources, and the

development of effective policing strategies, particularly within departments that integrate analytical findings into operational and strategic decisions (Kringen, Sedelmaier & Schuurman-Laura, 2016:1).

According to Mashiloane (2014:109) and Bruce (2017:6), crime analysis relies on a combination of methodological approaches to collect and examine data of significance for police departments and the communities they serve. This includes the integration of qualitative and quantitative data sources. Qualitative data refer to non-numerical information such as narrative entries in police reports or textual content from calls for service, which gives a contextual understanding of incidents and patterns (Santos & Davis, 2017:75). Such data are analysed by means of techniques such as content analysis whereby textual information is reviewed to identify recurring themes and patterns. Alternatively, qualitative data can be systematically coded and transformed into quantitative variables for further statistical analysis (Santos & Davis, 2017:75).

The applications of crime analysis

The utility and impact of crime analysis are closely linked to how effectively police departments apply the outputs generated by it. Since crime analysis plays a central role in proactive policing, it is regarded as an essential function that should be incorporated into the operational framework of every law enforcement agency (Bruce, 2017:27). According to Horne (2009:71), crime analysts are responsible for systematically examining large volumes of information, identifying irrelevant or unrelated data, and extracting information to reveal factual patterns and trends. The outcome of this analytical process is communicated to various levels of command within the police organisation, including police management, detective commanders, and client service commanders, to guide operational responses. After data collected from diverse sources such as field reports, arrest records, and dispatch logs have been analysed, the resulting information is disseminated to relevant decision-makers, including line managers, supervisors, patrol managers, and field personnel (Thibault, Lynch, McBride & Walsh, 2015:135). They rely on these analytical insights to make informed decisions regarding the deployment of personnel and the development of patrol strategies and operational techniques.

Crime analysis also contributes significantly to evidence-directed policing by supporting the formulation of effective practices and policies based on empirical evidence rather than intuition (Lum, 2013:12–13). Horne (2009:70), Govender (2011:121), and Tshishonga (2022:206) claim that crime information analysis plays a vital role in the reduction of criminal incidents and victimisation. It also enhances the effectiveness of forensic investigations by providing timely and relevant intelligence that informs investigative strategies. Moreover, crime analysis facilitates a better understanding of crime patterns and social disorder because it enables the police to focus their interventions on specific individuals, locations, or issues by adopting data-informed approaches. An important component of crime analysis is the evaluation of policing interventions to determine whether the intended outcomes have been achieved. Tshishonga (2022:206) asserts that this evaluative function is critical for assessing the effectiveness or ineffectiveness of crime prevention and control strategies. Therefore, crime analysis is a foundational element in the strategic planning and mission execution of modern police departments. Taylor, Boba, and Egge (2013:5) agree and note that the results of crime analysis contribute significantly to various policing functions. These include supporting patrol operations, guiding problem-solving efforts, informing criminal investigations and prosecutions, advancing crime prevention initiatives, and evaluating the overall impact of policing strategies. In short, crime analysis enhances not only the operational but also the strategic capabilities of law enforcement agencies.

An analysis of policing approaches adopted by the South African Police Service and the function of crime analysis within these models

Crime analysis is widely regarded as a crucial component of modern policing. Because of the expectation that it contributes to crime reduction, analysts are expected to determine whether a measurable reduction in crime has occurred or not (Piza & Feng, 2017:340). The aim of crime analysis is to support police officials and law enforcement agencies in preventing crime, suppressing criminal activity, reducing public disorder, and ensuring the apprehension of offenders. With this in mind, detectives, visible policing officers, station commanders, and members of crime prevention units should utilise crime analysis outputs produced at police stations (Maboa & Horne, 2024b:144). The policing models employed by the SAPS, along with the role of crime analysis in policing approaches, will be discussed in the sections that follow.

The standard policing model

The standard policing model is the most common approach in the SAPS. This model is characterised by a reactive and incident-focused orientation according to which police officers attend to reported crimes, respond to complaints, dispatch to service calls, and conduct routine patrols. The goal of patrols is to maintain a visible police presence and

to identify crimes that are either in progress or that have already occurred (OSCE, 2017:14). As Stamm (2015:1) explains, this model often reflects the public's conventional perception of policing. It establishes foundational practices across the policing environment, including unsystematic street patrols intended to create a perception of omnipresent police visibility in the hope of deterring potential offenders.

According to Santos (2014:155) and Stamm (2015:1), the standard policing model is generally reactive in nature and emphasises law enforcement through the deployment of police resources. In accordance with this model, training prioritises quick responses to service calls to prevent suspects from fleeing crime scenes. Consequently, the emphasis is on response after an incident. Police officers typically conduct follow-up investigations to collect evidence and build cases post-incident. This model involves several traditional strategies, including increasing the number of deployed officers to enhance arrest rates and crime detection; conducting random patrols to project visibility and deter offences; responding quickly to calls to increase arrest likelihood; relying on detectives for post-incident investigations; and implementing general arrest strategies to punish offenders and discourage public criminality (Santos, 2014:155; Anon, sa:41). Despite its longstanding use in law enforcement, this model has limited effectiveness in crime reduction. Research indicates that the traditional strategies associated with the standard model have neither mitigated crime nor improved overall public safety (Santos, 2014:155; Stamm, 2015:1–2; Anon, sa:41).

Crime analysis within the framework of the standard policing model is confined to operations-related activities. This includes the evaluation of staffing requirements and the determination of resource allocation to meet operational needs (Santos, 2014:155). The standard policing model is also adopted to assess the effectiveness of rapid-response protocols to service calls. Statistical outputs generated by crime analysts are often used to quantify the volume and types of crime over a specific period and allow police leadership to monitor whether crime is on the increase or not. However, as Santos (2014:156) notes, crime analysis functions as an informational tool rather than a mechanism for informing targeted crime reduction initiatives. It provides patrol officers and station commanders with temporal and spatial information about crime trends, and it is seldom integrated into proactive strategies for crime prevention. According to the standard policing model, crime analysis is used for administrative planning and internal evaluation, and not as a tool to reduce crime.

The role of crime analysis in the standard policing model

In accordance with the standard policing model, crime analysis plays a supporting role in primarily operational assessments. This policing model is employed to evaluate staffing requirements, assist in determining the number of officers necessary for deployment, and enhance the efficiency of police operations, particularly in relation to the timely response to service calls (Santos, 2014:155). Crime analysts produce statistical outputs that quantify the overall incidence of crime and specify whether crime rates have increased or decreased over a given period. According to Santos (2014:156), crime analysis creates situational awareness since it lets patrol officers and station commanders know when and where crimes occur, and indicates the types and frequency of those crimes. Because the standard policing model is largely reactive in nature, such information rarely informs proactive crime reduction strategies. In other words, even though crime analysis contributes to internal decision-making and reporting functions, it is not employed as a crime prevention tool.

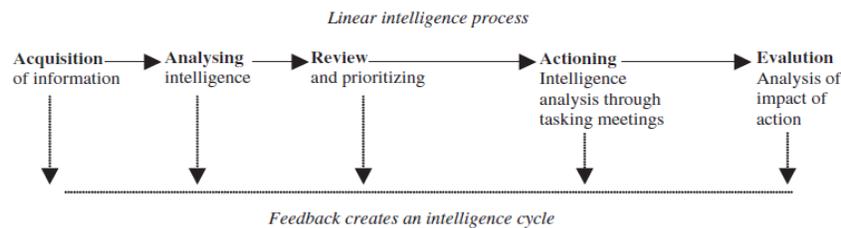
Intelligence-led policing

Intelligence-led policing marks a strategic evolution in policing philosophy. It relies on the systematic collection, evaluation, and interpretation of information pertaining to criminal activities and the conditions that foster them (Carter, 2015:8; Schneider, sa:403). This approach aims to transform raw data into actionable intelligence products that guide both tactical responses and strategic planning in the face of emerging or persistent threats. Bullock (sa:2–6) explains that intelligence-led policing focuses on the identification and disruption of criminal networks and repeat offenders, and emphasises incapacitation through targeted enforcement.

The implementation of intelligence-led policing necessitates the recruitment and professional development of analysts, along with the institutionalisation of structured processes to generate and interpret crime-related information. According to Ratcliffe (2003:3) and Santos (2014:161–162), this model positions the function of criminal intelligence analysis at the centre of strategic policing. It promotes objective, evidence-based decision-making that facilitates crime prevention and reduction through effective policing tactics and interagency collaboration. Intelligence-led policing also embodies a top-down management model because intelligence products are disseminated directly to decision-makers responsible for operational planning. Carter and Fox (2018:3) affirm that this model prioritises both the collection and analysis of crime-related data to develop intelligence products that inform tactical interventions and long-term strategies against criminal threats.

The goal of intelligence-led policing is to maximise the utility of both quantitative and qualitative information inputs for proactive crime control by identifying habitual offenders and pre-empting risks to public safety (Carter & Fox, 2018:3). This way, intelligence-led policing integrates traditional crime intelligence analysis within a broader problem-solving framework. Carter (2015:4) claims that intelligence analysis relies on scientific problem-solving methods to generate comprehensive assessments of crime patterns, security threats, and contextual risk factors. Its results are coordinated and actionable intelligence outputs. Schneider (sa:403) outlines seven stages in the criminal intelligence process, which include the planning, collection, collation, analysis, evaluation, dissemination, and review of intelligence to ensure analytical rigour and operational relevance. Similarly, Cope (2004:190) identifies five key stages in intelligence-led policing, namely acquisition of information, analysis, review, action, and evaluation. Figure 1 below depicts the ILP process.

Figure 1: Stages of the intelligence-led policing process

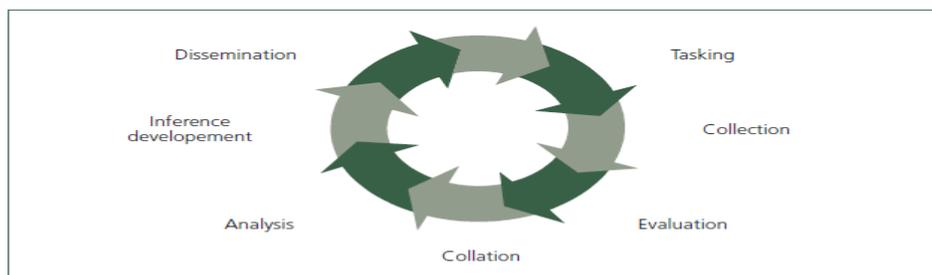


Source: Cope, 2004:190

According to Cope (2004:190), intelligence-led policing has five interconnected stages. The first stage – acquisition of information – underscores the necessity of a robust information infrastructure that facilitates the effective capture, storage, and cataloguing of data relevant to policing, enabling subsequent interrogation and analysis. The second stage – analysis – involves the transformation of raw data into actionable intelligence by identifying patterns within crime data, establishing connections between criminal incidents and constructing detailed profiles of suspects. The third stage – review – provides a mechanism to assess and prioritise intelligence, allowing for focused responses to the most pressing crimes and risks. The fourth stage – action – entails the operational deployment of policing resources based on the intelligence gathered, typically facilitated through structured tasking meetings. The final stage – evaluation – involves a critical assessment of the actions taken and relies on analytical feedback to determine effectiveness and inform future decision-making. This structured, cyclical process lays the foundation for effective intelligence-led policing strategies (Cope, 2004:190).

The ILP process is characterised by linearity. As shown in Figure 2 below, action is planned and taken based on feedback from each stage's intelligence cycle, which comprises cycles of officer taskings, data collection, collation, analysis, dissemination, and feedback (Bullock, sa:2-10).

Figure 2: The intelligence cycle



Source: UNODC, 2011:10

The role of crime analysis in intelligence-led policing

Within intelligence-led policing, crime analysts play a fundamental role by generating and communicating responses aimed at crime reduction and strategic decision-making. Santos (2014:162) emphasises the importance of crime

analysis in producing digestible and meaningful outputs such as network diagrams and crime mapping tools, which enhance the interpretation and understanding of criminal phenomena. Cope (2004:191) argues that a thorough understanding of crime challenges facilitates clearer and sounder action plans. Crime analysis, in this respect, complements problem-oriented policing methodologies as both encourage strategic responses and collaboration across policing functions, including community policing.

Intelligence units operating under this model frequently adopt problem-solving frameworks such as the Scanning, Analysis, Response and Assessment (SARA) model to prioritise policing interventions (Ratcliffe, 2003:5). Santos (2014:162) underscores the need for crime analysis to deliver the right information to the appropriate stakeholders at the optimal time to ensure the effective implementation of intelligence-led strategies. According to Jones and Gwinn (2017:31), crime analysis serves as a key enabler of strategic resource allocation by communicating essential insights to decision-makers. This approach not only promotes proactive rather than reactive policing but also enables analysts to pre-emptively identify and disrupt criminal activity before it escalates into more significant threats. Furthermore, Jones and Gwinn (2017:31) stress the importance of collaboration between analysts and operational personnel within a police department. Collaboration supports the consistent flow of information across criminal justice institutions and builds the trust and confidence necessary for regional cooperation. In this environment, crime analysis is the cornerstone of interagency communication and coordination.

Hotspot policing

Hotspot policing is a geographically focused approach that relies on traditional police strategies such as increased police presence and targeted enforcement in locations that experience a disproportionately high incidence of crime (Santos, 2014:159). In the South African context, Edelstein and Arnott (2019:6) note that the SAPS has implemented systems to apply the hotspot policing model in priority areas. This approach requires accurate, consistent, comprehensive, and reliable crime data to identify crime concentrations. Resources and law enforcement activities are strategically allocated to these hotspots. As to concerns about spatial displacement, evidence suggests that instead of merely shifting criminal activity to adjacent areas, hotspot policing often results in general crime reductions, even in neighbouring locations (Edelstein & Arnott, 2019:6). This is consistent with Telep and Weisburd's (2012:333) argument that concentrating police attention on small, high-crime areas yields significant crime reductions.

The role of crime analysis in hotspot policing

Crime analysis plays a crucial role in the successful implementation of hotspot policing. Santos (2014:159) affirms that spatial analysis and crime mapping are integral tools in identifying locations at which policing interventions should be directed. The effectiveness of hotspot policing is contingent on the accurate identification of hotspots, which is often undermined by subjective and inconsistent police assessments. Because crime analysis is an objective and data-driven means of recognising crime concentrations, it improves the precision of intervention efforts. Moreover, Santos (2014:159) asserts that understanding the underlying nature and dynamics of crime within hotspot areas is a prerequisite for developing appropriate policing responses, particularly when hotspot policing is integrated with broader problem-solving approaches such as Problem-Oriented Policing (POP). In addition, crime analysis is indispensable in evaluating the impact of hotspot policing strategies and in determining whether such interventions contribute to crime reduction or lead to displacement or the diffusion of benefits.

Problem-oriented policing (POP)

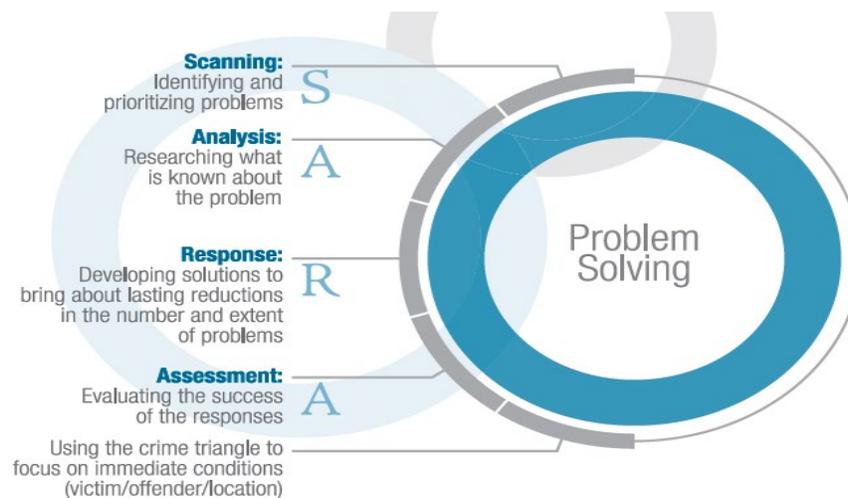
POP is a policing strategy that involves systematically identifying, analysing, and resolving persistent crime and disorder problems. According to Jones and Gwinn (2017:36), POP provides a structured framework for diagnosing and addressing criminal issues, often through collaborative partnerships with other stakeholders. Anon (sa:43) argues that POP encourages law enforcement to adopt a proactive posture. Because underlying problems within communities are identified and studied, it transcends mere reaction to incidents. This orientation requires the police to collect new forms of data, devise innovative analytical methods, identify alternative responses, and develop assessment criteria to measure the success of implemented strategies.

Telep and Weisburd (2012:337) affirm that POP necessitates a proactive attitude among officers to engage with the root causes of crime, which, in turn, strengthens its alignment with community policing efforts. Santos (2014:158) echoes this point by claiming that POP supports community engagement since it identifies and addresses local problems through tailored, evidence-informed interventions. Stamm (2015:4) identifies two key principles underpinning POP: first, the problem rather than the individual incident should be the fundamental unit of police work and, second, police organisations should concentrate on the root causes of these problems and not rely solely on the criminal justice system to sanction individual offenders. Stamm (2015:4) emphasises the need for inter-agency and

community partnerships to address the origins of social disorder and develop meaningful strategies for long-term problem resolution, including the use of civil statutes alongside criminal-law mechanisms.

The proactive and preventative orientation of POP is a significant departure from traditional, incident-driven policing and constitutes a more sustainable and systematic service delivery model (Townsend, Mann & Garrett, 2012:159). Brown (2012:140) notes that POP has become a permanent feature of contemporary policing and is often operationalised through the SARA model, which includes Scanning, Analysis, Response, and Assessment (SARA). This model structures police efforts to identify underlying conditions giving rise to recurring incidents. The theoretical basis of POP is that such underlying conditions constitute the actual problems and that an in-depth understanding of these conditions gathered through both police encounters and external information, enables the development of effective interventions (COPS, 2014:10). Figure 3 below illustrates the SARA problem-solving model.

Figure 3: The SARA problem-solving model



Source: COPS, 2014:10

According to Telep and Weisburd (2012:336-337), COPS (2014:10), Santos (2014:158), and Thibault et al. (2015:139), the SARA model is a four-stage approach to problem-oriented policing. The four stages are as follows:

- **Scanning:** This initial step involves identifying problems, prioritising potential issues, and grouping related incidents to determine whether or not they form part of a larger problem. The identified community problems are then prioritised for response.
- **Analysis:** This stage involves collecting and analysing information from police data as well as various public and private sources. Police thoroughly examine the problems, their causes, and their consequences to understand the factors contributing to the problem. This includes studying information about offenders, victims, and crime locations to develop tailored responses.
- **Response:** At this stage, police and community resources are combined to address the fundamental aspects of the problem. Collaboration between the police, the public, community members, and other agencies results in the development and implementation of strategies and interventions designed to solve the problem.
- **Assessment:** The final step entails evaluating the effectiveness of actions. This involves monitoring whether the responses have achieved the desired outcomes and if the problem has been resolved. The assessment process includes self-evaluation to determine how well the plan was implemented and what positive impacts were accomplished.

Schafer, Buerger, Myers, Jensen III, and Levin (2012:46) maintain that the SARA model requires police personnel to conduct environmental scanning for the detection and prioritisation of community problems. Schafer et al. (2012:46) contend that the acquisition and analysis of relevant information enables law enforcement to comprehend the nature and scope of each problem. This, in turn, facilitates the development of appropriate responses and strategic plans to address the identified issues. After the implementation of the selected response, police are expected to conduct thorough assessments to evaluate the results and establish whether or not the goals have been achieved. Telep and

Weisburd (2012:338) conclude that if police rigorously adhere to the SARA model and broaden their response options beyond traditional law enforcement tactics, they may experience enhanced crime control outcomes associated with problem-oriented policing.

The role of crime analysis in problem-oriented policing

The role of crime analysis in POP, specifically within the SARA framework, is critical across all stages of the problem-solving process. Boba (2001:36) holds that crime analysis is indispensable for accurately defining the problem during the scanning, analysis, and assessment phases. Moreover, analysts contribute to the response phase by providing data that guides the effective allocation of resources, such as identifying the specific times and locations where crime frequently occurs. Santos (2017:68) similarly believes that crime analysis underpins every phase of the SARA process.

During the scanning stage, analysis aids in identifying and prioritising problems for intervention. The selection and precise deployment of responses during the response stage also rely on detailed analysis. Problem analysis cannot occur without crime analysis, both of which are intertwined in POP (Santos, 2017:68–69). The importance of crime analysis is further highlighted by the fact that, owing to varied experiences, police officers often have different understandings of problems. Hence, crime analysts play a crucial role in either supporting or challenging these assumptions by offering comprehensive evaluations (Boba, 2001:36).

Crime analysis is essential not only for defining and specifying the problem but also for examining data to understand its dynamics. This facilitates the development of targeted response plans, including decisions about when and where to implement interventions, as well as assessing their impact (Anon, sa:45). Because crime analysis is a fundamental element of POP, problems cannot be solved without it. Jones and Gwinn (2017:37) agree with this view by noting that crime analysis is critical to the success of POP and indispensable throughout the SARA process. The absence of crime analysis would significantly undermine the prevalence and effectiveness of POP in reducing crime and disorder.

The analysis phase's omission can result in mis-defining the problem and prematurely progressing from scanning to response without sufficient knowledge (Jones & Gwinn, 2017:37). Jones and Gwinn (2017:37) further argue that failing to conduct thorough analysis and post-implementation assessments wastes resources in both the short and the long term. For instance, increasing patrols without proper analysis can lead to the displacement of crime to other areas or the resurgence of crime as soon as resources have been reallocated. One critical aspect of the process is the crime analyst's engagement with the problem location through direct observation, which complements data analysis and ensures that the contextual factors influencing the problem are fully considered (Jones & Gwinn, 2017:37).

Community-based policing

COPS (2014:1) defines community-based policing as a philosophy that promotes organisational strategies supporting the systematic use of partnerships and problem-solving techniques to proactively address immediate conditions contributing to public safety issues such as crime, social disorder, and fear of crime. Bullock (sa:2) explains that community policing marks a departure from traditional bureaucratic policing models characterised by a crime control focus, limited public interaction, random patrols, shift work, central dispatch, and territorial responsibility. It emphasises trust and communication between the police and the community through forums that allow diverse representatives to discuss and address safety concerns (OSCE, 2017:15). This approach expands the police mandate beyond crime fighting to include addressing the fear of crime, social and physical disorder, and other neighbourhood issues. Furthermore, community policing allows police officers to collaborate with residents to identify and solve priority problems (Bullock, sa:2-3). Community policing prioritises systematic and routine proactive problem-solving rather than reactive responses to crime.

According to COPS (2014:10), community policing encourages agencies to proactively develop solutions targeting the underlying conditions contributing to public safety problems. Bullock (sa:2-6) adds that it often involves assigning officers to specific geographic areas for extended periods to foster relationship building within communities. Bullock further identifies five organisational elements of community policing, namely establishing mechanisms for police-community consultation to understand policing priorities; addressing concerns raised by the community; improving community confidence and satisfaction with policing; engaging communities in setting police priorities; and encouraging community participation in crime prevention initiatives.

Brown (2012:222) maintains that problem-solving is a fundamental tenet of community policing. To engage effectively in problem-solving activities, police officers must be trained in crime analysis skills to enable them to identify crime patterns, link related events, and examine incidents to devise appropriate prevention strategies. Moreover, community policing adopts the SARA problem-solving model, reinforcing its problem-oriented nature.

The role of crime analysis in community policing

Crime analysis plays a central role in community policing by equipping police organisations with advanced analytical tools that enhance crime control strategies. Brown (2012:238) claims that effective crime analysis systems must provide comprehensive information on crime patterns and repeat offenders to all police units. As a result, it forms the backbone of coordinated crime prevention efforts. According to Santos (2017:67), crime analysis supports community policing by performing multiple functions. For example, it facilitates transparency and collective responsibility by making crime data accessible to the public; it supplies crime statistics to community organisations such as neighbourhood watches, and disseminates crime statistics in public newsletters; it gathers and evaluates community feedback concerning police performance, victimisation, and perceptions of crime; and it utilises crime data to better understand community dynamics and identify prevalent issues that require police attention.

In respect of community policing, crime analysis serves a dual purpose in that it collects intelligence from police operations and communicates critical information to the public, thereby fostering collaborative partnerships and enhancing transparency between law enforcement and community members (Santos, 2017:67). These functions underscore the indispensability of crime analysis across various policing models as it consistently lays the foundation for effective implementation. Although different policing approaches may adopt diverse procedures to conduct crime analysis, this function remains important.

A comparison of the crime analysis process, the intelligence process, and the SARA problem-solving model

The following discussion will explore the interrelationships and distinctions between three foundational policing processes, namely crime analysis, the intelligence process, and the SARA problem-solving model. Even though all three approaches aim to improve policing effectiveness, they differ in their focus, methodology, and application. The first sub-section – The crime analysis process and the intelligence process – compares their respective steps and analytical objectives. The second sub-section – Crime analysis and the SARA model – examines how crime analysis integrates with the structured phases of the SARA model, particularly within community and problem-oriented policing frameworks.

The crime analysis process and the intelligence process

Carter (2015:3) explains that intelligence analysis and crime analysis have both been employed in policing for a long time and differ in their focus and objectives. Crime analysis concentrates on crime patterns to facilitate the apprehension of offenders and prevent further criminal activities. Intelligence analysis, on the other hand, evaluates diverse information sources indicative of potential criminal behaviour such as suspicious activity reports, tips, and leads, to identify imminent threats to individuals or the environment and enable timely intervention to mitigate such threats (Carter, 2015:4). Although crime analysis and intelligence-led policing (ILP) adopt scientific methods, they apply different analytical techniques reflecting their distinct goals. Table 1.1 below compares crime analysis and intelligence analysis.

Table 1: Comparison of crime analysis and intelligence analysis

Crime analysis	Intelligence analysis
Analyses crimes that have already taken place.	Concentrates on potential threats.
Identifies trends and patterns to better understand criminal activity.	Intelligence analysts try to understand the operations of criminal networks, the demand for and distribution of illegal goods, the methods of gangs and criminal organisations, the characteristics of transnational crime, and potential threats to communities posed by criminal radicals.
Temporal and geographic characteristics, crime types, crime characteristics, and other forms of multidimensional analysis provide policymakers with essential information regarding crimes that have occurred across a jurisdiction.	The objective of Intelligence-Led Policing (ILP) is intervention at both the strategic and tactical level to prevent and neutralise emerging threats.

Crime analysis	Intelligence analysis
Crime typologies, the prevalence of repeat offenders, and victim characteristics are the types of information that determine personnel deployment, guide tactical police initiatives, direct investigative efforts, and help administrators set policing priorities.	Intelligence analysis is performed at both the micro- and the macro-level. Macro-level analysis examines the behaviour of criminal groups.

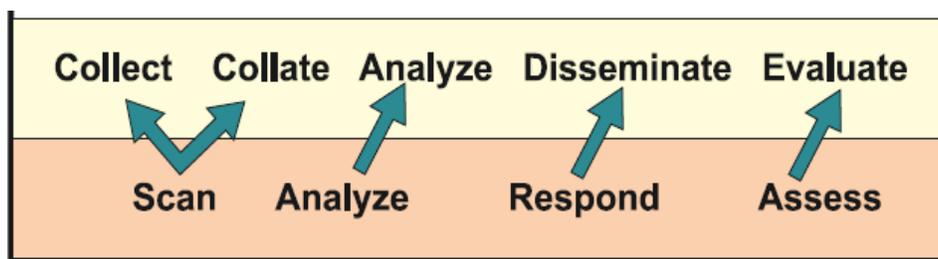
Source: Adapted from Carter, 2015:4-6

The ILP process, as described by Cope (2004:190), consists of five steps, namely the acquisition of information, analysis, review, action, and evaluation. Similarly, the crime analysis process involves data collection, data scanning and collation, analysis, dissemination, and evaluation. Both processes are founded on five core principles that closely align with each other. The initial step in crime analysis – data acquisition – corresponds with the information collection phase in ILP. But whereas crime analysis separates data scanning and collation from analysis, ILP integrates these activities in the analysis phase. Furthermore, crime analysis includes a distinct step for the dissemination of information, followed by evaluation. ILP has dissemination in the action stage, which is followed by review and evaluation. Consequently, crime analysis and ILP are similar in their overall structure and function.

Crime analysis and the SARA model

The SARA model for problem analysis is common in both community policing and problem-oriented policing frameworks. Hill (sa:2) maintains that crime analysis is a fundamental component in the SARA process. Despite variations in terminology across different contexts, the five stages of the crime analysis process – collect, collate, analyse, evaluate, and disseminate – are consistent. Hill (sa:4) asserts that these stages correspond with the phases in the SARA model and underscores the similarities between crime analysis and problem-solving practices. Figure 4 below demonstrates the resemblance between the SARA model and the five-step crime analysis process. It also illustrates that their integration can form a cohesive framework within police departments.

Figure 4: Relationship between the crime analysis process and the SARA model



Source: Hill, sa:4

Hill (sa:4) further argues that crime analysis connects community-based policing, POP, and the SARA model. Crime analysis commences with the appropriate application of administrative, strategic, and tactical analysis products, which facilitate the identification and scanning of problems within a jurisdiction. Crime analysts draw upon data from police information systems to generate the analytical insights, goals, and objectives underpinning community-based and problem-oriented policing. The reports of crime analysts are critical in planning responses to crime problems or geographic areas. They also guide operational decisions and allow for ongoing adjustments during implementation. Moreover, crime analysts do timely updates and assessments of the impact of interventions.

Following the execution of an action plan, crime analysts employ mapping and other analytical tools to evaluate the targeted geographic area or specific crime problem and determine whether changes have been enduring or if improvements were merely transient (Hill, sa:4). Problem-solving should be embedded within all policing operations and guide decision-making. The SARA problem-solving model offers officers a structured and disciplined way to address problems systematically (COPS, 2014:10). If they are implemented effectively, community-based policing and crime analysis techniques become closely intertwined.

Hill (sa:5) notes that the speed at which a police agency adopts crime analysis techniques in its community policing influences how quickly favourable outcomes are realised. A critical factor in the success of all policing approaches is the availability of reliable and accurate data, which maximises operational and tactical efficiency. The overall effectiveness of crime analysis depends upon the quality and type of analysis at a police department. Consequently, police departments should have a clear understanding of the roles and responsibilities of crime analysts and crime analysis units.

Operational limitations of crime analysis within the South African Police Service

The preceding discussion underscored the critical role of crime analysis within policing by highlighting its complexity as a systematic process to analyse crime and disorder problems and to assist law enforcement. Despite its significance, crime analysis in the SAPS faces several challenges. Management inefficiencies are a prominent issue. Burger (2015:55) contends that the optimal utilisation of crime analysis outputs at the station level is essential in crime prevention, detection, and control. Umanah and Wotela (2019:535) observe that station commanders often fail to leverage crime information to develop strategic interventions aimed at reducing crime. Goldstein (2005:397) deplors the limited application of crime analysis findings and notes that police operations frequently proceed without integrating such data. The result is that the Crime Intelligence Management and Analysis Centre (CIMAC) is unaware of the effectiveness of its operations. Moreover, Berning and Masiloane (2012:87) claim that the need for urgent responses to emergency calls conditions police officers to prioritise immediate action over reflective problem-solving. Although police officers have considerable experience and professional expertise, Edelstein and Arnott (2019:6) argue that their knowledge of crime trends is often less precise than the crime information obtained from well-maintained police data systems. Govender (2011:112) maintains that the use of crime information products is vital for identifying environmental conditions conducive to crime and enabling policymakers to formulate informed, proactive, and reactive strategies.

Another significant challenge is career development within the crime analysis discipline. Townsley et al. (2012:162) contend that the absence of defined career paths for crime analysts constitutes a major impediment. Historically, the analyst role lacked prestige within law enforcement agencies because of limited training and line managers' inability to offer them adequate professional development, probably because of their own insufficient training in this area. Santos (2017:32) points out that cultivating a qualified cadre of crime analysts is difficult and that opportunities for career advancement, promotions or lateral movement within police agencies are limited. Consequently, many crime analysts seek better opportunities elsewhere, and underperforming members sometimes take over their role. Burger (2015:53) notes that detective and crime analysis units in the SAPS struggle to retain skilled personnel because of ineffective retention strategies.

Additional challenges outlined by Santos (2017:32) and Poblete (2013:16) include the inconsistent availability of adequate data in terms of both quantity and quality; deficiencies in police information systems; limited training; insufficient knowledge and application of analytical techniques; and the underutilisation of qualitative data. Furthermore, the police's use of crime analysis products is limited, partly because of inadequate feedback mechanisms hindering iterative communication and alignment between analysts and end-users. Communication barriers between crime analysts across neighbouring jurisdictions persist, along with a general lack of formal training programmes and published resources dedicated to crime analysis. Collectively, these challenges impede the full operationalisation of crime analysis within the SAPS and warrant comprehensive strategic interventions.

Research methodology

This study adopted a qualitative case study design to explore crime analysis and operational efficiency within the SAPS. Its focus was on challenges and opportunities associated with crime analysis. Data were gathered through in-depth, semi-structured interviews with a purposively selected sample of forty-eight participants representing diverse organisational roles and levels. The sample included five individuals from the National and Provincial Crime Registrar (Sample A); twelve CIMAC members (Sample B); seven station commanders (Sample C); nine Visible Policing (VISPOL) heads (Sample D); thirteen detective commanders from the Tshwane policing district in Gauteng (Sample E); and two members of IACA (Sample F). This diverse participant pool had different perspectives concerning operational challenges, data integrity, and crime analysis practices within the SAPS.

The researchers adopted a qualitative approach grounded in the anti-positivist paradigm aligned with interpretivist traditions, which is well-suited to exploring the subjective meanings and experiences individuals associate with organisational processes (Berg & Lune, 2012:3; Lune, Pumar & Koppel, 2010:80). This epistemological position allowed for an in-depth examination of how data integrity and crime analysis influence operational decision-making

and efficiency in the SAPS. The methodology reflected an integrative perspective consistent with the views of Anderson (2014:52), Berg and Lune (2012:401), Bless, Higson-Smith, and Sithole (2015:16), and Silverman (2014:54) who affirm that research design and methods are determined by factors such as the characteristics of participants; the nature of the required data; the research setting; analytical approaches; and the research objectives.

A multi-method qualitative strategy combining thematic and content analysis techniques was adopted to analyse the data. Interview transcripts supplemented by comprehensive field notes underwent initial coding, theme identification, and systematic categorisation to reveal patterns, shared experiences, and differences between participant responses. Thematic analysis facilitated the identification of overarching conceptual themes, whereas content analysis supported the classification and quantification of recurrent themes and attributes (Anderson, 2014:240). The integration of these methods enabled the identification of well-defined analytical categories and comparative evaluation across participant groups. Their integration gave valuable insights into the challenges and opportunities related to crime analysis and operational efficiency.

To strengthen the study's analytical rigor and depth, convergent analysis was applied by integrating results from both thematic and content analyses. This triangulation approach enhanced the validity and reliability of findings through cross-verification from multiple data sources and analytical perspectives (Connelly, 2016:436). The findings were presented by means of verbatim quotations to authentically represent participant viewpoints, along with summary tables and narrative syntheses that consolidated the data into coherent, evidence-based conclusions. These outputs encapsulated the professional expertise and lived experiences of participants occupying strategic and operational roles within the SAPS.

Ethical approval for the study was obtained from the Research Ethics Committee of the University of South Africa (UNISA), reference number ST159. The SAPS gave formal permission to conduct the research. Detailed information sheets briefed participants on the study's aims and procedures. Participants gave informed consent in writing prior to their participation. Confidentiality and anonymity were rigorously maintained throughout the research process in accordance with ethical standards to safeguard participant identities and guarantee data integrity.

Results and discussion

Historical background and core goals of crime analysis

The historical evolution of crime analysis, as outlined in the literature, can be traced back to the 1800s. The earliest example of it is found in the deductive reasoning of the fictional detective Sherlock Holmes (Gottlieb & Arenberg, 1992:6; Tshishonga, 2022:149). Pattern recognition, as part of crime prevention, began with the establishment of the London Metropolitan Police in 1829. By the early twentieth century, August Vollmer institutionalised data-driven strategies such as pin mapping and hotspot identification (Santos, 2017:10). These methods were refined by Orlando Winfield's systematised patrol allocation methods. By the 1960s, this evolution led to the establishment of crime analysis units worldwide. The emergence of professional organisations such as the Commission for Accreditation for Law Enforcement Agencies (1979), the Colorado Crime Analysis Association (1982), and, most notably, the IACA in 1990, further institutionalised crime analysis as a distinct professional field.

The opinions of the participants in this study, specifically the international experts (Sample F), demonstrated a strong alignment with the literature on the development and mandate of IACA. When asked "*What is the mandate of the IACA?*" one participant replied: "*To help crime analysts around the world improve their skills and network with like-minded individuals*". Another participant responded: "*[It] is to help crime analysis around the world improve their skills and make valuable contacts. To help law enforcement agencies make the best use of their crime analysis unit*". These two responses reflect a shared understanding of IACA as a professional body committed to global capacity building in crime analysis.

When probed about the organisation's roles and responsibilities, participants responded: "*To deliver training workshops, networking opportunities and events, and post job opportunities,*" and "*[The IACA's role] is to operate as a professional body of international crime analysts and individuals performing criminalist duties within their respective policing environments. IACA is a knowledge-sharing body aimed at building relationships through networking and providing necessary training to civilian and sworn crime analysts*". These responses reaffirm the IACA's dual focus on professional development and inter-agency collaboration, which is consistent with the historical trajectory of crime analysis from reactive policing to proactive, intelligence-led operations. The congruence between participant insights and academic literature indicates a well-informed understanding among international participants regarding the evolution and institutional role of crime analysis. Their views not only underscore the significance of

globally recognised bodies such as the IACA in shaping contemporary practices but also validate literature-based assertions and offer a practitioner-informed view of continuous developments in the field.

The literature reviewed in this study regards crime analysis as a vital, evidence-based discipline that informs policing strategies, enhances resource allocation, and supports crime prevention and reduction efforts. Crime analysis draws upon both qualitative and quantitative methodologies to analyse crime patterns, understand contributing factors, and inform operational and strategic decisions (Kringen et al., 2016:1; Santos, 2017:18). The purpose of crime analysis is multi-dimensional, ranging from hotspot identification and offender profiling to evaluating policing interventions and forecasting future risks.

Participant feedback across all samples (A to F) articulated various functions of crime analysis, including its role in directing operations, informing prevention strategies, and uncovering criminal patterns. For instance, participants from Samples A to E described the purpose of crime analysis as to “*guide, direct and inform daily operations and members*”, “*identify hotspot areas*”, and “*give clarity on the what, when, why, where, who, and how of the crime*”. Other participants emphasised the strategic role of crime analysis. According to them, it is used: “*to see to it that measurements to combat crime are in place*” and “*to collect data about the crime that has occurred*”. Highlighting its analytical depth and utility in informing tactical responses, one participant described crime analysis as a means: “*to break down the crimes and to see what crimes happen where, how, why, and also how to address that crime*”.

International participants in Sample F emphasised the analytical and evaluative dimensions of the discipline. One participant defined its purpose as: “*using available technology and skills to make sense of large data sets related to crime, in order to provide actionable intelligence to the stakeholders*” while another observed that it is: “*to identify crime problems that are of significant nature... conduct research and assessment... provide recommendations... and thereafter assess the actions that were taken*”. These responses demonstrate a sophisticated understanding of crime analysis as both a diagnostic and prescriptive tool within the policing framework. Although the language and phrasing varied, participants’ insights closely aligned with the core themes presented in the literature, including the roles of crime analysis in identifying patterns, informing tactical deployment, supporting investigations, and evaluating interventions. This study found that the participants have a thorough understanding of the purpose and application of crime analysis, which affirms the central role of crime analysis in contemporary policing practice.

Applications of crime analysis

According to the literature reviewed in this study, crime analysis is a vital support tool across various levels of law enforcement operations, from patrol deployment and strategic planning to criminal investigations and resource allocation (Thibault et al., 2015:135; Govender, 2011:121; Tshishonga, 2022:206). Information derived from crime analysis products is used to direct patrols, analyse workloads, assign resources, and inform administrative decisions such as budgeting and operational planning (Horne, 2009:70; Taylor et al., 2013:5). Crime analysis also assists in evaluating the success of crime prevention interventions and in supporting prosecution through offender profiling and evidence collation.

Even though the empirical data gathered from samples A to F concurred with the literature’s view of crime analysis as an essential policing aid, perceptions about its effectiveness, especially within the SAPS, varied notably. Participants across all samples indicated that crime analysis “*can best be used in policing by adhering to the findings and implementing strategies based on the analysis*”. They held divergent views regarding the actual implementation of crime analysis. International participants (Sample F) stressed the importance of leadership support and noted that “*management should buy into the CIMAC product*” and that “*products should be taken seriously and used in operations*”. These responses underscore the need for institutional commitment to crime analysis if it is to have a meaningful impact.

Local participants in samples A to E had contrasting views. All the participants in sample A (national and provincial crime registrars) unequivocally stated that crime analysis is “*not effectively used within the SAPS*”. They attributed it to a lack of follow-up or operational feedback. One participant remarked that “*skyrocketing crime incidents are an indication that the information being provided is not effectively utilised to inform policing operations and deployment*”. This sentiment points to a systemic gap between analysis and application. Participants in sample B echoed this concern. Some of them stated that “*commanders do not use the provided products*” and that “*there is no feedback from operational members*”, although they believed that “*the products provide a clear picture of crime and guide operational members*”. Resource limitations were also cited as a constraint.

Conversely, participants in samples C and D mostly held a more optimistic view. They were of the opinion that crime analysis “*is effectively used within the SAPS*”. This indicates a potential disparity between provinces or units in how

effectively crime analysis is operationalised. Sample E participants were also divided. Some believed that CIMAC “*is effectively used within SAPS*”, whereas others mentioned that it is “*not effectively used due to resource shortages, poor analytical quality, or lack of implementation by crime prevention officials*”. A recurring concern of domestic participants was the absence of “*necessary feedback and follow-up*” on analytical outputs. International participants in sample F consistently affirmed that crime analysis is “*effectively used in their departments*”, though they acknowledged disparities between countries. One participant remarked that “*the effective use of crime analysis helps save money, resources, and time*”, which is in line with the cost-efficiency and operational benefits outlined in the literature.

In synthesis, although the theoretical applications of crime analysis are well-established and endorsed by literature, the practical implementation, particularly within the SAPS, seems to be inconsistent. This study found that the capacity and tools may well be present, but the absence of systemic accountability, follow-up mechanisms, and managerial buy-in hamper the full utility of crime analysis. Therefore, it is not only the existence of analytical products that determines success, but also the extent to which they are integrated into the policing culture, decision-making, and operational feedback loops.

Policing approaches in the South African Police Service and the function of crime analysis within policing models

The literature reviewed in this study state that crime analysis is not a substitute for investigative expertise. Crime analysis rather complements fieldwork and strategic decision-making across policing models such as the standard model, ILP, hotspot policing, POP, and community policing (Maboa & Horne, 2024:138; Santos, 2014; Stamm, 2015:1). This perspective is echoed by the views of participants in particularly sample E who regard crime analysis as a means of “*assisting with the tracing and identification of suspects and certain groups*”. Its function includes briefing detectives on repeat offenders and emerging crime patterns. Participants in sample E suggested operational improvements such as “*forming a dedicated task team*” to handle crime analysis reports and “*training investigating officers in crime analysis*”.

As to the standard model of policing, the literature characterises it as a reactive and incident-driven model relying on operational analysis for resource allocation and rapid response (Anon, sa:41; Santos, 2014:155). Crime analysis, in this context, provides crucial information for strategic deployment and internal decision-making. The practical application of this function was validated by participants who viewed crime analysis as a tool providing “*direction on where the problem is*” in support of, especially, patrol officers and station commanders.

The ILP model, which emphasises proactive policing and targeting high-risk offenders, depends on analytical tools such as crime mapping and network charts, to pre-emptively identify threats (Carter, 2015:8; Cope, 2004:190; Jones & Gwinn, 2017:31). The participants agreed with this view by commenting that the “*analyst should make sense of all the data collected during the investigation*” and that crime analysis plays a proactive rather than merely a supportive role. Regarding the hotspot policing approach, which focuses on geographically concentrated crime areas, participants agreed with the literature that crime analysis is central to identifying hotspots and measuring intervention effectiveness (Edelstein & Arnott, 2019:6; Telep & Weisburd, 2012:333).

The findings of this study apply, to a large extent, to the POP model, particularly its SARA framework. The literature claims that crime analysis is indispensable in every phase of problem-solving, from understanding crime causes to assessing strategy effectiveness (Santos, 2014:158; Stamm, 2015:4). Most participants (in samples A to D) were in agreement. One observed that “*problem solving cannot occur without crime analysis*”, thereby emphasising the role of data in identifying and addressing crime issues. Another aptly asked: “*No, how are we going to solve a problem if you don't know what the problem is?*” This question highlights the logic underpinning the necessity of analysis. Only a minority of the participants, including some participants in the international cohort (sample F), remarked that even though crime analysis is valuable, immediate field-based responses may, in some instances, suffice without formal analysis. One participant mentioned that in scenarios such as “*active shooting cases*”, trained police may rely on experiential knowledge. But even in these cases, crime analysis is required for post-incident evaluations and best-practice development.

In terms of community policing, which promotes collaborative problem-solving and public engagement, the literature again supports embedding crime analysis capabilities within the SAPS structures (COPS, 2014:1; OSCE, 2017:15). The literature recommends that officers be trained to recognise crime patterns and engage with communities in a transparent and informed manner. The participants agreed with this view. Regarding the dual flow of information, one

of them mentioned that: "CIMAC should inform detectives" and also "receive feedback from investigating officers", thereby stressing the iterative and participatory nature of community-based problem-solving.

This study found that the similarity between literature and participant responses suggests that crime analysis is indispensable across all modern policing approaches within the SAPS. Although situational exceptions may occur, the dominant view of the participants supports the strategic integration of crime analysis as a catalyst for effective, informed, and proactive policing. The findings also point to the need for systemic enhancements in training, feedback mechanisms, and resource allocation to maximise the utility of crime analysis in everyday police work.

Operational limitations of crime analysis within the South African Police Service

The findings confirm that the operationalisation of crime analysis within the SAPS is significantly hampered by a combination of structural, cultural, and resource-based limitations. The literature cautions that valuable intelligence is often ignored in operational planning. As a result, little feedback on the effectiveness of crime prevention is received (Burger, 2015:53; Santos, 2017:32; Poblete, 2013:16). This is compounded by the reactive nature of policing since officers are conditioned to immediately respond to incidents and not to engage in reflective, problem-oriented strategies. One participant remarked: "We are always chasing calls; there's barely time to sit down with CIMAC and really plan anything". This sentiment is in accordance with the view in existing literature that the practical knowledge of police officers may fall short of the precision of information from structured data analysis systems (Edelstein & Arnott, 2019:6). Furthermore, the literature highlights the absence of a formalised career path for crime analysts, which hampers the professionalisation of the field and the retention of skilled personnel (Townsend et al., 2012:162). The participants in this study reported a deficit in both specialised training and upward mobility, which discourages long-term commitment to the discipline.

In response to the question on implementation challenges, a significant number of participants across samples A to E cited inadequate resourcing as an obstacle: "For proper implementation of crime analysis, enough resources should be supplied to the CIMAC office so they can work effectively". Furthermore, some participants expressed concern that frontline officers often lack awareness of what the CIMAC office offers: "If members don't know what CIMAC can do, how can they ask for help or use it effectively?" The participant responses echoed the literature's emphasis on implementation challenges, particularly resource constraints. Samples A to E identified inadequate resourcing. One participant observed the following: "For proper implementation of crime analysis at the police station, enough resources should be supplied to the CIMAC office".

These responses not only correspond with the findings of earlier studies (Burger, 2015:53; Santos, 2017:32), but also give context-specific insights not covered in the literature. For example, the operationalisation of information and the lack of standardisation across provinces emerged as undocumented yet relevant issues. Furthermore, the international participants (sample F) introduced the critical, unexplored dimension of interpersonal and organisational dynamics. One international expert commented that: "It doesn't matter how well resourced a crime analysis unit is, if there is not a working relationship between the police and the crime analyst, then the work will not be effective". Other suggestions the international participants made included the following: "Have the crime analysts do ride-along with the officers" and "Let the crime analyst work with the officer that seems to be open to the analyst's work". Their comments emphasise rapport building and practical collaboration, which were not raised by local participants but are of strategic relevance for South African policing. Another international participant gave a technological perspective: "There is improvement in utilising crime analysis units and products... and I think that would improve going forward based on the successes". This perspective points to generational shifts in management attitudes toward technology and data systems. The same international participant mentioned challenges in coordination, including the "duplication of products" and "working in silos". His suggestion that "for large agencies, there should be a database of intended/upcoming products," and that "a crime analyst should be included in the team briefings at the outset of the job" contains practical advice for institutionalising collaboration and avoiding redundancy.

It was found that although some participants reported no challenges in implementing crime analysis and although a small number were unsure, most participants mentioned significant operational limitations. These include insufficient resources, limited awareness of analytical capabilities, poor integration of analysis into operational policing, and fractured communication between analysts and officers. Unlike international participants, local participants did not mention product duplication or inter-unit silo functioning as barriers. Although this insight is unique to the international context, it is relevant to future policy and practice in the SAPS.

Recommendations

Based on the findings, several actionable recommendations are made to enhance the implementation and operational efficiency of crime analysis within the SAPS. It is recommended that station management, detectives, crime prevention personnel, and operational members be capacitated to apply crime analysis insights in their routine policing functions. Crime analysis information, including temporal and spatial crime patterns, crime types, and incident frequency, should guide deployment strategies, patrol operations, and overall decision-making to ensure the efficient use of police resources. It is further recommended that detectives make consistent use of crime analysis data, particularly information relating to *modus operandi*, repeat offenders, and crime series, to support suspect identification, investigation linkages, and case development. To this end, it is recommended that CIMAC officials implement standardised briefings for investigators to communicate crime trends and investigative leads. CIMAC officials should also actively follow up on the use of intelligence and offer feedback on outstanding tasks or specific requests.

It is also recommended that crime analysts be trained and supported to translate raw data into actionable intelligence that is accessible and useful to operational members. A dedicated task team comprising detectives and crime analysts should be established to manage critical queries, urgent requests, and unresolved analytical tasks to enhance collaboration and integration across functions. For crime analysis to meaningfully contribute to crime reduction, it is recommended that the SAPS institutionalise the implementation of analytical outputs such as hotspot mapping and crime trend analysis, to address high-impact crimes such as domestic and gender-based violence. These products should not be generated in isolation and should be used. Mechanisms must be put in place to monitor their impact on crime prevention outcomes.

Although structured crime analysis is central to proactive policing, operational members and investigators must be encouraged to rely on their own expertise, intuition, and situational awareness in instances that demand immediate responses such as active shooting situations, when it is impossible to wait for crime analysis support. To support crime analysis at local level, it is further recommended that the SAPS develop an organisational command and control structure that formally recognises and reinforces crime analysis capabilities within station-level operations. To sustain analytical capacity, it is recommended that the SAPS establish structured career pathways for crime analysts and implement targeted retention strategies to safeguard institutional knowledge and ensure continuity in specialised roles.

It is recommended that a sworn officer join each crime analysis unit to improve operational integration and strengthen collaboration between analysts and operational officers. Crime analysts should ride along with officers to gain practical field experience and build rapport. Additionally, analysts should be paired with officers who are receptive to the value of crime analysis and work closely with those in supervisory roles to enhance strategic coordination. It is also recommended that the SAPS promote an information-driven culture by introducing seasoned officers to new technologies and ensuring that they are trained in the use of digital tools to solve contemporary crime problems.

To prevent duplication of work and improve communication, it is recommended that a centralised database be developed for tracking completed and uncompleted crime analysis products. Analysts should brief operational staff during morning parades on available products and forthcoming analytical outputs aligned with current crime threats and trends. Furthermore, analysts should be included from the outset in team briefings and planning related to specific crime operations to ensure that their input shapes the crime picture and informs tactical decisions. Regular and systematic information sharing between crime analysts and operational members during on- and off-duty parades should be institutionalised to ensure that crime analysis plays a central role in operational planning and decision-making within the SAPS.

Conclusion

This study underscores the fact that crime analysis as an indispensable tool for enhancing operational efficiency and strategic policing effectiveness within the SAPS. Crime analysis has progressed beyond merely identifying crime patterns. It is a sophisticated discipline that informs a wide range of policing models from ILP and hotspot policing to POP and community-based approaches.

The findings show that, despite growing recognition of crime analysis's strategic value, the practical integration of crime analysis into everyday policing remains inconsistent. Its integration is constrained by a combination of organisational, technological, and resource-related challenges. Key impediments include issues of data quality and integrity; limited technological infrastructure; insufficient training and professional development opportunities for analysts; and a lack of formalised communication channels between crime analysts and operational personnel. These factors hinder the optimal utilisation of analytical outputs and diminish their influence on frontline decision-making.

Moreover, the lack of structured career development pathways for crime analysts results in a high staff turnover and hinders the professionalisation of the field. A high staff turnover weakens the long-term institutional capacity of crime analysis units.

Nonetheless, this paper affirms the critical contribution of crime analysis to crime prevention, investigative support, and resource deployment. It highlights the need for the SAPS to institutionalise crime analysis within command structures, thereby ensuring its alignment with operational priorities. Effective crime analysis requires not only technological and human resource investment but also a cultural shift within policing organisations to embrace data-driven decision-making and foster collaboration between analysts and operational members. The findings advocate for the strengthened integration of analytical products into tactical and strategic processes and for robust feedback mechanisms and cross-departmental cooperation. Enhancing analyst-officer interaction through joint activities such as ride-alongs and assigning sworn officers to analysis units may improve mutual understanding and trust and, ultimately, increase the relevance and application of crime intelligence. Furthermore, clear career pathways and retention strategies for analysts are essential for sustaining expertise and advancing the discipline within the SAPS.

Overcoming the identified challenges through targeted organisational reforms, capacity building, and enhanced technological adoption will enable the SAPS to fully harness the potential of crime analysis and enhance their operational efficiency. By implementing strategic organisational reform, targeted capacity building, and the systematic integration of advanced analytical technologies, the SAPS will significantly improve its use of crime analysis. Institutionalising crime analysis as a core policing function will enable data-driven, anticipatory, and effective decision-making. As South Africa confronts complex and dynamic crime patterns, the strategic institutionalisation of crime analysis will be critical to the operational efficiency and responsiveness of the SAPS.

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