



ANALYSIS OF CRIME PREVENTION ENHANCING URBAN PUBLIC SAFETY THROUGH DATA-DRIVEN STRATEGIES

**Buytrago, Bernard Angelo C.,
Delos Santos, Peter Mark S.,
Penados, Sachiel,
Bandalos, Irish P.ⁱ**
University of Mindanao,
Philippines

Abstract:

As cities continue to grow and more people move into urban areas, crime has become a serious problem. This study looks at how data-driven strategies can help prevent crime and improve safety in urban communities. The research is based on the Situational Crime Prevention (SCP) theory, which focuses on making it harder for crimes to happen by changing the environment and using technology. The study uses a quantitative, non-experimental method with a descriptive-correlational design to find out how data-driven strategies like anti-street crime actions, community-based programs, and crime awareness campaigns affect crime prevention. A survey was given to 300 students from the University of Mindanao, who live in urban areas and represent different backgrounds. The data were analyzed using basic and advanced statistical tools, such as Pearson's r and Spearman's Rho , to see if there's a connection between the strategies used and how well they prevent crime. The results are expected to show that these strategies help reduce crime, solve problems more effectively, and make urban areas safer. This study is important because it can help police, local leaders, and communities create better plans to fight crime using evidence and technology. It also shows how crime prevention can lead to better lives, safer neighborhoods, and stronger communities.

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ⁱ Correspondence: email ipioneta@umindanao.edu.ph

1. Introduction

In the middle of the world's growth in population and swift urbanization progress, the growing menace of crime has become one of the most severe problems every nation is dealing with in all senses. As a result, it diminishes the system's safety, security, and social structure. Depending on the scope and type of crime, societies are impacted in various ways. When something occurs frequently enough in societies and threatens social order, solidarity, and the safety of individuals and property, it becomes a problem. Crimes nonetheless have tangible and intangible consequences on the socioeconomic, direct or indirect, psychological or physical, and individual or community-wide levels (Abiodun, 2022).

Urban crime prevention plays an essential and continuous role in the sustainable development of urban areas and the quality of citizens' lives. Patrol route planning could help us to enhance urban public safety by creating routes that will increase the effectiveness of patrols, prevent crime, or enable a prompt reaction to occurrences involving criminal activity. These routes should be more objective and efficient than those created by random patrolling. Coordination of police patrol strategies is necessary to improve the effectiveness of crime deterrence and its efficiency. In order to handle emergencies and conduct regular patrols, police must move and station a significant number of personnel in various spatial configurations. It is essential to assign tasks and create the routing efficiently (Johnson *et al.*, 2021). Data-driven strategies are critical in crime prevention and enhancing urban public safety. Data-driven strategies could analyze the history of crime data in a particular place if studied precisely and identify the strategies and patterns that can anticipate a crime occurring in a particular place so people can prevent that from happening. We are currently in a modern world, so with the help of technology, people can easily observe urban areas using CCTV cameras, which could lessen the opportunity for a potential crime. Engagement with the community is also essential when implementing data-driven crime prevention in urban areas (Cheng *et al.*, 2021).

First and foremost, this literature highlights how data-driven crime research supports a broader movement toward preemption and prevention, which aims to foresee crime and prevent it before it occurs (Egbert & Krasmann, 2020). Since technology has permeated most aspects of society, public institutions are constantly pressured to innovate to stay in step with the latest developments. Nonetheless, the employment of technology has been a significant aspect of police work, and the advancement of technology has closely correlated with the evolution of modern policing practices (Taylor, 2023). Additionally, the COVID-19 pandemic presented new challenges, prompting police forces worldwide to increasingly rely on technological innovation to enhance their operations (Azoulay & Jones, 2020).

The term “surveillance” remains central to contemporary crime prevention and policing, even though not all emerging security technologies are explicitly designed for surveillance. Many crime prevention and detection technologies nevertheless rely on

some form of sensing, monitoring, or data collection to support public safety and law enforcement activities (Laufs et al., 2020a). Over the past decade, police and crime prevention services in major cities such as London have also experienced austerity measures and budget reductions, which have significantly affected various aspects of their operations (Brown, 2020). Despite these financial and operational constraints, enhancing public safety and security remains a fundamental priority, making continued investments in smart policing and surveillance infrastructure increasingly important (Laufs et al., 2020).

The growing “smartification” of urban infrastructure and the rapid adoption of innovative technologies have introduced both new opportunities and challenges for law enforcement practitioners. Smart surveillance systems can enhance the capacity of authorities to monitor communities, detect potential threats, support crime prevention efforts, and respond more effectively to public safety concerns. In the local context, España and Nabe (2023) emphasized that understanding the underlying structures of neighborhood crime can provide a basis for developing policies and strategies that strengthen peacekeeping efforts, suppress crime and other forms of delinquency, reinforce community relationships, and contribute to the creation of a safer and more secure society. Thus, integrating knowledge of neighborhood crime patterns with emerging surveillance technologies may provide law enforcement agencies and local governments with a more informed approach to crime prevention, community safety, and strategic resource allocation.

The previously mentioned Smart Operating Security Technologies (SOSTs) and other technological solutions aimed at addressing resource shortages are central to this evolution. For instance, a recent study involving twenty senior crime-reduction practitioners in London explored their views and the real-world challenges of acquiring and implementing SOSTs. These experts provided insights into the effectiveness of advanced digital technologies for crime prevention and detection, as well as the key barriers hindering efficient procurement and operation, particularly among stakeholders often underrepresented in the academic literature (Garcia *et al.*, 2021).

Public support for policies intended to reduce crime tends to fluctuate, often intensifying after significant incidents. For example, the introduction of new surveillance technologies or expanded surveillance powers frequently occurs in the aftermath of high-profile tragedies or mass-casualty events, when the public perceives a heightened need for security (Rodriguez *et al.*, 2023). Additionally, the push toward automation and data-driven tools is often seen as a practical response to resource limitations in policing (Ahmed, 2022).

The study is based on the Situational Crime Prevention Theory, which was advanced by Clarke in 1980. This theory sees it as necessary to adopt measures that will make it hard for wrongdoing to occur, deter those who wish to engage in criminal activities, and make the act unprofitable for the offender. Such ideas include raising awareness, lowering the incentive for a criminal, and coming up with methods that will make it challenging to perpetrate a crime. In light of this theory, its applicability to the

study is anchored in the aspects of environmental and situational elements in the crime prevention logic with a propensity to the study's concern on evidence-based approaches to improving public security in a city.

Therefore, using these principles, the study will show how security agencies can bring harmony to reduce and prevent crime within urban centers, noting the possibility of Situational Crime Prevention (SCP) in improving public safety in urban settings by adopting evidence-based approaches to reducing criminal activities (Ho, Ko, & Mazerolle, 2022). Clarke built SCP further from Cornish and Clarke, which aims at regulating the situation conditions so that they decrease opportunities for crime, for instance, by increasing the level of effort that is necessary for a criminal act, raising the cost that an offender must bear for criminal activities, or decreasing the benefits of crime. By integrating SCP techniques into the analysis of cybercrimes, this framework aims to extend these successful strategies beyond traditional crime contexts to the digital realm. The approach relies on making unfavorable conditions for cybercriminals based on the knowledge derived from both criminology and cybersecurity, which provides a sound strategy for minimizing the number of business opportunities and improving the general well-being of the general population (Ho *et al.*, 2022).

In this study, the null hypothesis assumes that the implementation of data-driven strategies, anti-street crime strategies, community-based anti-crime strategies, and crime awareness strategies has no significant effect on crime prevention outcomes in urban areas. Specifically, it posits that these strategies do not contribute meaningfully to improvements in problem-solving, crime prevention efficiency, or public safety. Thus, any observed changes in crime prevention indicators are presumed to be due to random variation or other unrelated factors rather than the influence of the data-driven approaches examined in this research.

Figure 1 shows the study's conceptual framework, which consists of independent and dependent variables. The independent variable is data-driven strategies, which comprises several indicators: Anti-Street crime strategy refers to strategies and tactics for crime prevention, usually concentrating on crimes happening on the street. The community-based anti-crime strategy represents the locally directed crime prevention measures that focus on places with a greater likelihood of crime rather than on specific individuals. The crime awareness strategy brings into focus the fact that more effort should be made to prevent crime, which is done through a strategic approach to crime awareness. That is why people worldwide have been searching for proper approaches to crime prevention throughout history (Nguyen, 2023).

The study focuses on two primary variables: The use of the Independent Variable (IV) and the Dependent Variable (DV). Which the Independent Variable is Data-Driven Strategies, and the Dependent Variable is Crime Prevention.

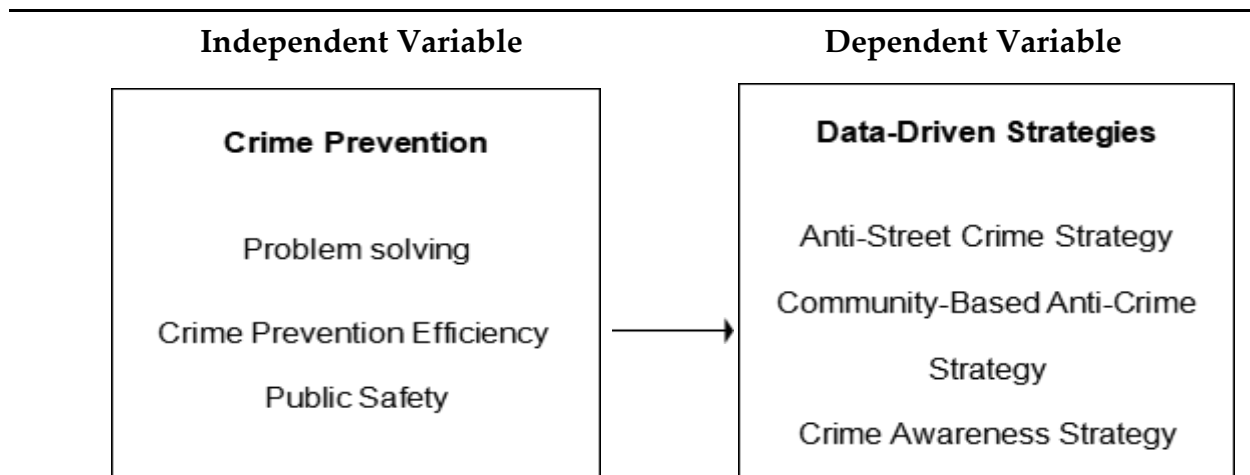


Figure 1: Conceptual Framework of the Study

The Independent Variable include several key indicators: the first one is the Anti-Street Crime Strategy, which targets the kinds of crimes that are carried out in public areas; the second one is the Community-Based Anti-Crime Strategy, which focuses on strategies that are conducted and initiated from the community level, targeting the hot spots rather than the offenders. The third is the Crime Awareness Strategy, which is a campaign that seeks to educate the people so that they can deter criminals. These indicators relate to a focused strategic method that uses data to solve specific aspects of crime prevention in urban areas. On the other hand, the Dependent Variable includes Problem Solving, which is the understanding and solving of any crime issues facing society, and Crime Prevention Efficiency, which is the efficiency and effect of the efforts put into preventing crime and ensuring society's safety. The relationship of these variables is significant, as efficient applications of data techniques should increase the indices of crime reduction and improve the safety of cities.

The relationship between Data-Driven Strategies (IV) and Crime Prevention (DV) is essential in improving public safety in urban areas in this thesis. The Data-Driven Strategies consist of essential frameworks such as the Anti-Street Crime Strategy, Community-Based Anti-Crime Strategy, and Crime Awareness Strategy. These strategies seek to embrace various crime prevention schemes, including reducing crime cases in public places, involving people at large in acts of preventing crime, and increasing awareness about these crimes.

Crime prevention outcomes are assessed using parameters such as problem-solving, crime prevention efficiency, and public safety. I assume that these indicators are preceded by the capacity to solve crime-generative factors, the overall efficacy of crime-fighting processes, and enhancing the public safety level. The study posits that when Data-Driven Strategies are effectively implemented, they enhance these indicators, ultimately leading to safer urban environments.

Numerous initiatives aimed at reducing crime have shown promising results, while others have proven less effective. Although many programs are grounded in scientific principles, a significant number still lack comprehensive evaluation to

conclusively determine their effectiveness in real-world settings (Anderson & Riley, 2021). The study that the researchers will conduct focuses on implementing targeted environmental and managerial interventions designed to reduce the opportunities and incentives for criminal activity. This approach emphasizes modifying the physical and social environments where crimes occur rather than focusing solely on the individuals who commit them (Bennett, 2023). Such a strategy is particularly relevant to the Philippine context, where rapid urbanization, high population density, and industrial expansion have contributed to elevated crime rates in urban centers. Empirical studies consistently demonstrate that crime rates tend to be higher in low-income communities and densely populated areas (Silva & Cruz, 2023).

The study's primary objective is to determine and analyze the appropriate strategies for preventing crimes in urban areas. The appropriateness and initiative to account for crime prevention indicate the significance of evaluating crime prevention strategies. Another study aims to analyze crime prevention in enhancing urban public safety. Implementing an effective crime prevention strategy provides a safe and secure environment for society to improve. Lastly, the study will describe factors and search for prevention in terms of how individuals in a specific area can prevent crimes. Developmental prevention oversees the distribution of resources to help individuals address the root causes of criminal activity and antisocial behavior before these issues emerge or become entrenched.

Once data-driven analysis is applied in crime prevention, the interventions between two variables will become more effective, lowering overall crime rates quickly. Getting advanced data-driven analysis techniques using predictive modeling, will significantly impact high-risk areas and individuals, eventually decreasing crime rates compared to our traditional crime prevention techniques. Strategies for preventing crime can benefit society economically in several ways.

Firstly, the costs of criminal justice and law enforcement will be decreased; by preventing criminal activity, the criminal justice system may save money due to this decline in crime-related activity.

Secondly, enhanced productivity and economic output are achieved when businesses operate in a safer environment due to effective crime prevention measures, investment, job creation, and economic growth.

Thirdly, increased property values and investment, as higher property values are typically found in areas with safer neighborhoods and lower crime rates. Fourthly, enhanced business and tourism, as well as a safe and secure destination, draws more tourists, boosts tourism-related income, and creates job opportunities.

Fifthly, decrease healthcare costs: healthcare costs are frequently linked to high crime rates because of the need to treat psychological trauma and injuries caused by criminal activity; healthcare resources can save money if crime is prevented.

Sixthly, improved social capital and quality of life, as people living in areas with high crime rates are more likely to feel safe and secure. Consequently, this leads to an

enhanced standard of living, increased social engagement, and the growth of social capital.

Lastly, future researchers, apart from the fact that this study can help individuals feel safe and secure, future researchers can also obtain additional vital information regarding the various approaches that can enhance urban safety. This study will also help future researchers by providing them with additional knowledge to unlock new learning opportunities.

2. Methods

This section provides the various research methodologies that the researchers utilized to gather the target research participants for the study, materials and instruments, and an overview of the research design and procedure.

2.1 Research Respondents

The target population for the study entails the students from the University of Mindanao. These students were chosen because they reside in Urban Areas and are among the region's most populous and have relatively high crime rates. Therefore, they are pertinent to the study on crime prevention strategies.

These residents have diverse socio-economic statuses and different age groups, and some of them live both in urban and semi-urban areas. It comprises old and new inhabitants of the city, who may have different experiences and views on incidents and challenges concerning crime and safety.

The sample size for this study is set at 300 respondents. The following sample size was adopted using simple random sampling, deemed the most effective method of drawing a balanced sample by reducing bias (Noor, 2022). The process of selection makes it possible for every person in the target population to stand an equal chance of making it to the study, thus making the study valid and reliable.

The selection of participants for the study utilized a simple random Sampling method to ensure that every individual in the target population had an equal chance of being included. This approach minimizes selection bias and enhances the generalizability of the results, as the sample more accurately reflects the characteristics of the broader population. Recent literature emphasizes that simple random sampling is among the most reliable techniques for producing unbiased results, thereby strengthening the validity and reliability of research findings (Noor, 2022).

The distribution of the 300 respondents was proportional to the number of selected students. This proportional distribution ensured that each student's representation reflected its population size, thereby enhancing the accuracy of the data. The breakdown of respondent distribution complies with the research objective of ensuring a broad representation of opinion across the selected students' various social, economic, and demographic characteristics.

This research was conducted at the University of Mindanao in Davao City, Philippines. The area is chosen based on the given data concerning the level and types of crime happening in different regions and their overall criminality, as the students reside in different Urban Areas, making it possible to analyze the possibilities of implementing appropriate crime control measures.

2.2 Materials and Instruments

The study utilizes a structured survey questionnaire to evaluate two main variables: Data-Driven Strategies (independent variable) and Crime Prevention (dependent variable). The questionnaire is developed in two parts. Section one is Data-Driven Strategies, comprising 15 items, including anti-street crime strategies, community-based anti-crime strategies, and crime awareness strategies. The survey included thirty items that were answered using a Likert scale of 1 to 5, with 1 representing "strongly disagree" and 5 representing "strongly agree." The items were adapted from (McDonger, 2020), a sample survey on crime prevention, and personal observation.

Thus, a 5-point Likert scale measures respondents' agreement with the following statements: Crime Prevention is evaluated in Part II of the questionnaire by 15 questions on a 5-point Likert scale. The questions used in this section are selected from the same sources as used in Part I to compare the efficiency of implementing different crime prevention approaches in the community. This unified interpretation scale ensures consistency in evaluating the effectiveness of both Data-Driven Strategies and Crime Prevention measures. For all data collected across the variables, the following interpretation scale was applied.

The scale used to assess the strategies and measures is divided into five categories, each with a corresponding range and description. A score ranging from 4.20 to 5.00 is interpreted as Very High, indicating that respondents highly agree with the strategies and measures being assessed. A score within the range of 3.40 to 4.19 is considered High, which means that respondents agree with the strategies and measures. A score of 2.60 to 3.39 falls under the Fair category, suggesting that respondents moderately agree with the strategies and measures. Meanwhile, a score between 1.80 and 2.59 is categorized as Low, showing that respondents poorly agree with the strategies and measures. Finally, a score ranging from 1.00 to 1.79 is described as Very Low, indicating that respondents disagree with the strategies and measures being assessed.

To maintain the high validity and reliability of the surveys, the questionnaire had to be adapted based on the subjects in the analysis of the pilot group and had similarities to the target population. The findings from this pilot test were incorporated into enhancing the questionnaire; a group of experts from criminal justice and public safety further validated the questionnaire. The validation process showed that the instrument was content valid and relevant, with the experts' average rating of 4 for the items. The results were 8 out of 5, showing that the website is appropriate for achieving the study's goals

2.3 Design and Procedure

The study employs a quantitative, non-experimental research design using the descriptive correlation technique. This design is appropriate for the study's focus on analyzing and understanding relationships between variables related to crime prevention strategies and their effectiveness. Using a descriptive-correlation design allows for examining existing conditions and identifying patterns or correlations between data-driven strategies and crime prevention measures without manipulating variables.

In the context of criminology and criminal justice, this design is handy for assessing the current state of crime prevention strategies and their impact on public safety. Using this approach, the study can establish whether or not the existing strategies are practical and if there are areas that can be improved. Descriptive research is a type of research that establishes relationships between various factors through documentation, hence necessary in giving an understanding of the phenomenon for the formulation of crime prevention policies (Bhandari, 2021).

2.4 Data Analysis

This research employed a structured survey questionnaire to generate data on measures employed in crime prevention and the respondents' impressions of their efficacy. The responses were then quantified by assigning a rating scale of 1 to 5 to classify all crime prevention strategies. The scale used for interpretation was as follows:

The scale used to assess the effectiveness of crime prevention strategies is divided into five categories, each with a specific range, description, and interpretation. A score ranging from 4.20 to 5.00 is classified as Very Effective, meaning that crime prevention strategies are perceived as having a significant impact on reducing crime. A score within 3.40 to 4.19 is considered Effective, indicating that the strategies are perceived to have a notable impact on crime reduction. Scores falling between 2.60 and 3.39 are described as Moderately Effective, suggesting that the strategies are seen as having a moderate impact in reducing crime. Meanwhile, a score ranging from 1.80 to 2.59 is interpreted as Slightly Effective, reflecting the perception that the crime prevention strategies have only a minor impact. Lastly, scores within 1.00 to 1.79 fall under the Not Effective category, indicating that the crime prevention strategies are perceived as having little to no impact on reducing crime.

Such a structure makes it possible to precisely assess the perceived level of crime prevention and the kind of approaches valued by the community. The rights and welfare of the people involved or the effectiveness of the crime prevention measures to be implemented are another factor that deserves ethical consideration when researching this topic. A consent form was presented to each respondent before the study began, and they were required to sign it prior to participation. The form outlined the purpose and procedure of the study, as well as the respondent's right to withdraw at any time without any questions asked. In addition to the survey, privacy was prioritized through anonymity and by ensuring that all data were securely protected so that individuals could not access each other's personal information. Publishing false information was

considered a serious violation of research ethics; therefore, the study was conducted with the goal of producing accurate and trustworthy results. These ethical practices were intended to ensure that participants' rights were respected, that the research process maintained its integrity, and that the study's outcomes were credible.

3. Results and Discussion

This chapter presents the results of an analysis on enhancing urban public safety through crime prevention using data-driven strategies. This study used questionnaires, the first part of which consisted of a 15-item questionnaire for Data-Driven Strategies and a 10-item questionnaire for the Crime Prevention Questionnaire. Together, these results provide a comprehensive view of data-driven strategies for crime prevention, enhancing public safety in the urban areas.

3.1 Level of Data-Driven Strategy

Table 1 presents the level of implementation of various crime prevention strategies, as perceived by 300 students from the University of Mindanao resides in urban areas. The data were obtained through a 15-item questionnaire, categorized into three groups: Anti-Street Crime Strategy, Community-Based Anti-Crime Strategy, and Crime Awareness Strategy. Respondents rated each item using a five-point Likert scale, and the mean scores were interpreted based on quantitative descriptive categories: Very Low, Low, Moderate, High, and Very High.

Table 1: Level of Data-Driven Strategy

	Mean	SD	Interpretation
Crime Awareness Strategy	4.474	0.361	Very High
Community-Based Anti-Crime Strategy	4.136	0.424	High
Anti-Street Crime Strategy	3.872	0.813	High
Overall	4.161	0.533	High

Overall, the respondents rated the crime prevention strategies positively, with an average score of 4.161, which falls under the High category. The overall standard deviation of 0.533 suggests that while most respondents had similar views, there was still some variation in their opinions.

Among the three strategies, the Crime Awareness Strategy stood out with the highest mean score of 4.474, interpreted as Very High. The low standard deviation (SD = 0.361) shows that most respondents shared the same favorable opinion about its presence and effectiveness in their community (Omda & Sergeant, 2024).

The Community-Based Anti-Crime Strategy followed, with a mean score of 4.136, still within the High category. This suggests that many respondents believe that community involvement plays an important role in preventing crime, with only a small difference in how people rated it (SD = 0.424) (Pyo, 2021).

Lastly, the Anti-Street Crime Strategy had the lowest mean score of 3.872, though it still falls under the High category. However, it also had the highest standard deviation (SD = 0.813), which means that people's opinions about this strategy varied more compared to the other two. This could reflect differences in how visible or effective this strategy is across different areas or groups in the community.

3.2 Level of Perception of Public Safety among the Local Population

Table 2 shows the respondents' perceptions regarding the level of crime prevention in their respective communities. These perceptions are based on three key aspects: Crime Prevention Efficiency, Public Safety, and Overall Crime Prevention, all measured through Likert-scale items. The mean scores were interpreted based on quantitative descriptive categories: Very Low, Low, Moderate, High, and Very High.

Table 2: Level of Crime Prevention

	Mean	SD	Interpretation
Public Safety	4.550	0.340	Very High
Crime Prevention	4.396	0.435	Very High
Crime Prevention Efficiency	4.243	0.598	Very High
Overall	4.396	0.458*	Very High

The results revealed that all three dimensions of crime prevention were rated Very High, reflecting a strong and positive perception of the effectiveness of local crime prevention efforts. The overall combined mean score for these dimensions was 4.396, which falls under the Very High category. The overall standard deviation of 0.458 suggests that while most respondents shared positive views, there was still some variation in their responses.

Looking more closely, Public Safety received the highest individual mean score of 4.550, along with the lowest standard deviation (SD = 0.340), indicating not only a high level of perceived safety but also a consistent agreement among respondents.

This was followed by Overall Crime Prevention, with a mean score of 4.396, showing that respondents generally believe the community's crime prevention efforts are effective.

Lastly, Crime Prevention Efficiency received a mean score of 4.243, which, while still within the Very High category, suggests slightly lower but still positive perceptions of how efficiently crime is being prevented.

3.3 Correlation Analysis Between Crime Prevention and Data-Driven Strategy

Table 3 contains the correlation coefficients between the three crime prevention strategies and the three crime prevention outcomes: Crime Prevention Efficiency, Public Safety, and Overall Crime Prevention. Pearson's correlation coefficient r was used to determine the strength and direction of each relationship, while the p -values indicate statistical significance (Turney, 2024).

Table 3: Correlation Analysis Between Crime Prevention and Data-Driven Strategy

	Crime Awareness Strategy	Community-Based Anti-Crime Strategy	Anti-Street Crime Strategy
Crime	$r = 0.457$	$r = 0.471$	$r = 0.041$
Prevention	$p < .001^{**}$	$p < .001^{**}$	$p = 0.479$
Efficiency			
Public Safety	$r = 0.459$	$r = 0.211$	$r = 0.182$
Crime	$p < .001^{**}$ $r = 0.493$	$p < .001^{**}$ $r = 0.406$	$p = 0.002^{**}$ $r = 0.099$
Prevention	$p < .001^{**}$	$p < .001^{**}$	$p = 0.086$
Total	1.409	1.088	0.322

Displays Pearson correlation coefficients (r) between each of the three strategies and the crime prevention outcomes. As seen in the chart, the Crime Awareness Strategy and Community-Based Anti-Crime Strategy both have moderate positive correlations with all three outcomes, particularly with Overall Crime Prevention. In contrast, the Anti-Street Crime Strategy shows relatively weak and inconsistent correlations, with a marginally significant relationship observed only for Public Safety.

The analysis shows that both the Crime Awareness Strategy and the Community-Based Anti-Crime Strategy demonstrated moderate and statistically significant positive relationships with all three crime prevention outcomes. Among the three strategies, the Crime Awareness Strategy had the strongest overall correlation, with a total r -value of 1.409, including a particularly strong association with overall crime prevention ($r = 0.493$, $p < .001$). This highlights the important role of raising public awareness in promoting effective crime prevention (Pederson, 2022).

The Community-Based Anti-Crime Strategy followed, with a total r -value of 1.088, also showing significant positive correlations with all three outcomes. This suggests that engaging the community and encouraging participatory approaches contributes meaningfully to crime prevention efforts.

In contrast, the Anti-Street Crime Strategy recorded the weakest overall correlation, with a total r -value of only 0.322. Although its relationship with public safety was statistically significant ($r = 0.182$, $p = 0.002$), the effect size was minimal. Its associations with crime prevention efficiency and overall crime prevention were not statistically significant. These findings imply that enforcement-centered approaches may have a more limited influence on perceptions of crime prevention effectiveness (Bostrom *et al.*, 2024).

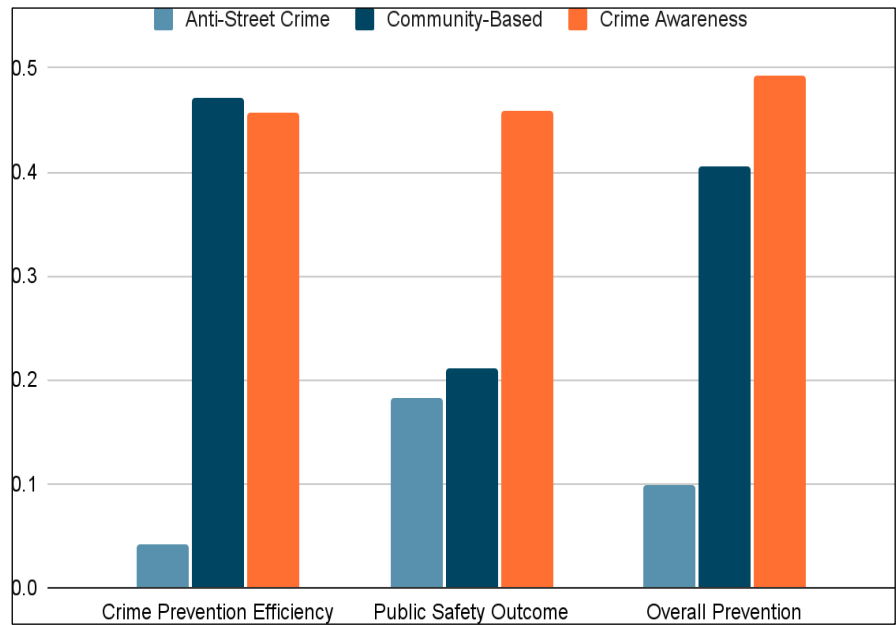


Figure 1: Correlation Analysis Between Crime Prevention and Data-Driven Strategy

3.4 Regression Analysis Predicting Crime Prevention

Table 4 shows the results of a multiple regression analysis to determine the predictive power of each strategy on overall crime prevention. The regression coefficients (B) indicate the degree to which each strategy contributes to the prediction of crime prevention outcomes when controlling for the other strategies. The t-values and p-values determine the significance of each predictor.

Table 4: Regression Analysis and Crime Prevention Predicted by a Data-Driven Strategy

Model	B	SE	β	t	P
M1 (Intercept)	-0.917	0.330	—	-2.781	0.006
Anti-Street	0.130	0.024	0.243	5.353	< .001 **
Crime Strategy Community-Based	0.524	0.047	0.510	11.252	< .001 **
Anti-Crime Strategy					
Crime Awareness	0.591	0.051	0.490	11.546	< .001 **

The results indicate that all three strategies are statistically significant predictors of crime prevention ($p < .001$). Among them, the Crime Awareness Strategy emerged as the strongest predictor ($B = 0.591$), followed by the Community-Based Anti-Crime Strategy ($B = 0.524$). These findings suggest that initiatives promoting public education, participation, and communication are highly effective in enhancing crime prevention outcomes (Nubani, 2023).

Although the Anti-Street Crime Strategy was also a significant predictor ($B = 0.130$), its relatively lower coefficient indicates that its contribution is more limited compared to the other two strategies. This reinforces earlier findings that proactive and collaborative approaches may yield better results than purely enforcement-based methods (Bostrom *et al.*, 2024).

The results of this study underscore the critical role of awareness- building and community participation in enhancing public safety and crime prevention outcomes. Strategies that emphasize public engagement and information dissemination appear to be more effective than those relying primarily on enforcement mechanisms (Nubani, 2023).

4. Conclusion and Recommendations

This chapter contains a summary of findings, appropriate conclusions, and recommendations. The findings were presented based on the results.

The research evaluated the implementation level and effectiveness of three data-driven crime prevention programs: Anti-Street Crime Strategy, Community-Based Anti-Crime Strategy, and Crime Awareness Strategy implemented in selected students in University of Mindanao. The research findings showed that all three strategies are implemented at high levels, with Crime Awareness Strategy being rated highest in perceived effectiveness and consistency.

Correlation and regression tests validated that both Crime Awareness Strategy and Community-Based Anti-Crime Strategy significantly and moderately strongly correlate with crime prevention effects. Crime Awareness Strategy, in fact, was the most effective and strongest predictor of enhanced public safety and crime prevention, and Anti-Street Crime Strategy had weaker correlations and predictive value, indicating its limited effectiveness as a single strategy.

This study offers an overview that investigates the connection between crime prevention and data-driven tactics among students from the University of Mindanao residing in urban areas. The researchers advise educational institutions, especially criminology schools like the University of Mindanao, to establish specific objectives to enhance the role of academic training in crime prevention measures in light of the findings. For schools, it is recommended to integrate community-based and crime awareness strategies into the criminology curriculum. Real-world applications of crime prevention through data analysis, safety advocacy, and community involvement should be emphasized in courses. Students gained a stronger comprehension of how proactive and cooperative tactics supported public safety as a result.

Teachers should use teaching strategies that emphasize the need of participative and preventive approaches to reducing crime. This involves incorporating community immersion initiatives, simulated exercises, and case studies that complement anti-crime initiatives. Instructors ought to support students in creating more comprehensive safety programs and promote critical conversations regarding the shortcomings of tactics that are solely focused on enforcement.

Criminology students need to be motivated to actively participate in campaigns to raise public awareness of crime. They can put their theoretical knowledge to use while supporting neighborhood safety initiatives through research-based projects, outreach campaigns, or internships. In order to suggest evidence-based remedies that are

appropriate for particular communities, students must also learn how to use data to analyze crime trends.

Program heads and school administrators should work with law enforcement and local government organizations to establish alliances that enable students to participate in data-driven, real-time crime prevention initiatives. These partnerships may result in common learning platforms, cooperative projects, and practical experience.

Future researchers should keep investigating the efficacy of different crime prevention techniques and disseminate their findings to local and scholarly stakeholders. Future public safety leaders and programs can be greatly influenced by criminology institutions by coordinating school-based activities with community safety objectives.

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Conflict of Interest Statement

The authors declare no conflicts of interest. The authors declare no conflicts of interest. The authors are dedicated to upholding the highest ethical and research standards. Per these standards, any potential conflicts of interest that may arise during the study will be promptly disclosed and managed to ensure the impartiality, transparency, and integrity of the research outcomes. This declaration is intended to underscore our commitment to transparency and maintaining research integrity throughout the study

About the Author(s)

Irish Alemania Pioneta-Bandalos is a Doctor of Criminal Justice with a specialization in Criminology. She is a research coordinator and full-time faculty in the College of Criminal Justice Education at the University of Mindanao, Philippines. Outside of their professional pursuits, the Irish is actively involved in different organizations. An Emergency Action for Good Leadership Service, Inc. Fire Auxiliary Corp member, specifically the University of Mindanao Chapter. Additionally, she serves as an Enlisted Personnel Reservist in the Philippine Army. To further enhance their knowledge and skills, she has attended various seminars, including the Training Workshop on the 7-Step Method of Investigation for Trafficking in Persons and Environmental Crimes in the Philippines, Cybercrime Incident Response Specialization Training, and Medico-Legal Forensic Training conducted by PAP FILE in Cebu City, Philippines.

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